

# **Lebanon National Strategic Plan to End Tuberculosis, 2023-2030**

- A. Core Plan**
- B. Budget Plan**
- C. Monitoring and Evaluation Plan**
- D. Operational Plan**
- E. Technical assistance plan**

**World Health Organization and  
International Organization for Migration  
Lebanon**



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## ACRONYMS AND ABBREVIATIONS

ACSM	Advocacy, Communication and Social Mobilization
aDSM	Active TB Drug-Safety Monitoring and Management
AIDS	Acquired immunodeficiency syndrome
ARV	Antiretroviral medicine
CHV	Community Health Volunteer
COVID-19	COVID-19, an acronym from Corona Virus Disease 19 (acute respiratory illness in humans caused by the coronavirus)
DOT	Directly Observed Therapy
DOTS	A brand name for the WHO-recommended strategy for TB control; it constitutes the foundations for the Stop TB Strategy and End TB Strategy
DST	Drug susceptibility test/testing
DS-TB	Drug-susceptible TB
DR-TB	Drug-resistant TB
EMR	Eastern Mediterranean Region for the World Health Organization
EPTB	Extra-pulmonary tuberculosis
FBO	Faith-based organization
FMx	Fondation Mérieux
FQ	Fluoroquinolone
GDF	Global Drug Facility
GDP	Gross domestic product
GF	Global Fund to fight TB, AIDS and Malaria
HIV	Human immunodeficiency virus
HR	Human Resources
IPC	Infection Prevention and Control
Lebanon-born or Lebanese	Indicates an individual born in Lebanon, while foreign-born or non-Lebanese refers to individuals born outside Lebanon who, in the vast majority (but not exclusively) are migrants or refugees.
LHS	Lebanon Health Sector Strategy Framework (LHS), Vision 2030: Bridging Crisis Phase to Developmental Agenda in Lebanon (Draft 13 July 2022)
LRM	Laboratoire Rodolphe Mérieux
MAF	Multisectoral Accountability Framework
M&E	Monitoring and Evaluation

MOH/MOPH	Ministry of Health/Ministry of Public Health
MDG	Millennium Development Goal
MDR-TB	Multidrug-resistant tuberculosis
NGO	Nongovernmental organization
NRL	National reference laboratory
NSP	National strategic plan
NTP	National Tuberculosis Programme
OR	Operational Research
PHC	Primary Health Care
PLHIV	People living with HIV
PMDT	Programmatic management of drug-resistant tuberculosis
PMTPT	Programmatic management of TB Preventive treatment
PPE	Personal Protective Equipment
PTB	Pulmonary tuberculosis
RR-TB	Rifampicin-resistant tuberculosis
SDGs	Sustainable Development Goals
SOPs	Standard operating procedures
SRL	Supranational Reference Laboratory
TB	Tuberculosis
TBI	Tuberculosis Infection
TPT	Tuberculosis Preventive Treatment
UHC	Universal health coverage
WHO	World Health Organization
XDR-TB	Extensively drug-resistant tuberculosis



# FOREWORD

It is a pleasure and an honor to present to Lebanon Health authorities, health care staff, partners and donors, the newly developed National Strategic Plan 2023-2030.

After several months of intensive work coordinated by the National TB Programme in collaboration with IOM and all the partners active in the country, the Ministry of Health of Lebanon is proud to share the first-ever country Tuberculosis Elimination Plan in all its components (Core Plan, Budget Plan, Monitoring and Evaluation Plan, Operational Plan and Technical assistance plan). The plan is visually complemented by a robust collection of Boxes which help the reader to fully understand the content and by 10 Annexes.

The Goal and Objectives of the plan are aimed to allow Lebanon to accelerate its trajectory towards TB pre-elimination, entering already in the elimination phase in specific categories of patients (e.g. children and MDR-TB) and implementing a comprehensive approach to manage TB infection.

The Lebanon 2023-2030 not only is fully consistent with the WHO regional plan to eliminate TB in the low incidence countries of EMR and the WHO MAF document, but also captures the most important elements of the national strategic health plans, including the Health Sector Strategy Framework (LHS).

We consider this plan as a pillar guiding the final steps to eliminate TB in Lebanon and an inspiring example for other countries within and outside WHO EMR.

Special thanks to IOM for supporting the consultancy work and for providing relevant inputs at all levels and to WHO and all partners for their endless proactivity during the different steps of the document's development.

**Beirut 29 November. 2022**

**Minister of Public Health Dr. Firass Abiad**

# EXECUTIVE SUMMARY

The Republic of Lebanon is a low Tuberculosis (TB) burden country (estimated 2021 TB incidence rate of 10 per 100,000), with an estimated HIV-negative mortality rate of 1 per 100,000 pop., a TB case-fatality ratio (estimated mortality/estimated incidence) of 8%, and high treatment success rate (overall >80%). It is situated at eastern Mediterranean region in Western Asia bordering Occupied Palestine and Syria. The estimated population of the country for 2021 was 5.6 million. Nearly 70% of the country's Gross Domestic Product (GDP, 18.08 trillion USD in 2021) is derived from exports and import of goods. The Gross National Income per capita (GNI) PPP is 15,900 current US dollar.

The health care services in the country are catered through both public and private health sector. The public health services have a through network of primary health centres, tertiary hospitals and healthcare facilities under other ministries. The private sector consists of mainly private hospitals, clinics, and Non-Governmental Organizations (NGOs) catering to larger population in the country.

Lebanon is hosting large number of migrants and refugees:(Syrian refugees estimated to be 1.5 million, Palestinian refugees 180,000 with 27700 returnees from Syria) contributing to about 50% of the total TB burden in Lebanon (50% among migrants and 50% among refugees).

Under the Ministry of Public health (MOPH), the National TB Programme (NTP) functions with a central unit headed by NTP Manager and has nine TB units in the Governorates. The MOPH has contracted Laboratoire Rodolphe Mérieux (LRM) as National Tuberculosis Reference Laboratory (NTRL) and a TB Sanatorium for in-patient services. The grass root level field workers working for TB implementation are financially supported by Global Fund (GF) Middle East Response (MER 1,2,3) grants.

These High Priority Activities, defined by the NTP in 2021, were taken into account in the dynamic process Situation Analysis-SWOT Analysis. Gap Analysis- Development of Goal, Objectives and Strategic Interventions within the new Lebanon NSP 2023-2027, which are clearly focused on TB Elimination.

The Lebanon NSP has been developed according to WHO guidance, with a consultative process involving NTP, WHO, IOM and all the other stakeholders operating in Lebanon.

The NSP is composed of: A. the Core Plan; B. the Budget Plan; C.the Monitoring and Evaluation Plan; D. the Operational Plan; and E.the Technical assistance plan.

The Lebanon TB Elimination plan contains Strategic Interventions relevant to manage the pre-elimination phase, looking both within and beyond the health system, as recommended in the EMR Action Plan, 2023-2030.

The plan includes 1 Goal and 4 Objectives, as follows:

**Goal 1A.** *To approach the pre-elimination phase in Lebanon, with an incidence of 20 case per million in 2030 among the Lebanese-born (48.1 % decline from 2023 to 2030, e.g. 6.8% per year) with a reduction of 50% in the number of TB cases among non-Lebanon born (including migrants/refugees) between 2026 and 2030.*

**Goal 1B:** *To reduce the TB Mortality (case-fatality ratio) of 37.5% from 2023 to 2030 (from 8% to 3%)*

**Objective 1:** *to increase the case detection rate/TB treatment coverage from 87% in 2023 to 90% in 2030 (3% increase in 7 years)*

**Objective 2:** *to eliminate TB in children (Lebanon and non-Lebanon-born, including migrants and refugees) by reducing the notified incidence of TB in children below 15 years of age from 6.78 per million in 2023 to 1 per million in 2030*

**Objective 3:** *to eliminate MDR-TB in Lebanon (among Lebanon born and refugees), achieving <1 MDR-TB case per million population by 2030*

**Objective 4:** *by 2024 a full description of the TBI cascade available in Lebanon with a) 90% TPT completion in Lebanon-born and refugees patients by 2030 and b) 70% of eligible migrants receiving TPT*

The document includes the Strategic Interventions to reach the planned Goal and Objectives.

The costing and budgeting aspects are covered by the Budget Plan, A specific set of indicators have been identified within the Monitoring and Evaluation Plan. The activities planned in the Core plan are operationalized per quarter in the Operational Plan. Last but not least the technical assistance needs are described in the Technical Assistance Plan.

## **1. Background: selected key characteristics of Lebanon**

### ***1.1 Geography***

The Republic of Lebanon is located at approximately 34°N, 35°E in the middle-east region on the eastern coast of the Mediterranean Sea in Western Asia. The country is located in the Northern and Eastern hemispheres. Lebanon has land borders with two countries Syria and Occupied Palestine Territories. It is bounded in the northern and eastern parts by Syria; in the southern part by Occupied Palestine Territories; in the western part by the Mediterranean Sea. The country shares its sea borders with Cyprus. It has a surface area of 10.5 thousand square kilometres. The country is rectangular in shape becoming narrow at the south and farthest at the north. It has a mountainous topography with a narrow and discontinuous coastal plain along the Mediterranean Sea featuring both the sandy bays and rocky beaches (**Box 1**).

## ***1.2 Demography***

In 2020 the population of the country was nearly 6.85 million with a population density of 669.5 persons per square kilometer. The annual population growth rate is 0.5%. The life expectancy at the age of birth is 78 years for men and 82 years for women. The proportion of the population below the age of 15 is 28% and above the age of 65 is 10%. There are approximately 10 adults aged 65 and older for every 100 persons aged 15–64. The ratio is expected to increase to 27.4 by 2050. The crude death rate is 4.35 per 1000 and the crude birth rate is 17.54 per 1000 population. The infant mortality rate is 6.2 per 1000 live births. The average number of children per woman was estimated to be 2.2 (2019). In general, the outbound migration is high in the Arab region, Lebanon has historically been a major center of emigration and registers one of the world's highest ratios of expatriates to resident nationals. The literacy rate among adults aged above 15 years is 90%. The Human development index rank is 67 (2014). Currently, there is huge refugee population in the country. According to the United Nations High Commissioner for Refugees (UNHCR), the country has the largest number of refugees per capita. As estimated, there are refugees from Syria (1.5 million), refugees from Ethiopian, Iraqi, Sudan and other origins (16,000), and Palestinian refugees under UNRWA's mandate (200,000).

The pyramid of population is presented in **Box 2**.

## ***1.3 Political situation***

Lebanon was one of the most developed countries before its civil war and one of the first established republics in the middle-east. The country has a mosaic society with around nineteen religious communities with varied socio-cultural aspects. It has a liberal free economic system which relies mainly on banking and tourism.

Lebanon has a unitary multiparty republic with a parliamentary system of government. The National Assembly is elected for a term of four years. The president is elected by a two-thirds majority for a period of six years. The president, in consultation with the speaker of the National Assembly and the parliamentary deputies, forms a cabinet, and the cabinet members' portfolios are organized to reflect the sectarian balance.

Over the last one year, Lebanon has been assailed by compounded crisis specifically an economic and financial crisis (**Box 3**) followed by the COVID-19 pandemic and lastly the explosion of the port of Beirut. In 2019, the economy plunged into a financial crisis that precipitated into banking sector failures and exchange rates sudden variations, leading to a rapid devaluation of the Lebanese national

currency by at least 8 folds against the USD. In March 2020, the Government's inability on the redemption of Eurobond followed by lockdown due to COVID-19 further aggravated the situation. On 4 August 2020, a massive explosion at the Port of Beirut led to human tragedy and had an economic impact on financial flows of up to 3.5 billion USD. Lebanon now faces a complex political, economic, and health crisis.

### ***1.4 Economy***

The Gross Domestic Product (GDP) in Lebanon was worth 18.08 billion US dollars in 2021, according to official data from the World Bank. The GDP value of Lebanon represents less than 0.01 percent of the world economy **(Box 3)**.

Lebanon is almost three years into an economic and financial crisis that is among the worst the world has seen **(1)**. Politically, Lebanon heads into parliamentary elections on May 15, which are highly anticipated in light of systemic failures in governance. The economic consequences of the war in Ukraine and associated sanctions are adding to Lebanon's plights, in particular given its critical net imports of wheat (quasi-exclusively from Russia and Ukraine) and oil.

#### *Recent Developments*

Real GDP is estimated to have declined by 10.5% in 2021, on the back of a 21.4% contraction in 2020 as policymakers have still not agreed on a plan to address the collapse of the country's development model **(1)**. A scarce source of growth is the tourism sector, where tourist arrivals surged by 101.2%, from a low base, over the first seven months of 2021. Public finances improved in 2021, paradoxically, as spending collapsed faster than revenue generation. The exchange rate continued to deteriorate sharply in 2021, keeping inflation rates in triple digits. The share of the Lebanese population under the national poverty line is estimated to have risen by 9.1 percentage points (pp) by end-2021. Lebanon has witnessed a dramatic collapse in basic services, driven by depleting Foreign Exchange reserves.

In 2021, the annual GDP growth rate was -10.52%, a 15.39% increase from 2020 **(2)**. Nearly 70% of GDP is determined by exports and imports of goods and services. In 2021, the Gross National Income per capita (GNI Per Capita) was \$3,450, with a 25.97% decline from 2020. In 2019, the total healthcare expenditure on health per capita was \$663, a 4.61% decline from 2018.(and a 6.39% proportion of GDP) **(3)**, while private expenditure on health as a share of total health expenditure for Lebanon was 50.1 %, falling gradually from 70.1 % in 2000 to 50.1 % in 2019 **(4)**. Still in 2019, the general government expenditure on health as a share of general government expenditure for the country was 13.4 %, fluctuating substantially in recent years, but tending to increase through 2000-2019 **(4)**.

Details on the TB financing profile are available in [Boxes 5 and 6](#).

In [Box 7](#) we see details of the SDG (Sustainable Development Goals) associated with TB, with some information on economic parameters as well. We see that the health expenditure per capita after a continuous growth has started to decline as well as the GDP per capita. Other indicators of poverty are worsening, as malnutrition (rising after 4 years of decline) and the proportion of population leaving in slums, which is slightly increasing since 2015.

### *Outlook*

Subject to extraordinarily high uncertainty, real GDP is projected to contract by a further 6.5% in 2022 under the assumptions of continued inadequate macro policy responses and a minimum level of stability on the political and security scenes. Considering the scale and scope of Lebanon's financial and economic crisis, the negative impact of the economic consequences of the war in Ukraine and associated sanctions is of a different magnitude. It is nonetheless large and negative as Lebanon will have to quickly tap new alternatives for its wheat imports from Russia and Ukraine to guarantee food security. Additionally, surging energy prices will further exacerbate already existing crises related to exchange market pressures, highly elevated inflation rates, and likely reduce further the limited amount of electricity supplied by EdL (Electricité du Liban).

Details on the health expenditure are summarized in [Box 4](#).

### *Poverty*

A study conducted by UNDP in 2008 shows that almost 28 per cent of the Lebanese population was considered poor and eight percent was considered extremely poor particularly in the Northern district of Akkar. In 2011 Lebanon poverty ratio at national poverty line was still 27.4 %, **(4)** so national poverty targeting programmes were established to reduce poverty through provision of basic social service were implemented since that year, complemented in 2013 by a Social Promotion And Protection Project funded by the World Bank. This project aimed at increasing access to social development services at the community level, improving the coverage of the National Poverty Targeting Program (NPTP), and strengthening the capacity of the Ministry of Social Affairs (MOSA) at the central level and the Social Development Centers (SDC) at the local level. The social assistance package consisted of registration fee waivers and provision of free books at primary and secondary schools and health coverage at public and private hospitals through the waiver of 10-15 percent of copayments for hospitalization. As of 2020, the NPTP reaches 43,000 households. However, the current economic and financial crisis could put more than 155,000 households (850,000 individuals, equivalent to 22% of the Lebanese population)

under the extreme poverty line; and 356,000 households (1.7 million individuals, equivalent to 45% of the Lebanese population) under the upper poverty line **(5)**. Despite numerous delays, close supervision and flexibility in approach enabled the Project to expand coverage of basic social assistance to extremely poor households (from 195,000 to 261,000), improved the NPTP targeting method, enhanced the NPTP management and monitoring systems, and introduced the e-card transfer system. More importantly, the Project institutionalized the NPTP as Lebanon's first and only poverty-targeted social safety net (SSN) programme, and is the only SSN to build upon **(6)**. Details are available also in **Box 7**.

## **2. Main health issues and challenges in Lebanon**

### ***2.1 Health status of the population***

The health status of the population is dependent on the availability and accessibility of the health care facilities in Lebanon. The Universal Health Coverage (UHC) effective coverage index aims to represent service coverage across population health needs and how much these services could contribute to improved health **(7)**.

The civil war that ended in 1990 left only a third of public hospitals operational, but since then a series of reforms by the MOPH have improved the equity and efficiency of the health system. Out-of-pocket spending dropped from 60% of health expenditure in 2000 to 32% in 2015. The MOPH has facilitated public-private (for- and non-profit) stakeholder collaboration at the local level, and this system has been remarkably resilient, given dwindling resources and the huge influx of refugees, for which a 'Health Response Strategy: a new approach in 2016 and beyond' was developed. One of the four strategic goals identified by the Health Strategic Plan 2016-2020 was related to progress towards UHC **(8)**. The dilemma of the health system in Lebanon is the current existence of a universal coverage for tertiary care and sophisticated treatments such as open heart and joint replacement surgeries and expensive cancer patent drugs, whereas, paradoxically, prevention and PHC services are not universally covered

**Box 8** shows the UHC coverage for Lebanon (increase from 54.2% in 1990 to 74.5% in 2019, about 1% per year) ([ref](#)) with further details in **Box 7** ([ref](#)).

Since the development of the national primary healthcare network, scaling up the primary healthcare (PHC) system and reducing out of pocket payments have been a major strategic direction for the

MOPH. However, the Syrian crisis has placed a large and additional burden on the healthcare system in Lebanon with the primary care system at the frontline.

Realizing the urgent need to address the emerging health crisis especially in underserved host communities, the MOPH developed an emergency programme aimed at expanding the PHC package while targeting the poor and near poor population in Lebanon. Accordingly, the MOPH, through a grant from the Multi Donor Trust Fund (MDTF) for Lebanon, has embarked on a project with the World Bank to support the delivery of a package of primary healthcare services (Essential Healthcare Package EHCP) to the impoverished Lebanese. This project was designed by the MOPH and experts from the American University of Beirut, WHO and UNICEF (9). The Emergency Primary Healthcare Restoration Project (EPHRP) was a project operating under the Primary Healthcare Department at the MOPH with the objectives of 1) providing an healthcare essential package (EHCP) of health services to 150,000 vulnerable Lebanese with limited income in 75 PHCCs; 2) enhancing the capacity of the PHCCs for service delivery; 3) building the capacity of HHR working in PHCCs through training. The EPHRP was funded through a grant from the multi-donor trust fund managed by the World Bank. The project was declared effective in July 2015, the implementation was initiated in June 2016 and it was extended till end of 2019. The PHC Department oversaw a network of 228 PHCCs, which deliver healthcare services to both host and refugee populations. As of 2018 (Q2) the project contracted all 75 targeted PHCCs (10).

Two main areas of action were identified by MOPH to enhance UHC in the country:

1) **Health Equity in Access and Continuum of Care** where priority was given to:

- redesign the health benefit packages (HBPs) to become more realistic and at the same time acceptable for citizens;
- promote equitable accessibility to healthcare and continuity of treatments under the severe financial constraints of both, funding agencies and HHs, and lifting subsidization on chronic medications;
- further develop technology advancements and people's expectations; continuity of advanced and high-tech services provided by the private sector;
- Main Lebanon's focus remains on the following:
- Continuity of advanced and high-tech services provided by the private sector;
- A basic package of services that can be expanded over time.

2) **Health Care Delivery Models** where major focus will be given to:

- Regulate access to and continuity of health care; gatekeeping and referral, hospitals sustainability;



- promote health workforce development, retention, and production;
- Define the role of public hospitals (vs. the private) and ensure their service provision sustainability.

The main focus for Lebanon is on the following:

- Transform public hospitals into frontline people's centered institutions;
- Reinforce the value of PHC contracting frameworks involving NGOs and municipalities;
- Develop options of models of primary care engaging the private sector **(11)**.

## ***2.2 Determinants of death in Lebanon***

The top 10 causes of total number of deaths in 2019 and percent change 2009–2019, all ages combined are shown in **Box 9**. Non-communicable diseases are the major causes of mortality in the years 2009 and 2019. Ischemic heart disease, stroke, lung cancer, and hypertensive heart disease remains the major causes of mortality in the last two decades. The lower respiratory infection has come down to 9<sup>th</sup> position (2019) from 7<sup>th</sup> one (2009).

The top 10 risk factors contributing to mortality and the total number of DALYs in 2019 and percent change 2009–2019, all ages combined is shown in **Box 10**. Tobacco remains the number one behavioral risk factor over the past two decades followed by metabolic risk factors like high blood pressure, high body mass index, and high fasting plasma glucose. Significantly, malnutrition has a step-down effect to 9<sup>th</sup> position with a change in the proportion of -26%. The other risk factors, which have a high impact are air pollution, dietary risks, high HDL, kidney dysfunction, and low physical activity **(11)**.

Selected indicators on maternal and child health are summarized in **Boxes 11 and 12**.

In **Box 7** the SDG (Sustainable Development Goal) Indicators associated with TB are summarized. It is clearly impossible to comprehensively counter-act the TB epidemic without tackling the different determinants, which can play a role in fueling it. For example, lowering HIV prevalence or the prevalence (and control) of diabetes mellitus, combatting alcohol and tobacco consumption as well as improving economic parameters, living conditions and access to clean water while reducing poverty and ensuring universal access to prevention, diagnosis and care.

**Boxes 13 and 14** summarize the major indicators and trends.

### ***2.3 COVID-19 and the response of TB services***

As of October 14<sup>th</sup>, 2022 Lebanon notified 1,216,999 COVID-19 cases with 10,688 deaths and 1,087,587 patients recovered (12).

NTP moved promptly to implement the MOPH strategy and to minimize the impact of COVID-19 on health services (for additional information see also section 4).

During the first quarter of 2020, there was an 8% increase in the total TB cases notification compared to the same period of 2019; However, the rest of the year was marked by a decline in notification in the different population subgroups Overall, the observed decrease in TB notification was 13.4%. This decline can be explained by several factors as follows:

- the Coronavirus pandemic with its first and second waves;
- The Beirut Blast (August 4), which destroyed the main TB centre in the country;
- The repeated lockdown waves of and the fear the patients' had to be infected by COVID-19 when reporting to health services;
- The important decline in the number of newcomers within the migrant community; and, last but not least:
- the economic crisis, which is worsening.

During the COVID19 pandemic, with the support of WHO and IOM, the NTP continued to offer quality services in order to maintain continuity of TB prevention, diagnosis and treatment activities, as follows:

#### ***Screening***

NTP provides systematic COVID-19 PCR testing of patients in 3 situations:

- 1) Before admission to the TB sanatorium;
- 2) For presumptive TB cases with signs and symptoms compatible with TB and chest radiography abnormalities, when sputum smear microscopy and molecular tests ( Gene Xpert) are negative;
- 3) For patients with serious respiratory illness.

#### ***Treatment Delivery and Follow-up***

- Expansion of the Community Health Volunteers (CHV) network, cultural mediators from different nationalities, who target the different population sub-groups in the country, thus supporting NTP HCW in treatment monitoring and contact tracing;
- Communication technologies were used to maintain treatment support mainly through VOT;
- Follow-up visits for TB patients were reduced to when follow-up testing was required;

- Adequate amounts of TB medicines were dispensed to individual patients to last until the next visit (to avoid treatment interruptions during lockdown periods);

### *Preventive and Infection Control Measures*

- Consistent use of Personal Protective Equipment (PPEs)
- Promotion of regular handwashing and decontamination of surfaces,
- Staff distancing
- Improved ventilation of workplaces

### *ACSM activities*

- The awareness campaign continued with production of materials including a video about the delivery of TB services during COVID19 pandemic
- Other IEC materials were developed in different languages targeting different population subgroups in close collaboration with AUB-FHS (American University of Beirut-Faculty of Health and Sciences), MUBS (Modern University for Business and Science) and UNOV (UN Online Volunteers).

## *2.4 Organization of the health system*

In 2016, the MOPH has developed a national strategic plan for health with the vision of, "An equitable health system that identifies and addresses the key determinants of physical and mental health and promotes, develops and sustains the highest attainable health status of all Lebanese". The mission of the Ministry of Public Health of Lebanon is to, "build and sustain an effective, high impact organization that can develop partnerships across the various stakeholders and the Lebanese society to achieve the vision of promoting physical and mental health and improving the quality of life of even the poorest and most vulnerable of Lebanese society thereby contributing to the sustainable social and economic development of the country"(13).

In Lebanon, Primary health care is the essential health care made available in a comprehensive way for individuals and families in the community to access with affordable costs is based on the principles of justice, equality, and rational use of resources (14).

In 2017 (15) NTP estimated 172 hospitals (28 public) were operating in Lebanon with an approximate global number of 13,000 beds. The private hospitals are ran by charitable, religious organizations, or private physicians' groups. The MOPH signed contracts with hospitals (public and private) based on

quality and accreditation. It was also estimated that public hospitals have attracted more than 40% of hospitalized patients. In addition, there were 960 dispensaries and primary health care (PHC) centres among which 216 accredited by the MOPH as to build the PHC network. Furthermore, there were more than 320 laboratories, which are either hospital-based or free-standing. Approximately half of the free-standing laboratories were licensed by the MOPH. Most of the laboratories are concentrated in urban areas, contributing to the unequal distribution of access to health care.

In 2019, the health workforce present in the country was composed of medical doctors (34 per 10000 population), dentists (16 per 10000 population), pharmacists (21 per 10000 population), and nursing and midwifery staff (39 per 10000 population) (17). WHO estimated in September 2021 that nearly 40 per cent of Lebanon's doctors and almost 30 per cent of nurses had departed since October 2019 (18).

The health service delivery is provided through either public healthcare or by private facilities. The public institutions involved in health care provision include: (a) Ministry of Health (b) Ministry of Finance (c) Ministry of Defense Ministry of Social Affairs (d) Ministry of Interiors and Municipalities (e) Ministry of Labor and (f) Board of Ministries. The health care providers organizations include (a) Order of nurses (b) Order of pharmacists (c) Order of physicians (d) Syndicate of private hospitals (e) NGOs (f) Order Dentists (g) Syndicate of Laboratories (h) Order of Physiotherapists (i) order of Midwives (j) syndicate of social workers; the medical providers are also organized into scientific societies based on area of specialty, such as the society of Pulmonary Medicine specialists, of Infectious Diseases specialist, etc. The orders, syndicate and scientific societies play an important role in technical advice and normative support at the national level, with focus on access and quality of care.

It was estimated that more than 50% of individuals in Lebanon are covered by Health Insurance (16).

The December 2020 virtual WHO Review underlines under recommendation 1 and 5 (Annex 4) the importance of implementing MAF and integrating TB services within PHC, with special attention to HR (recommendation 4). These areas need to be well covered by the present NSP.

### ***2.5 Public Health Delivery: Hospitals, Primary Health Care (PHC) centres, dispensaries***

There are 30 public hospitals, providing a total of 1,200 beds, and 245 PHC centres in the MOPH network, within a large pool of around 1000 dispensaries and social development centers and PHC centers, and it caters to 10-15% of the population.

The number of public sector hospitals and Primary Health Care services are summarized per Governorate in **Box 15**.

The services provided at the PHC level are summarized in [Box 16](#).

[Box 17](#) shows the healthcare services damaged by the Beirut Port Blast.

The administrative organization in Lebanon is shown in [Box 18](#).

## **2.6 Private Health Delivery**

The private service is delivered through the following infrastructure in the country. (a) Private hospitals: 135 hospitals (<100 beds), 26 hospitals (100-200 beds), 7 hospitals (>200 beds). (b) Private clinics - approximately 8000 in number (c) Dispensaries – approximately 770 (d) Pharmacies – approximately 6000 (e); Laboratories – approximately 430. Private sector accreditation and licensing are controlled by MOPH. The MOPH purchases services from private hospitals through contractual agreements based on quality and accreditation.

Specific details on the private sector and TB are included in Section 5.1.

The December 2020 virtual WHO Review underlines under recommendation 10 ([Annex 4](#)) the importance of collaborating with the private sector.

Recommendation 13 on the need for an Health Assessment Survey has to be captured within this plan,

## **2.7 Health Financing**

The Financing for the public sector is mainly through: MOPH, National Social Security Fund, Civil servant's cooperative, MISA, and Armed forces. The financing for the private sector includes: Household (out-of-pocket), Private insurance, and NGO. The country is also supported by International donor organizations like UNDP, WHO, UNICEF and UNFPA.

A comparison between the total Budget 2020 and 2021 is summarized in [Box 19](#).

Details on health expenditure, 2017 (real data) and 2050 (predicted) are summarized in [Box 4](#).

Additional details ([19](#)) are summarized in [Box 14](#), showing how only about a portion of the budget is funded by the governmental, the rest originating from international donors or being unfunded.

According to the Global WHO report 2022 ([19](#)) the national TB budget is of about 1.6 million USD ([Boxes 5 and 6](#)). In 2021 the domestic funding lowered, the Global fund one remained stable and the contribution of other donors increased ([Box 5, panel 1](#)). In [Box 5, panel 2](#), we can see the funding in million USD by line item and in [panel 3](#) the funding gap by item.

The average expenditure for both drug-susceptible and drug-resistant patients, summarized in [Box 6, panel 1 and 2](#), has declined since 2018.

As shown below, a new document (LHS) is under development to enhance decentralization and autonomy of health services (SD1, SG 1.3, with 50% increase in funding for public hospital; SD2, SO 2.1.2 with coverage schemes for refugees adjusted to the national package, and, under SG 2.2, mechanisms to support the poor and vulnerable populations).

Several activities related to health financing have been mentioned in the December 2020 virtual WHO Review, particularly focusing on the recruitment of human resources (recommendation 4, [Annex 4](#)), ensuring universal access to security welfare schemes with development of a patients' charter (recommendation 17 and 18), and on training activities and development of a training action plan (recommendation 12).

### ***2.8 Lebanon Health Sector Strategy Framework (LHS), Vision 2030: Bridging Crisis Phase to Developmental Agenda in Lebanon (Draft 13 July 2022)***

This core document, consulted in draft, is aimed at setting a general framework for the Lebanon health sector strategic (LHS). It is meant to be a living document to evolve and adapt with the changing context, given the uncertainty and rapid evolution of the situation in Lebanon.

It contains important elements to inform the present plan in the area of Government Commitment which includes MOH/NTP organization and financing, MAF, laboratories, infection control, private sector and ACSM (Area 1, see section 5.1 for details), vulnerable groups (Area 2, see section 5.2), migrants and refugees (Area 3, section 5.3) and surveillance (Area 7, section 5.6).

Several elements of this document are useful to inform the section 'Opportunities' in the SWOT Analysis (see section 6 of this document for details).

The Health Strategy Framework is included in [Box 20](#).

### ***2.9 Vision of NTP in the transition phase to an integrated model of care***

The vast majority of countries implemented over time vertical system of TB control, based on specialized centres and staff. Different models have been described, which included ambulatory-based services (often called Dispensaries) and specialized hospitals (often called Sanatoria). This vision was effective in the historical phase when the disease was highly prevalent, an articulated network of out-patient services was necessary to vaccinate with BCG, diagnose (and follow-up) TB cases, and activate contact-tracing. Similarly, a large number of beds was necessary to manage the many patients diagnosed every year. Under this model, the general health services were advised to refer patients to the TB services, and, anyway, patients knew well where to report when TB signs and symptoms appeared.

With a general decline of the incidence of TB, countries started integrating health services at the diagnostic level (e.g. involving more and more PHC centres for active-case finding) and limiting the number of beds when, on top of the incidence reduction, effective short-course chemotherapy regimens were made available allowing more patients to be managed without (or with limited) hospital admission.

Lebanon has embarked in this health care reform, as mentioned above, which is entering in a new phase as the country is now part of the ‘club’ of the low TB-incidence countries.

In order to ensure a smooth process and future coordination of all activities related to TB control and Elimination, although integrated, MOH and NTP strongly commit to keep a strict coordination through an effective (although agile) central Unit, which over time will keep coordination of TB prevention, diagnosis and treatment activities although different actors, over time, will run them within integrated vision. This Lebanon NSP 2023-2030 represents a milestone to plan the process.

### ***2.10 Gender issue***

As discussed in specific sections of the document (see Section 4 for details) more females than males are notified in Lebanon, suggesting gender issue is not a problem in the country, although more can be done in reducing stigma.

According to the WHO report 2021 (20), the proportion of women over 15 years of age represents the 54% of the total number of TB cases in Lebanon.

Some additional elements in this direction come from the December 2020 virtual WHO Lebanon mission, within recommendation 17 and 18 (Annex 4) among others.

#### *Strengths*

More than 50% of outreach workers appointed under the MER 2 grant are women. Elderly patients, women, and children are prioritized under the current grant by doorstep sputum collection and treatment delivery. The NTP identified multiple NGOs working for specific vulnerable population and sensitized regarding TB diagnosis and treatment. Few cured TB patients were/are working as community health volunteers (CHVs) and delivering awareness in addition to other tasks.

#### *Challenges/Constraints*

There is no specific directive developed and distributed from NTP to reduce TB related stigma. The TB patient charter is yet to be developed and distributed. The country is yet to develop systematic guidance for the involvement of civil society, youths, and affected communities in TB control activities.

### **3. Why the National Strategic Plan focused on TB Elimination is necessary for Lebanon**

#### ***3.1 Why NSP is necessary in Lebanon***

The previous NSP plan 2017-2021 ‘Towards TB Elimination in Lebanon’, as the title suggests, had a focus on TB Elimination (16). It was based on the WHO End TB Strategy, capturing the important elements from Pillar I to deliver quality prevention, diagnosis and treatment services, as well as elements from Pillar II, which look also beyond the health sector, and implementing Pillar III for operational research activities. However, although pioneering the vision of TB Elimination, the plan did not address the 8 areas recommended by the WHO Framework for TB Elimination as necessary to advance towards the pre-Elimination phase, as specifically covered under section, and did not include specific Objectives on TB Elimination. More details on Goals and Objectives are available in section 5.1, under planning and budgeting.

Furthermore, according to the 2022 WHO Global Report the incidence of TB has dropped to 9.7 cases per 100,000, pretty in line with the planned targets. Given the ongoing socio-economic crisis the country is facing and the important programmatic challenges NTP had to face (including the effects of the COVID-19 pandemic and of the Beirut blast), the Lebanon NSP 2023-2030 will pay specific attention at the determinant of such a decline in order to impact the TB epidemic in the best possible way.

#### ***3.2 NSP development***

The Lebanon NSP 2023-2030 has been developed according to WHO guidance (21), with a consultative process involving NTP, WHO, IOM and all the other stakeholders operating in Lebanon.

The process was organized into 3 phases (Box 21).

##### ***Phase 1. Preliminary planning, training and preparation (September 2022).***

The process initiated with informal planning and preparation discussions involving NTP and partners, The overall structure of the NSP was agreed and the next steps were planned. A core organizing team



was defined, including the NTP Lebanon, IOM (which ensured the necessary resources) and the Consultant, with support by WHO EMR.

***Phase 2. Plan for the NSP development, mobilization of resources, development of the first narrative NSP draft (Early October 2022).***

A detailed roadmap was developed for the NSP development process. Agreement was found with NTP on the overall structure and initial discussion started on the content of the situation analysis, SWOT analysis, Gap analysis, Goal, Objectives and Strategic Interventions (NSP first draft). The necessary resources for the core activities related to the plan development (including the organization of the Beirut Workshop, consultancy work, etc.) were secured by IOM. NTP provided additional national data complementing those provided by the December 2020 programme review and the necessary data/evidence consolidation.

***Phase 3. NSP collaborative writing and organization of the Workshop for discussion with all stakeholders, fine-tuning of the NSP and its adoption (November 2022).***

As summarized in **Boxes 21** and **22**, in Phase 3A goal, objectives, strategic interventions and activities were developed.

The first NSP draft was gradually expanded into subsequent versions, as a collaborative efforts including NTP and partners, with the support of the international Consultant.

Metrics and activities for monitoring, evaluation and review were developed (Phase 3B) and costed (Phase 3C). A set of specific Tables was created as essential components of the *Budget Plan, M&E Plan, Operational Plan and Technical Assistance plan*.

During the online Workshop organized on November 7<sup>th</sup>, 2022 and the in-person Workshop organized in Beirut on November 29<sup>th</sup> 2022, (Phase 3D) the core elements were discussed with all the relevant stakeholders operating in Lebanon, revised and fine-tuned, and the document was finally adopted.

Finally, dissemination and resource mobilization were initiated.

In summary, the Lebanon NSP 2023-2030 was developed based on the WHO-recommended good practices for TB strategic planning **(21)**, which include:

- Government stewardship and ownership;
- Alignment with the End TB Strategy and other relevant global and regional strategies;
- Alignment with the national health strategy and other health programmes;
- Multi-sectoral and multi-stakeholder engagement at national and subnational levels;

- Adapting the NSP at subnational level, as per Lebanon context.

The NSP includes: **A.** *the Core Plan*; **B.** *the Budget Plan (cost and resource mapping)*; **C.** *the Monitoring and Evaluation Plan*; **D.** *the Operational Plan*; and **E.** *the Technical assistance plan*.

The Lebanon core plan 2023-2030 includes the usual recommended sections (*Situation analysis, SWOT and Gap analysis, Goal, Objectives and Strategic Interventions*), as well as the *Contingency measures* to be activated in case a major disruption of service provision might occur in the future.

The plan contains specific Strategic Interventions (SI) relevant to approach the pre-elimination phase in Lebanon, looking beyond the health system, as recommended in the EMR Action Plan, 2023-2030 **(22)**. Furthermore, the plan captures all the necessary actions beyond the health sector according to the principles of the WHO End TB Strategy **(23)**.

The Lebanon NSP is designed to provide middle-term direction to end TB with a participatory, multidisciplinary and multisector approach, which involves all key stakeholders (including civil society and communities affected by TB). The plan has a focus on integrated service delivery and maintainance of essential health services in the post COVID-19 phase.

### **3.3 Target audience**

The Lebanon NSP 2023-2030 is intended for use by all stakeholders involved in national strategic planning for TB (e.g. UN organisations and programmes, MOH, other government ministries, private sector including local and international NGOs, civil society and affected communities, academic and research institutions, and technical and funding partners) with the ultimate Goal of eliminating TB in Lebanon.

### **3.4 TB Elimination and its 8 core areas**

The TB control Strategy is aimed at reducing the incidence of TB infection and, consequently, TB disease, based on early diagnosis and treatment of infectious cases of TB. Fewer and fewer new people in the community will be exposed to contact with the bacilli and will develop the disease.

Elimination is the point at which the sources of infection are too low to allow the epidemic to be a health issue anymore (24). Elimination was originally seen as an additional strategy aimed at targeting TBI (25).

At the 2013 WHO/ERS global consultation in Rome on TB elimination in low-TB incidence countries and in the 2014 WHO action framework (26,27), the agreed-upon definition of TB Elimination was “less than one case per million population” to comply with the concept of eliminating all forms of TB (regardless of bacteriological confirmation). TB pre-elimination was defined in the same document as “less than one case per million population”. The central role of diagnosis and treatment of TBI is well described in the document. According to the WHO definition in force, TB elimination is defined as fewer than one TB case per million, a threshold low enough to ensure that TB will never emerge as a public health priority in the future.

The 8 core activities identified to pursue TB Elimination are as follows:

- 1) ensure political commitment, funding, and stewardship for planning and essential services.
- 2) address the most vulnerable and hard-to-reach groups; 3) address special needs of migrants and cross-border issues; 4) undertake screening for active TB and TBI in TB contacts and selected high-risk groups, and provide appropriate treatment; 5) optimize the prevention and care of drug-resistant TB; 6) ensure continued surveillance, programme monitoring, and evaluation and case-based data management; 7) invest in research and new tools, and 8) support global TB prevention, care, and control.

The Lebanon TB Elimination plan 2023-2030 is consistent with, and take inspiration from, the EMR Regional TB Elimination plan emerging from the virtual WHO regional consultation of the 11 EMR low TB incidence countries organized on 30-31 March 2022 (also covering the period 2023-2030) (22). For this event Lebanon reported qualitative information on the 8 TB elimination areas as part of the EMR survey (Annex 5), which are particularly important for situation analysis and for the Monitoring and Evaluation plan.

As largely discussed in the following sections of the plan, the structure identified allows to tackle the priorities identified in Lebanon, which, among others include: under *area 1* the consequences of the economic crisis and the transition between a vertical system into an integrated one; under *area 2* the issues of poverty and other social determinants/vulnerable groups; under *area 3* the issue of migrants and refugees; under *area 4* the management of TB Infection, core intervention to pursue TB Elimination; under *area 8* the possibility to establish cross-border collaborations linked to area 3.

A sound Lebanon TB Elimination Plan 2023-2030 will be of paramount importance for implementation of quality prevention, diagnosis and treatment of TB in the Country, for monitoring and evaluation and as advocacy and fund –raising tool.

The Goal and Objectives of the previous plan, as well as the information provided by the NTP 2021 report and the recommendations of the December 2020 WHO Lebanon virtual Review were taken into account in the dynamic process **(16,28,29)**: Situation Analysis-SWOT Analysis. Gap Analysis- Development of Goal, Objectives and Strategic Interventions for the Lebanon NSP 2023-2030.

Similarly the principles of the MAF document **(30)** have been captured in this NSP, as well as a newly published document on PHC and LHS in Lebanon **(31,32)**.

The Lebanon NSP has been developed according to WHO guidance **(21)**, with a consultative process involving NTP, WHO, IOM and all the other stakeholders operating in Lebanon and the support of experienced consultants, as mentioned above.

The process followed in developing the NSP is summarized in **Box 21** and **22**.

#### **4. (A) Core Plan, Situation analysis (i). Epidemiology: Incidence and Mortality in Lebanon**

##### *Burden analysis*

Lebanon is one of the 11 low TB incidence countries of WHO EMR, as indicated in the WHO EMR TB Elimination plan (which is included as Annex to the WHO EMR TB Action Plan 2023-2030) **(22)**.

The core indicators describing the Lebanon TB burden are incidence and mortality

#### **4.1 Burden, TB Incidence**

##### *4.1.1 Introduction*

Incidence, e.g. the number of new TB cases occurring in Lebanon in a calendar year is one of the core indicators. In order to break the chain of transmission it is necessary to rapid diagnose the (infections)

cases and rendering them rapidly not-infectious. Therefore, a combination of high case-finding and high treatment success rates describe an effective NTP, which can impact the TB epidemic and reduce the incidence in the years to come. In the specific situation of Lebanon, the fluctuation of TB incidence largely depends on the high proportion of foreign-born migrants and refugees: Lebanon is one of the countries in the world, which, with a relative small overall population (5.6 million, in 2021) has a large foreign-born component. Therefore, an in depth understanding of the dynamics of the TB epidemic in Lebanon data needs to be analyzed with an overall approach, as well as disaggregating into native Lebanese and foreign-born. Presently statistics are presented per nationality, an approach which is considered less precise than per country of birth.

#### *4.1.2 Incidence and case notification rates in Lebanon*

The Lebanon case notification rate and incidence are summarized in [Boxes 23, 24 ad 25](#).

The absolute number of cases notified and TB incidence per 100,000 population, in the pre-COVID period 2000-2019 are presented in [Box 23](#). Although both notified cases and incidence are subject to oscillations, the incidence remained below 15 cases per 100,000 population, so well within the threshold defining low TB incidence countries.

[Box 24](#) presents the trend of TB notifications rates (new and relapse cases) per 100,000 population and in absolute numbers, in pre-COVID period 2000-2019.

[Box 25](#), derived from the WHO Global TB Report 2022 provides information on the TB Notification rates and incidence in absolute numbers and per 100,000 population updated at 2021 with the new population (5.6 M), the first year of the COVID-19 pandemic. In the middle upper panel, the estimated incidence is indicated in green and the notified cases in black. The difference (representing the undetected or ‘missing cases’) was rather stable between 2000 and 2021, [Box 25](#)).

The estimated TB incidence is 9.7 per 100,000 population (95% CI: 8-3-11), being very low (reported at 0 per 100,000) for the HIV co-infected individuals. Overall 471 cases were notified in 2021 (233 Lebanon-born), with an estimated case detection rate (treatment coverage rate) of 87%.

This means that in Lebanon 1 new TB case occurs every 16 hours.

As shown in [Box 13](#), the present notification rate shows a reduction of 18%, when the target was set at 20% by 2020.

Important to underline that the reduction in incidence is probably in part related to a mixture of determinants belonging to the socio-economic and health-system situation (Beirut blast contributing), the fluctuation of migrants and refugees' flows, the programmatic challenges faced by NTP and the effects of the COVID-19 pandemic.

Therefore, specific attention was paid when designing the present NSP to consider a potential increase in TB notifications during the first 2 years likely to occur as a result of the programmatic impact of the new activities planned within the NSP.

In **Box 25** the incidence per age-groups and sex is displayed.

The cases attributable to alcohol, smoking, malnutrition, diabetes and HIV are presented in **Box 26**.

In Lebanon there is no gender issue (**Box 25**), as TB is affecting more females than males in the age group 25-34 years (the most affected), as well as in the age groups 15-24 and 35-44. A possible explanation for this is that in general the migrant workers coming to Lebanon fall under these age groups, the majority being females.

When describing the cases attributable to individual risk factors (**Box 26**), we see how alcohol consumption and smoking explain a bit more than 100 cases, while undernutrition, diabetes and HIV play a much lower role in Lebanon.

Further details are available from the WHO Global TB Report 2022 on Lebanon (**19**).

Overall (**Boxes 25 and 26**), 471 new and relapse cases were notified in 2021, of whom:

- % tested with rapid diagnostics at time of diagnosis: 58%
- % with known HIV status: 73%
- % pulmonary: 59%
- % bacteriologically confirmed: 91%
- % children aged 0-14 years: 8%
- % women (aged  $\geq 15$  years): 54%
- % men (aged  $\geq 15$  years): 38%

During the period 2014 to 2018, the TB treatment outcomes for drug-susceptible new and relapse TB cases was as follows: average success rate almost 82%; death rate below 3%, lost to follow-up 5% and patients having left the country 10%. In 2018, the nationality and number of TB patients who were

transferred out were as follows: Ethiopia (21), Bangladesh (2), Philippines (2) and India (1). In terms of lost-to follow-up 60 patients were from Ethiopia, 6 from Bangladesh and Philippines and 4 from Syria. Similarly, for extrapulmonary TB cases the proportion of patients who left the country in 2018 ranged from 5 to 8% and these lost to follow-up from 2 to 7%. The treatment outcomes of the 2020 cohort indicate an overall high success rate (81%) which is very high (91%) in native-born Lebanese, as well as in some groups of foreign-born (from Syria and Palestine), but not in all foreign-born (**Box 27**). No failures have been described in this cohort.

#### *4.1.3 Details on TB notifications*

The TB notifications 2007-2021 by population subgroups (Lebanon-born, Refugees and migrants) in absolute numbers are presented in **Box 23**. The number of migrants, which since 2015 exceeded that of refugees, lowered in 2021 becoming almost equivalent (121 migrants, 114 refugees).

In **Box 28** TB notifications are presented showing national Lebanese vs non-nationals. While a slow decline in Lebanon-born was observed, this representing 50% of the overall TB notifications, TB among patients of different nationalities increase until 2019 then decreasing in an important manner.

The TB cases by nationality are presented in **Boxes 29-30**.

**Box 31** shows the reduction, in percentage, of TB notifications during the COVID-19 pandemic: 2021 vs. 2019 (- 38%) and 2021 vs 2020 (-28%). The analysis by population subgroups (Lebanon-born vs. migrants and refugees) shows that the decline among migrants was higher than among refugees.

**Box 32** summarizes the percentage reduction of TB notifications by age-group, during the pre COVID-19 pandemic period (2019).

**Box 33** described the TB cases by gender and age groups in Lebanon in 2021 and **Box 34** the TB cases by gender, age groups and population subgroups.

In **Box 35** details on the extrapulmonary TB (EPTB) cases by site of disease identified in 2021 are presented. Overall, out of 468 cases, 192 had EPTB (41.0%) about half being lymphonode TB cases.

In **Box 36** the TB cases are presented according to the Governorate where they have been notified.

In **Boxes 37-39** details of the cases diagnosed in each Governorate are presented.

**Box 40** shows (black rectangle) the targets posed by NTP to the bacteriological confirmation (in percentage) of pulmonary (85%) and extrapulmonary TB patients (50%). In Lebanon, in 2021, the

confirmation of the pulmonary cases exceeded the expectations (91%), while that of extrapulmonary cases was at 15%.

#### *4.1.4 Notification of Lebanon-born and children per million population*

As reported in **Box 25**, right table, in 2021 233 native Lebanon cases have been notified, which means 41.6 cases per million population. This is not far for the pre-elimination threshold of 10 case per million, being 4.1 times higher.

Moreover, 38 children below 15 years of age were notified in 2021, corresponding to 6,78 cases per million, which is within the TB pre-elimination threshold and 6.78 times higher than the TB Elimination one.

## **4.2 TB Mortality**

No information on mortality can be derived from the WHO December 2020 virtual Programme Review in Lebanon.

Update information is available in the WHO Global Report 2021: the graphical representation of the HIV-negative mortality data are summarized in **Boxes 25 and 41**.

After remaining stable below 1 per 100,000 population per year it has increased (likely because of the COVID-19 pandemic) to reach 1.4 per 100,000 population per year (95% CI: 0.86-2.1) in 2020 and 0.79 in 2021 (95% CI: 0.48-1.2). In absolute numbers they were 44 cases (95% CI: 27-65) in 2021.

The estimated HIV-positive TB mortality was lows, consisting of 2 patients in 2020 (95% CI: 1-2), and 1 in 2021 corresponding to 0.02 per 100,000 population (95% CI: 0.01-0.03) and 0.02 (95% CI: 0-0.04), respectively.

The case fatality ratio (estimated mortality/ estimated incidence) in 2021 was 8% (95% CI: 5-12) (**Box 25**).

The mortality (death rate) as derived from cohort analysis results (**Box 27**) of the 2020 TB cohort was 19 out of 656 patients (11 in the age over 55, one child), which makes 2.9%. This death rate is low, and affects 17 patients born in Lebanon (81%) and 4 of different nationalities.

Overall, we observe in Lebanon 1 TB death every 4 days.



As shown in **Box 13**, the present notification rate shows a reduction of 18%, when the target was set at 20% by 2020, with a 27% decline against a target decline of 35% by 2020.

## **5 (B) Core Plan, Situation analysis (ii). TB prevention, diagnosis and treatment according to the 8 areas relevant for TB Elimination**

### **5.1 Political commitment (MOH, NTP, Budgeting/Planning, MAF, Laboratories, Drug management, Infection control, private sector, ACSM)**

Under Area 1 several areas will be included, including organizational and budgeting aspects of MOH and NTP, coordination activities within and beyond the health sector (MAF), the laboratory network, drug management, TB infection prevention and control (IPC), private sector and Advocacy, Communication and Social Mobilization (ACSM). All these activities are related to political commitment; when necessary they will be further discussed with a specific focus under the areas 2 to 8.

#### *5.1.1 Introduction on political commitment: strengths and challenges/constrains*

Useful information on strengths and challenges/constrains can be derived from the December 2020 WHO virtual Lebanon review, as follows:

##### *Strengths*

As identified by the December 2020 WHO virtual review in Lebanon **(29)** at the national level, TB is prioritized in the national health policies and the related documents, thus reflecting the political commitment in Lebanon. Furthermore, domestic funding is assigned to the NTP. All the residents in Lebanon have equitable access to TB care services available at the NTP centers. These services are provided free of cost.

The country has a previous 2017-2021 NSP, which was adequately planned and costed (see section 3 and the specific paragraph below). It was launched in the occasion of the World TB day 2017 after approval from MOPH. There is “Mandatory TB screening of migrants from high TB burden countries” in governmental hospitals since 2017. A TB Sanatorium was contracted to cater inpatient services to

drug-susceptible and drug-resistant TB patients. To cater to advanced TB diagnostic services in the country the MOPH contracted the LRM-USJ to function as National TB Reference Laboratory (NRL) since June 2019.

Exhaustive online TB and COVID-19 awareness messages (Video clips) were developed and widely circulated targeting health professionals and the community through the MOPH website (see also the ACSM section 5.1.11). To reinforce TB control activities in the country the Minister of public health has signed and endorsed the "Moscow Declaration to end TB".

Furthermore, within the LHS document, SD1, SG 1.5 plans exist to 'Establish practice of good governance principles ...' including a long-term indicator evaluating development of an adequate legal framework.

### *Challenges/Constraints*

Overall, there is limited investment in public health infrastructure and human resources for health (see also WHO Review recommendation 4, [Annex 4](#)). The majority of NTP human resources are financially supported by GF MER 2 grant: the programme is largely dependent on the MER 2 grant for human resources and different activities.

The payment of financial bills to NRL is pending since 2019. Fondation Mérieux is taking care of diagnostic tests at NRL from 2018 to 2021; Sample from Syrian and Palestinian patients were covered by IOM under MERII.

There is no recruitment of human resources under MOPH since last 10 years. The MOPH has very recently selected 4 physicians and 3 Health Care Workers to work on a part-time basis at the NTP centres till December 2020; however, the HCWs were moved to their parent department soon after.

There is limited advocacy at the national level to attract investment in TB care beyond Global Fund (see also WHO Review recommendation 3). The essential procurement of commodities and consumables for TB diagnostic and treatment services is not prioritized because of the financial situation in Lebanon.

There is no drive for Multi-sectoral engagement (MAF) in TB service delivery (see also recommendation 1 of the WHO review 2020).

The December 2020 virtual WHO Review underlines the need for the implementation of a 'End TB guidance Committee' to coordinate activities with, and support, NTP. These areas need to be well covered by the Lebanon 2023-2030 NSP.

### 5.1.2 MOH and National TB programme (NTP)

In Lebanon, the NTP was implemented in 1950 and reactivated in 1992 after the civil war; the DOTS strategy was adopted in 1998 while the coverage was expanded in a phased manner across the country; complete coverage was achieved in 2000.

Under the MOPH, the NTP functions with a central unit headed by NTP Manager and 9 TB units in the Governorates (Box 42). The NRL and a TB Sanatorium for in-patient services support the NTP. Both NRL and TB Sanatorium (managed by an Armenian Charity organization) are independent entities with a public health missions as charity organizations contracted by MOPH. The NRL is the Laboratoire Rodolphe Merieux (LRM), created by the French Foundation Fondation Mérieux (FMx) at Saint-Joseph University of Beirut (USJ) with a mixed governance (USJ, FMx, MOPH). Three outreach teams (with 3 coordinators and 16 outreach workers) are also supported by GF MER 2 grant and are working at the grass-root level in implementing TB control activities.

There are 9 TB centers in the country- One in Beirut, One in Mount Lebanon, Two in North Lebanon, Three in South Lebanon, and two in Bekka, as indicated in the map (Box 43). The detailed human resource available for TB control programme implementation in the country are given in Box 44.

### 5.1.3 Organization of TB activities: strengths and challenges/constrains

#### *Strengths*

As described in the December 2020 WHO virtual review in Lebanon, NPT has an established Central unit coordinating a network of nine district-level TB units in charge of prevention, diagnosis and treatment activities. A Sanatorium is available to ensure in-patient TB services, as mentioned above, and accredited NRL ensures advanced TB diagnostic services.

NTP has diagnostic algorithm for the diagnosis of drug-susceptible TB, drug-resistant TB, and TB infection. Several refreshing workshops were conducted on TB diagnosis and management to clinicians funded by the MER 1 & MER 2 grants. The National TB guidelines and training tools for healthcare workers were developed and were adapted for training recently according to cope with the latest WHO guidelines.

An *ad-hoc* TB core committee composed by MOPH (NTP)- IOM – FMx follows regularly on the NTP programme implementation in close collaboration with WHO, the NRL and local NGOs.

Decentralized TB treatment services are available at all the specialized TB centers and peripheral healthcare facilities. The NTP has engaged a trained third party for timely sample transportation. Four free-cost GeneXpert machines located at NTP centers ensure rapid molecular diagnosis of TB. Funded by the GF MER 2 grant, active case finding and awareness activities to identify presumptive TB patients in vulnerable and hard to reach populations were expanded.

Within LHS plans exist to ensure health security (SD1, SG 1.4, SO 1.4.1) with specific preparedness for public health response to outbreaks, which is relevant for TB in a pre-elimination scenario.

### *Challenges/Constraints*

Some of the activities planned by NSP were not fully implemented because of absolute lack of funds.

A comprehensive and funded training plan is considered important to strengthen NTP activities.

TB activities are not completely integrated in PHC; there are no registers for presumptive TB cases in all PHCs, this hampering estimates and Monitoring and Evaluation activities.

Due to the ongoing COVID pandemic, serious disruptions of activities have occurred. Among others, active case finding activity among vulnerable populations, referral from the public sector and repeated rounds of lockdown reduced access to health services.

Furthermore, the Beirut blast in August 2020 led to a temporary interruption of TB diagnostic and treatment activities in Karantina.

Details of NTP financing are summarized in **Boxes 5 and 6**.

#### *5.1.4 Human Resources (HR) for TB control and elimination*

The issue of HR is cross-cutting the different NTP areas of work, and therefore is cross-cutting the different elements of the Lebanon 2023-2030 NSP.

The 2020 WHO virtual programme review has underlined this in its recommendation 4, which is strongly linked with the recommendation on training /HR development (recommendations 7 and 12).

The LHS offers an important opportunity to NTP to implement these recommendations. The LHS covers HR under different SDs: SD 3, SG 3.1, SO 3.1.1-2 on integration with PHC and SO 3.1.3 on home care and, especially, under SD 5 (Enhancing resilience and adaptability to the health system...),

SG 5.1 on health manpower development, retention and repurposing with SO 5.1.1 (producing high level workforce), 5.1.2 (upgrading curricula) and 5.1.3 (retention).

Furthermore, new possibilities for HR recruitment are available under SD 1, SG 1.5 with its long-term indicator focused on creating an adequate legal framework to support the overall LHS implementation.

Details on NTP human resources are available in [Box 44](#).

A challenge for the implementation of the 2023-2030 Lebanon NSP will be represented by ensuring adequate consistency of quality HR (which means adequate staff number and adequate training) in the phase when several vertical activities of the NTP will be integrated together PHC, particularly at the clinical level.

#### *5.1.5 TB treatment services*

The December 2020 WHO virtual Programme Review provides useful information to inform the 2023-2030 Lebanon NSP on this topic.

#### *Strengths*

The TB treatment services are decentralized and available in all Governorates.

The outreach workers are providing directly observed treatment (DOT) to the patients more and more based on the Video Observed approach.

Continuity of care is ensured, with solid M&E of patients transferred out.

As recommended by WHO aDSM has been implemented (Lebanese National Pharmacovigilance Centre being in charge). From the clinical viewpoint, all patients are tested monthly for drug-related side effects such as hepatotoxicity amongst others.

#### *Challenges/Constraints*

More than 10% of TB patients initiating their treatment are transferred or lost-to follow-up, migrants mainly returning home at different times after being registered.

Patients belonging to vulnerable groups other than refugees are often facing financial difficulties in doing essential follow-up tests (not available at NTP level).

Interesting elements of the 2023-2030 Lebanon NSP are derived from the Lebanon NSP report on supervisory visits outcomes ([Annex 6](#)).

### *Treatment supervision*

DOT officers are supervising treatment in coordination with the outreach team in most of the regions (in North Lebanon DOT supervision is performed but CHVs in the area do not support DOT officers.) Yet they are facing many challenges hindering this activity because of weak internet connection issues (causing impossibility to perform video calls) or transportation challenges due to the fuel crisis (home visits by the DOT officer conducted when necessary only, and not according to the scheduled plan).

For details of the treatment regimens used, see section 5.5, and [Boxes 45](#) and [46](#).

### *5.1.6 Budgeting/Planning*

As discussed above in section 3, a sound NSP has been launched for the period 2017-2021, containing the basis for effective implementation of the End TB strategy with focus on some elimination activities, without specific focus to the 8 areas to pursue TB Elimination.

### ***Goal and Objectives of the Lebanon NSP 2017-2021***

The Goal and Objectives of the previous 2017-2021 Lebanon NSP Plan were as follows:

**Goal:** Eliminating tuberculosis in Lebanon with the targets of reaching:

- Estimated incidence rate: <10 cases/100 000 population
- Estimated mortality rate: <1 death/100 000 population
- Case notification: 90% of cases diagnosed and treated
- Treatment success: 90% of cases successfully treated-

**Objective 1:** By 2021 further decrease the burden of TB to less than 10 cases/100 000 population by increasing the efforts for case detection and improve treatment outcomes through the existing health service network

**Objective 2:** By 2021 decrease by half the burden of TB among migrants and increase case finding activities to all refugee populations newly arrived in Lebanon

**Objective 3:** Achieve and sustain accurate surveillance, monitoring and evaluation, adherence to SOPs and obtain better estimates of TB situation for a reliable measurement of progress

**Objective 4:** Increase coordination among all stakeholders involved in TB prevention care and control, public and private, including social support actors by organizing formal meetings with stakeholders

**Objective 5:** Raise TB awareness, decrease stigma through a plan for communication and social mobilization and promote research

The previous plan offers excellent elements to inform the new 2023-2027 Lebanon NSP.

The LHS document has important elements for planning and budgeting of future NTP activities, e.g. under SD1 SG 1.3 Enhanced decentralization and autonomy of health services, SG 1.4 Ensure health security, SG 1.5 Establish practice of good governance principles, SG 2.3 (promoting health insurances), SG 2.4 (revise and harmonize agreements with the private sector), 2.5 (re-set payment mechanisms), SD3 setting the scene for better collaboration with the private sector and enhancing primary health care (PHC) and SD4 on MAF and ACSM (Health promotion and disease prevention).

#### *5.1.7 Laboratory Network*

The December 2020 WHO virtual Programme Review provides useful information to inform the 2023-2030 Lebanon NSP on this topic.

#### *Strengths*

Basic TB diagnostic services (direct sputum smear microscopy) are available in all the Governorates and the GeneXpert in four TB centres. Patients are asked to provide a sputum sample in their nearest NTP centre, and samples are then referred for further analysis. More than 20 laboratories perform solid culture and 3 laboratories liquid culture (1 in north Lebanon & 2 in Beirut) with standard operating procedures in place. An efficient sputum collection and transportation mechanism has been established

by engaging a logistic agency for rapid sputum transportation. Under the supervision of FMx, the LRM has the NRL function. It is registered to undergo international EQA programmes for both active and latent TB diagnosis (UK NEQAS and INSTAND). Locally, Panel Slides are prepared at the NRL and sent to microscopy centres as a part of EQA on yearly basis.

The LHS document includes plans to enhance the laboratory activities under SG.4 on Communicable Diseases, SG 4.5 with SO 4.5.4 on the possibility to better support NRL and SO 4.5.5 supporting AMR (antimicrobial drug resistance activities).

One additional strength is the availability of second line DST for new drugs that allows the orientation and contribute to the success of the treatment.

### *Challenges/Constraints*

Within the private health sector 15 GeneXpert stations operate in Lebanon; unfortunately they do not regularly report to NTP and are not participate in the EQA coordinated by the NRL. Five out of nine TB centers do not have GeneXpert equipment. The Karantina laboratory was completely damaged because of the recent blast. Reagents and Consumables will be procured via the NRL under MER3. Written protocols for EQA for sputum smear microscopy and GeneXpert still need to be developed.

### *The NRL/LRM- Saint Joseph University*

LRM was nominated by decree as the NRL in June 2019 by MOPH with the support of Fondation Mérieux. Its equipment include:

- Solid and Automated Liquid Culture
- Rapid Molecular Drug Susceptibility testing (DST) using Line Probe Assay (LPA) technology
- GeneXpert and Direct Microscopy
- the recently donated MS Prime (Matrix Assisted Laser Desorption Ionization-Time of Flight) system for routine microbial identification)

The Fondation Mérieux. provided technical assistance to redesign the whole NTP with two different areas for patients and for the coordination team and rehabilitated the NTP Karantina laboratory.

LRM is providing additional support to the NTP since the Beirut blast occurred, in particular by:



- Ensuring diagnosis of all presumptive TB cases.

In 2021, 73 TB cases were bacteriologically confirmed at NRL (81% with PTB and 19% with EPTB) with a positivity rate of 8%. The number of confirmed cases with Non Tuberculous Mycobacteria (NTM) was 31. As for the DST, 54 First Line DST and 13 Second Line DST were performed. Additionally, 32 First Line LPA and 32 Second Line LPA were done in the laboratory.

### *Priorities emerging from supervisory visits*

According to the NTP report 2021 the following priorities emerged:

#### Sputum Collection

The quality of sputum containers is satisfactory in most of the centres, except Saida and Tripoli which are using narrow containers. The wider cups will be delivered to these centres. Sputum containers are generally well labelled: Patient name, Date of collection (Sample ID needs to be added).

Storage of specimens is unsatisfactory in Hermel, Saida and Tripoli due to suboptimal storing temperatures (due to major electricity back-outs). Currently, HCW at these centre are trying to schedule sample collection on the day when transportation is scheduled under the Fondation Mérieux's support. With UNICEF support, solar energy fridges for the TB centres have been procured and installed (with the exception of Tripoli, where the centre is planned to be relocated to the governmental hospital very soon, the site preparation having started in the previous COVID vaccination site).

#### Specimen referral

- It was generally satisfactory for PTB cases, particularly when patients were referred and sputum was collected via the NTP. It was high in most of the centres, meeting or exceeding the NSP targets for 2021. Except in Tripoli, Tyre and Zahle-in Zahle, all PTB cases performed Xpert except 4 paediatric cases, this confirming the importance of insisting on bacteriological confirmation in children.
- However, major challenges have been observed in the referral of extra-pulmonary specimens, resulting in very low proportion of bacteriological confirmation in these cases, particularly during the last quarter of 2021. Rationale exists for specific training on this topic.
- Several episodes of specimens sent the pathology laboratory and not, in part, to the mycobacterial laboratory. This calls for the need of specific refresher training and for wider distribution of the available laboratory SOPs. Furthermore, under MER3 a pilot study in 3 major hospitals will be conducted to better understand how specimen referral is actually managed.

Specific topics are when the samples should undergo culture, based on sputum smear and Xpert results.

A specific attention will be by this Lebanon NSP 2023-2030 in improving referral of specimens to the NRL, in particular when extrapulmonary specimens are involved (given the low confirmation proportion for extrapulmonary cases).

#### *5.1.8 Drug management*

The December 2020 WHO virtual Programme Review provides useful information to inform the 2023-2030 Lebanon NSP on this topic.

#### *Strengths*

As excellent drug supply management is operating in Lebanon, no stock-outs occurred during the last 10 years. The WHO Prequalified anti TB-drugs are procured via the GDF through MOPH (currently covered under GF grant/ MER3) and stored at the MOPH warehouse as per standard protocol. All the drugs are supplied to all the Governorates once in six months based on the consumption, with an 'ad Hoc' procedure for MDR-TB patients. The drugs are released on a monthly basis for the TB patients undergoing treatment. A pharmacist ensures quality drug procurement activities.

#### *Challenges/Constraints*

The demand and supply of drugs need to be streamlined. There was a discrepancy in the calculation of the necessary amount of isoniazid; therefore, large quantities of the drug procured for TPT are exposed to the risk expiring before being used. One training was done on a GF methods, and a second on QUAN-TB is planned in January 2023. Lack of a robust distribution system to transport the drugs to peripheral centers and lack of electronic recording system for effective drug stock management were also noticed during the WHO mission, which (recommendation 19, [Annex 4](#)) suggested to invest in drug management training and implementation of an electronic M&E tool. However, as a system of weekly transportation of samples to the NRL and main center/ Karantina centre exists, NTP agreed with the colleagues from NRL and with IOM, that the vehicles can pass by the warehouse and distribute drugs and consumables taking advantage of the opportunity.

### 5.1.9 TB Infection Control IPC

According to the recent December 2020 WHO virtual Lebanon review (29) some pieces of information inform the present NSP as follows:

#### *Strengths*

The National IPC committee is in place in the country. Airborne IPC protocols are developed and implemented. IPC posters and signage are available and distributed to all the healthcare facilities.

#### *Challenges/Constraints*

The NTP representatives are not part of the National IPC committee. Institution-specific IPC SOPs need to be developed especially for specialized TB centres and the TB Sanatorium. The December 2020 virtual WHO Review underlines these elements recommendation 12, Annex 4).

Useful elements are present in the analysis of 2021 supervisory visits' reports, as summarized in Annex 6, and here below:

- PPE: instructions on the proper use of PPEs were given to staff.
- As for presumptive TB cases, HCW should wear a respirator when entering the centre.
- Medical waste disposal is not satisfactory managed in most of the centres
- Infection control IEC materials should be displayed in the waiting area at the centres
- Adequate natural ventilation is available (doors and windows are open at all times) in most of the centres
- Sputum samples are generally collected in a well ventilated area or at home.

Specific activities to tackle IPC will be captured in the 2023-2030 Lebanon NSP.

In particular, as resistance exists to admit (when necessary) TB patients in tertiary hospitals, training and education activities will be planned to ensure, from one side, complete understanding of the TB-IPC principles and, from the other side, to guide development of quality facility plans including sound administrative and environmental measure on top of adequate personal protection.

### *5.1.10 Private sector and NGOs*

As discussed above under the organization of health services, the private sector is important in managing TB patients in Lebanon.

According to the recent December 2020 WHO virtual Lebanon review **(29)** some pieces of information inform the present NSP as follows:

#### *Strengths*

NTP sensitization activities are conducted on a regular basis for the Ministry of Social Affairs (MOSA), prison health services, military health services, scientific societies, private hospitals, private clinics, and NGOs for presumptive TB patient referral.

The NGOs are sensitized at regular intervals with the support of the MER 2 grant.

The LHS document **(31)** contains important elements to support inclusion of the private sector, specifically under SG 2.4 (revise and harmonize agreements with the private sector), 2.5 (re-set payment mechanisms) and SD3 setting the scene for better collaboration with the private sector.

#### *Challenges/Constraints*

There is a lack of a standard operating protocol on Public- Public & Public-Private engagement, as to ensure that all care providers collaborate with NTP in Lebanon.

The mapping and line listing of NGOs in healthcare service is not yet available. The NGO engagement protocol needs to be formulated in the country, as recommended by the December 2020 virtual WHO Review (recommendation 23, **Annex 4**).

The health institutions diagnosing and notifying TB cases in 2019, 2020 and 2021 are presented, stratified per public and private, in **Box 47**. Private clinics and hospitals, followed by government institutions, most contribute to the management of TB patients.

Specific activities to tackle the private sector will be captured in the 2023-2030 Lebanon NSP.

### 5.1.11 ACSM

#### *Strengths*

The NTP has integrated TB related ACSM activities in health promotion. Various social media contents are developed with no cost for both professionals and the general public on TB during the COVID-19 pandemic. These contents are made available in the MOPH website and other social media platforms.

To ensure continuity of service during and after the COVID-19 pandemic, awareness campaign materials including a video about the delivery of TB services during the pandemic and other ACSM materials were developed in different languages targeting different population subgroups in close collaboration with AUB-FHS, MUBS and UNOV. Communication technologies were used to maintain treatment support mainly through VOT.

The World TB Day 2021 was used by NTP to organize a virtual meeting (March 31<sup>st</sup>) hosting 38 key stakeholders from scientific societies and partner organizations in order to generate a cascade of communication and reach a wider audience in Lebanon. The topics were following:

- recent TB trends in the country and impact of the COVID19 pandemic
- response of the TB services to ensuring continuity during the pandemic
- impact of the economic crisis and the Beirut blast on TB services
- partners support in different areas
- challenges and opportunities to get back on track.

#### *Challenges/Constraints*

There are limited resource and capacity to develop and distribute ACSM materials in Lebanon (see also Recommendation 3, [Annex 4](#), December 2020 virtual WHO Review).

These areas need to be well covered by the present NSP.

## **5.2 Vulnerable groups (children, TB/HIV, prisoners, diabetes, COPD)**

Useful information on case finding and active case-finding, with focus on vulnerable (and high risk groups), is available from the NTP analysis of the supervisory visits' reports (28).

The December 2020 virtual WHO Review (29) underlines under recommendation 11 (Annex 4) the importance of implementing systematic screening (compulsory screening is for certain groups).

### *5.2.1 Active case-finding*

As a result of the numerous crises in the country, active case finding targeted mainly contacts through contact screening activities in the different TB centers. Only two screening interventions targeted other high risk groups: one in prison (following the notification of an active TB case among inmates, the activity was 'at large' a contact tracing activity) and one in an Ethiopian shelter (the migrants' group was without documents and lacking previous history of screening).

According to the Lebanon guidelines, active case finding (ACF) is regularly performed on migrants from high burden countries upon their arrival in Lebanon.

The ACF in prison had to be interrupted because of the human resource shortage and the COVID-19 pandemic. It is presently planned under MER3 (the protocol is almost completed and implementation will start soon).

High risk groups will be targeted under MER3 through specifically planned interventions.

### *5.2.1.2 Contact screening*

- The activity is considered satisfactory in most of the centres, with 80% or more contacts of PTB patients having been screened. A single problem was noticed in Karantina, where a gap was found on patients discharged from the Sanatorium.
- Furthermore, the proportion of EPTB patients below 5 years whom contacts were screened as per guidelines was 100% in 3 centres (Karantina, Saida and Tripoli).
- The proportion of both contacts below or above 5 years eligible for TPT who received it was high in most of the centres. Some gaps related to TPT provision (at Halba) and to reading TST result (at Hermel) were promptly addressed by NTP.
- The proportion of PTB cases out of the total cases notified was low in most of the centres at time of the supervisory visit except in 3 centres (Karantina, Hermel, Nabatieh). This could be

attributed to the decline in notification of PTB cases or to the over-diagnosis (e.g. non bacteriological confirmation) of EPTB. An in-depth data analysis is therefore needed.

- A register to collect data about presumptive TB cases is available in the following centres: Saida, Tripoli, Tyre and Zahleh. As of January 2022, data collection concerning presumptive TB cases will be standardized and collected on DHIS2 for TB.

### *5.2.1.3 Screening of contacts*

Despite the numerous challenges related to the COVID pandemic, the instability in the country and the shortage in human resources, contact investigation remained one of the ongoing active case finding activities conducted by NTP in 2021.

Contact screening was ensured to around 80% of eligible active TB cases: 279 received TPT and 9 contacts were diagnosed with active TB. High risk groups for TB were also targeted as part of the contact investigations with a screening activity conducted at the shelter of the Ethiopian embassy and another one for detainees at Kasr Al Adel. **Box 48** shows the main findings of this activity for 2021 (**33**). The indicator "No. of TB cases to whom contact screening should be done" describe the number of "Active PTB cases" and "EPTB cases below the age of 5" whom contact should be screened as per WHO guidance. So, out of 271 active TB cases, 219 active TB cases had their contacts screened. Those 219 active cases had 1000 contacts with 1000 PPD done. Box 41 include both Lebanon and non-Lebanon born individuals.

According to the recent December 2020 WHO virtual Lebanon review, some pieces of information inform the present NSP on vulnerable groups as follows:

### *5.2.2 Children*

#### *Strengths*

The Childhood TB diagnostic algorithm is in place and paediatricians are sensitized on the challenge represented by programmatic diagnosis and treatment in this particular age-group. The TB notification rate among children below 15 years of age are consistently around 8% over last 5 years (**Boxes 25 and 26**).

#### *Challenges/Constraints*

Diagnosis and treatment of TB in childhood poses challenges in all countries. Specialized human resources are necessary, for example, to perform and read the specimens collected via gastric aspiration or bronchoscopy, and the storage of the samples represents a problem as well. Furthermore, hospitalization is sometimes necessary, making access more complicated and sometime needing payment or procedural fees. Additional efforts are needed to integrate NTP and PHC activities, taking advantage also of the potential support offered by the LHS document.

Details in reduction in notifications for the age-groups 0-4 and 5-14 years are presented in [Box 32](#). Additional information is included in [Boxes 33](#) and [34](#).

In the 2020 cohort, the success rate in children (age group 0-14) was 97.6%, with 2.4% lost to follow-up. The treatment success rates in previous years were as follows: 2014: 50 out of 56; -2015: 48 out of 50; 2016: 42 out of 44; 2017: 48 out of 49; 2018: 42 out of 44; 2019: 29 out of 33; 2020: 42 out of 43.

### *5.2.3 TB/HIV*

The low proportion of HIV co-infected TB patients is summarized in [Box 7](#).

In [Box 49](#) the core data on TB co-infection are reported for 2021.

In [Box 50](#) the proportion of TB cases undergoing rapid HIV diagnosis and resulting HIV co-infected has increased importantly since 2014.

### *Strengths*

Updated National Guidelines for HIV/TB are available at all levels and all the NTP HCW including laboratory technicians are trained on voluntary and self-testing. All the NGOs working with the National AIDS Programme (NAP) were trained on TB screening and referral. 82% of the TB patients enrolled for TB treatment in 2019 underwent HIV. There is an exchange of data from the TB and HIV/AIDS register on PLHIV initiating TPT.

### *Challenges/Constraints*



The coordination of NTP and National AIDS Programme is sub-optimal. The TB/HIV collaborative activities which includes joint training, review meetings and data exchange are not jointly planned and need substantial improvement. The TPT implementation for PLHIV has been initiated; however, no data is reported on TB screening in PLHIV and TPT. Further efforts are necessary to improve recording and reporting PLHIV with TB infection as to describe the TPT cascade of care in Lebanon.

#### *5.2.4 Prisoners*

##### *Strengths*

The systematic screening for active TB in the largest prison in Lebanon is done using a symptom-based screening questionnaire and chest radiography available at the prison level. There are approximately 15,000 prison populations in the country. Inmates of four peripheral prisons were screened for active and TB infection in 2019. Of the 379 Screened, 61% of them underwent TPT.

Integration of TB activities in the 3 largest prisons of Lebanon is going to start soon, funded by MER3. The project includes a TB awareness campaign, screening with diagnosis and treatment for both TBI and active TB.

##### *Challenges/Constraints*

The roles and responsibilities for screening and managing a case of TB are yet to be included in the guidelines. TB screening among diabetes and other comorbid conditions is not in place.

Data on the incidence of TB in prisons are presently lacking. Old data showed an incidence of 1200 per 100,000 prisoners in 1996, which gradually decline till 2012 (latest data, NTP) where the incidence was 380, always higher than that of the general population. Quality data are necessary to plan adequate interventions at prison level.

#### *5.2.5 Malnutrition, Diabetes, COPD and other groups*

As poverty rates are rising, malnutrition is having an upward trend. According to a recent survey conducted by UNICEF an estimated 200,000 children under the age of 5 suffer from a form of malnutrition (34). In **Box 26** we see that malnutrition explains about 100 cases of TB in Lebanon.

In **Box 26** we observe that diabetes explains less than 50 cases of TB in Lebanon and in **Box 7** that the prevalence of diabetes is rising in both men and women.

The prevalence of diabetes in Lebanon in the population of 20-79 years of age is 15%. Considering the potential importance of this co-morbidity as determinant of both TBI and TB diseases, screening for diabetes has started in some TB centres.

According to a study performed in 2011 **(35)** 9.7% of the Lebanon population above 40 years of age suffers of COPD, this representing ‘*per se*’ a public health issue (e.g. driving hospital admissions, drug consumption and socio-economic consequences related to loss of working days) in addition of being a risk factor for TB.

In **Box 26** we see that smoking explains about 100 cases of TB in Lebanon, roughly the same number than alcohol abuse.

A recent study **(36)** aimed to assess cigarette smoking and water-pipe experimentation among Lebanese adolescent school students with respect to their gender, region, age, and socio-economic status was recently conducted in Lebanon. Designed as a cross-sectional study, 1133 students between 11 to 18 years of age were included from all over Lebanon. The total proportion of adolescents who ever experimented with cigarette smoking was 24.5%. Males experimented with cigarette smoking more commonly than females (31.9% vs. 19.1%;  $p < 0.001$ ). Cigarette smoking experimentation was higher among students from the Beirut area (33.6%;  $p < 0.001$ ) in comparison to other regions, and among those with poor health perception (29.1% vs. 19.8%;  $p < 0.001$ ) compared to students with excellent health perception. The total proportion of adolescents who ever used a water-pipe was 33.9%. Water-pipes were significantly more experimented among males than females (40.3% vs. 29.8%;  $p < 0.001$ ), and among students with bad perception about their health (39.4% vs. 28.9%;  $p < 0.001$ ). Adolescents who experimented with both cigarettes and water-pipes compose 22.2% of the studied sample. The study’s authors concluded that the rate of tobacco product use is alarming and constitutes a major public health issue for adolescents, urgently calling for public health intervention. The findings raise important policy implications for the development of cigarette smoking prevention programmes for youth. This was confirmed by another study, where 33.3% of 363 individuals randomly selected aged more than 18 years declared to be smokers **(37)**.

In **Box 7** we can see that smoking is a problem particularly among men, whose proportion is not declining much, than among women, whose proportion is, in fact, declining.

Considering that, with 37% of the population in Lebanon currently smoking (11 million smokers estimated, yielding the third place in the world in cigarette consumption), the new Lebanon NSP plan 2023-2030 will carefully consider how to approach chronic diseases and smoking cessation.

## 5.3 Migrants and refugees

The trends in notification of refugees and migrants vs Lebanon-born between 2007 and 2021 are summarized in [Box 51](#) and the trends in notified TB cases by nationality, 2007-2021, in [Box 52](#).

### 5.3.1 Outreach activities

#### *Strengths*

With the support from MER 2 grant, regular outreach activities are conducted in refugee settlements through outreach workers appointed under this grant. Mandatory TB screening for migrants from high TB burden countries has been initiated in Government hospitals since 2017. Active case-finding activities among refugees are implemented since December 2019. The direct service costs, transportation costs, and all-purpose cash support for the most vulnerable are available under MER 2. The healthcare workers of UNRWA are regularly sensitized on identification and referral of TB symptomatic individuals among Palestinian refugees.

#### *Challenges/Constraints*

The programme has the biggest challenge to develop a feasible and standardized protocol for mapping, systematic screening of refugees, and migrants. There is lack of cross-border communication mechanism to ensure treatment support for the migrant population who are leaving the country.

### 5.3.2 Cross-border activities

Cross-border activities are very important given the context and the large amount of migrants and refugees in Lebanon. Useful information is available as a result of the 2020 virtual WHO Lebanon review.

#### *Strengths*

The cross-border patient support is prioritized in the NSP 2017-2021 (see also [Annex 4](#))

### *Challenges/Constraints*

More than 10% of the TB patients enrolled for treatment are leaving the country and are therefore lost-to-follow up. No funds are allocated to establish patient-tracking mechanisms for those transferred out abroad or patients who are leaving the country without informing the NTP (see also recommendation 15, [Annex 4](#), December 2020 virtual WHO Review).

These areas need to be well covered by the Lebanon NSP 2023-2030.

### *TB Screening in migrants from TB HBC*

Systematic TB screening of migrants coming from TB HBC is undertaken in governmental hospitals for the purpose of providing a work permit for migrant workers.

In 2018, a Tuberculosis Registration System for TB screening in migrants was developed and implemented by NTP with the support of WHO to improve data collection and reporting. The system is used by NTP staff and focal persons for TB in governmental hospitals where screening is done. [Box 53](#) summarizes TRS data for the past 4 years.

As mentioned above, recommendation 11, [Annex 4](#), December 2020 virtual WHO Review, systematic screening (compulsory in certain risk groups) is considered important.

## **5.4 Management of TB Infection**

The December 2020 virtual WHO Review underlines under recommendation 9 ([Annex 4](#)) the importance of M&E of TBI activities, under recommendation 9 and of the use of the Prevent TB Mobile Application under recommendation 20.

The 2021 TBI-related activities are summarized in [Box 48](#).

The indicator "No. of TB cases to whom contact screening should be done" is the number of "Active PTB cases" and "EPTB cases below the age of 5" whom contact should be screened as per the

recommendations. So out of 271 active TB cases (all nationalities), 219 active TB cases had their contacts screened. Those 219 active cases had 1150 contacts with 1000 PPD done (87%).

These figures include Lebanese and non-Lebanese.

A total of 1171 contacts (all ages) were screened for TB and 19 (1.6%) cases of active TB were detected in the 2020 (61.6 contacts of TB cases, had to be screened to detect 1 case) as shown in **Box 54**. The Karantina and Hermel TB centres performed the highest number of PPD.

The country witnessed a huge influx of migrants over the past three years. In 2018, at least 19% (16532 of 86894) of migrants were screened for TB and 44% (7330) of them initiated TPT. Similarly, in 2019, 63% (27463 of 43825) were screened and 41% (11138) underwent TPT. In 2020, a total of 7360 migrants were screened, 2552 (35%) being prescribed TPT (**Boxes 53,55**).

The 2020 WHO virtual programme review in Lebanon provides useful elements on strengths and weaknesses/constraints on TBI management in the country.

### *Strengths*

The country has prioritized TB preventive treatment, which is covered in the 2017-2021 Lebanon NSP.

The agreed-upon operational definition for high-risk individuals is used for screening purpose and for TPT. Tuberculin skin test and chest radiography are used as diagnostic tools to, respectively rule-in and rule-out active TB among high-risk individuals: household contacts of TB patients, PLHIV, patients initiated anti-tumor necrosis factor- $\alpha$  (TNF-  $\alpha$ ) treatment and patients on hemodialysis. Contact investigation registers are in place in all Governorates. Isoniazid preventive treatment for 6 months is the treatment of choice for TB prevention for eligible individuals. The TPT coverage among children below 5 years contacts exceeds 75% since last 3 years.

### *Challenges/Constraints*

Currently, contacts of all ages and nationality are screened as per guidelines for TB infection (including migrants, prison populations, and children under five years of age, who systematically undergo TPT). The protocol to screen healthcare workers for TB is yet to be developed in the country. The newer shorter regimens are yet to be included in the PMTPT.

Importantly, although quality data on screening and TPT initiation exist, no information on completion rate as to design the TPT cascade are correctly available.

This aspect will be covered by the Lebanon NSP 2023-2030.

The regimens recommended for TBI in Lebanon are reported in [Box 46](#).

## 5.5 Drug-resistant TB

The drug resistant TB case managed in Lebanon are few, reaching a maximum of 10 in 2016 ([Boxes 56-59](#)), therefore the outcomes (in percentage) should be interpreted with caution. Overall, the success rate of DR-TB in Lebanon was high, at the level of 70-100% except in 2017 when at least 5 cases left the country, thus reducing the success rate to 29%. Importantly a single failure and a single death were observed in the period 2014-2017.

The trends of Drug Resistant-TB cases by population Subgroup, 2014-2021, are summarized in [Box 58](#).

In [Box 59](#) the bacteriological profile of DR-TB Cases by Population Subgroup between 2019 and 2021

Useful elements are available from the December 2020 WHO virtual mission to Lebanon on strengths and challenges/constraints.

### *Strengths*

The programme has a standard diagnostic algorithm for DR-TB management. Most of the physicians and health care workers are sensitized on DR-TB management. The PMDT protocol included all-oral shorter regimens for eligible DR TB patients. The sanatorium has facility to admit DR-TB patients as in-patients. In Lebanon patients are admitted when they have severe disease or adverse events or co-morbidities.

In [Box 6](#) we see ([panel 3](#)) we see the duration of hospital stay for patients with drug-resistant TB vs. those with drug-susceptible TB. The duration of hospital stay for DR-TB cases had a small decline, from about 200 days in to about 150 days after 2018, with values changing every year as expected, while that for DS-TB is much lower.

In [Box 6, panel 4](#), we see the number of visits as out-patients of DR- and DS-TB cases, where- as expected, the number of visits is higher for DR-TB ones. We also see how the COVID-19 pandemic dramatically reduced the number of visits.

The patients on DR-TB treatment are followed-up on a monthly basis. The NTRL is equipped to perform culture and DST both on solid and liquid culture. The LPA (for both first and second line anti-TB drugs) is also performed and the consumables for LPA testing are procured with the support of Fondation Mérieux and IOM/GF under MER2. All the second-line drugs are available at the NTP drugstore and there are three approved DR-TB regimens available in the country, including the shorter regimen, the longer regimen and the BPaL regimen (as operational research in 2022), all injection-free (see [Box 45](#) for the DR-TB regimens for details, and [Box 46](#) for the regimens recommended for DS-TB and TB infection).

### *Challenges/Constraints*

A gap exist in initiating DR-TB treatment for those diagnosed under the programme; a total of 21 DR TB patients were estimated by WHO and only 7 were registered and treated in 2019 ([Boxes 56](#) and [58](#)).

The recent updated PMDT guidelines are in the draft stage and they are yet to be finalized. The clear road map to roll out shorter-all-oral regimens are yet to be planned systematically.

## **5.6 Surveillance, supervision and monitoring**

The recording and reporting flow is summarized in [Box 60](#), according to three steps: data collection, data compiling and cleaning and data analysis and reporting. Data quality assessment is performed on a continuous basis, focused on data timeliness, completeness and accuracy. Supervisory visits also contribute to this important NTP data quality evaluation.

In [Box 61](#) details on the DHIS2 Tracker Programme Structure are reported.

Important to underline that 3 electronic softwares were developed and launched: a) in 2018 the TB registration system (TRS) for migrants screened upon entry to Lebanon, which is used in 30 governmental hospitals and 9 TB centers; b) 2022 DHIS2 for TB currently in its pilot phase used only in the NTP centers and NTRL (to obtain more accurate data about presumptive cases there is need to implement the software at a more national level: hospitals-PHCCs, etc.); c) 2022 LMS (logistic management system) to manage drug stocks as well as requests from centers and the process of drug distribution.

The Lebanon NTP report 2021 reports important findings resulting from supervisory visit, as summarized in [Annex 6](#).

Useful elements are available from the December 2020 WHO virtual mission to Lebanon on strengths and challenges/constraints.

### *Strengths*

The structured supervision and monitoring activities are prioritized in the 2017-2021 Lebanon NSP. The NTP has developed and implemented the Electronic Nominal Recording System (ENRS). The New datasheet for recording presumptive TB cases information and laboratory results was created in 2018. An electronic software for screening migrant workers is in place. The TB module of DHIS2 was developed, and pilot tested in the country.

### *Challenges/Constraints*

Limited supervision and monitoring activities are in place because of effects of the COVID pandemic and lock-down measures. The DHIS 2 recording and reporting system has yet to be launched in the country.

Useful elements to support surveillance are included in the LHS document, specifically under SD 1, SG 1.4 (Ensure Health Security), SO 1.4.1, point b) (Adopt and implement ‘integrated disease surveillance strategies’) as well as in SD.5, SG 5.2 (NHIS, National Health Information System), SO 5.2.3 (Electronic Health Records) and SO 5.2.4 (Telehealth).

Useful elements are available in the NTP report of supervisory visits activities for 2021 (see [Annex 6](#)).

Data entry officers were recruited under C19RM grant until June 2023 only. They were also trained on DHIS2 use.

### *Paper based data entry:*

- Standardized forms and registers are available and used in most of the centres, which were updated in 2018 based on the WHO Definitions and Reporting Framework for TB.
- Some missing results were noticed in the laboratory register in few centers and the HCW were asked to revise and complete missing data;
- The quality of TB register was considered satisfactory;



- It was underlined that the medical files should be stored in a locked filing cabinet to protect patients' privacy;

- Few centres were still confusing treatment outcomes "Cured" and "Completed" and they were retrained about these definitions.

The electronic based data entry was considered satisfactory in terms of timeliness and partially satisfactory in terms of completeness (some missing data in some centres).

The forms and registers used for recording and reporting are described in [Boxes 62-63](#).

## **5.7 Operational research**

The December 2020 virtual WHO Review (29) underlines under recommendation 25 ([Annex 4](#)) the importance of developing an 'ad hoc' budgeted Operational Research (OR) plan with Lebanon priorities and clear indication of procedural requirements and discusses strengths and challenges/constraints

### *Strengths*

The National OR Committee and Ethics Committee are in place in the country. The NTP in collaboration with other partners (Lebanese University Laboratory and Lille Pasteur Laboratory, Saint Joseph University and Fondation Mérieux among others) are engaged in operational research activities.

### *Challenges/Constraints*

The National task force and national TB research agenda are not in place in the country. There are limited resources to undertake OR activities in the country.

Furthermore, core procedure/SOPs related to OR (e.g. how to access ethical committee, focal persons/offices, etc.) are not available.

## **5.8 International collaboration on TB control and elimination**

The most relevant international collaboration for Lebanon is related to the management of migrants and refugees, and in particular, to their trans-border management as discussed in the 2020 WHO virtual programme review in Lebanon.

### *Strengths*

The Cross-border patient support is prioritized in the Lebanon NSP 2017-2021.

Furthermore, Lebanon is actively involved in the EMR plan to Eliminate TB in the low-TB incidence country of the Region (22).

### *Challenges/Constraints*

More than 10% of the TB patients enrolled for treatment are leaving the country and are lost to follow-up. No funds are allocated to establish the mechanisms to track patients transferred out of the country or patients who are leaving Lebanon, this ideally needing inter-country collaboration coordinated by an international organization.

The 2023-2030 Lebanon NSP will cover this important area.

## **6 (A) Core Plan, Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis**

The analysis of the strengths and weaknesses of, and opportunities and threats for, TB control or elimination, is known as a SWOT analysis; it is, in essence, an assessment technique. The SWOT analysis is a prerequisite step to undertaking the gap analysis.

It offers the opportunity to fully understand and appropriately describe the TB situation in Lebanon, identifying the positive and negative influencing factors that are inside and outside the TB programme. The words “strengths” and “weaknesses” refer to the factors that are internally related to the programme, while “opportunities” and “threats” refer to factors that are beyond the scope of TB programmes (in the health system, or even outside it, relying, e.g., on the social or economic sphere) but may have a significant influence on TB.

The SWOT analysis detailed below is based on) the results of the virtual WHO TB programme review conducted in Lebanon in December 2020; it also takes advantage of the in person Workshop conducted in Lebanon in the November 2022.

We identified many strengths that need to be enhanced and weaknesses that should be addressed. Also, there are opportunities that need to be considered in the current action plan and some threats that must be taken into account in the development of this action plan.

The results of the SWOT analysis for Lebanon are presented below:

<b>Internal factors</b>	<b>STRENGTHS</b>	<b>WEAKNESSES</b>
	<ul style="list-style-type: none"> <li>• Strong political commitment to support TB Elimination and ensure universal access to equitable health care services free of cost to all the population</li> <li>• Strong support of WHO and several other agencies to implement sound prevention, diagnosis and treatment of TB in Lebanon</li> <li>• Technical support of IOM on management of migrants, refugees and other NTP activities in Lebanon</li> <li>• Functional NTP in place</li> <li>• Established 2017-2022 NSP in Lebanon with initial focus on some TB Elimination areas</li> <li>• Decentralized and functional laboratory network with established NRL</li> <li>• Functional network of 9 TB centres present in all Governorates and one contracted TB Sanatorium</li> <li>• Treatment supervised by outreach staff taking also advantage of new technologies</li> <li>• Low prevalence of drug resistance</li> <li>• Unavailability of anti-TB for sale (pharmacies) outside NTP</li> <li>• Low estimated (13 per 100,000 pop) and notified TB incidence rate not far from the pre-elimination threshold</li> <li>• High treatment success rates</li> <li>• Patients monitored and managed for co-morbidities</li> <li>• aDSM in place</li> <li>• Refugee population linked to social support schemes through UNRWA (UN Relief Work Agency) supporting Palestinian refugees and UNHCR supporting Syrian refugees</li> </ul>	<ul style="list-style-type: none"> <li>• END TB strategy Committee not in place, relevant for the transition phase towards activities integrated with PHC</li> <li>• No trans-border activities in place to tackle the migrants' and refugees' flow</li> <li>• Limited integration of NTP activities with PHC</li> <li>• Sub-optimal amount of trained HR with high dependence on external funding</li> <li>• Limited capacity of advocating for external funding beyond the GF</li> <li>• Sub-optimal supportive supervision for lack of funds in some areas</li> <li>• Several health services damaged by the Blast</li> <li>• Important proportion of TB patients accessing to the private sector not linked to NTP</li> <li>• Important proportion (10%) of patients starting treatment lost to follow-up (migration-related)</li> <li>• Some guidelines/SOPs (MDR, IPC, TBI, TB/HIV, paediatric TB) yet to be finalized</li> <li>• SOPs for TB screening and management in prisons yet to be updated</li> <li>• More than half of the patients not yet having access to social support schemes</li> <li>• NGOs mapping not yet finalized</li> <li>• Relative weak HR consistency and capacity for M&amp;E, although recruitment and training were done under the C19RM grant.</li> <li>• Relative weak of HR consistency for drug management and difficulties to electronic monitoring system (LMS- logistics management system exists but , electricity and internet connections problems still in place).</li> <li>• Existing registers for TBI without capacity to evaluate TPT outcomes and describing the whole TBI cascade of care</li> <li>• Very limited social support to Lebanon-born citizens under the poverty line</li> <li>• Lack of costed Operational Research Plan with priorities and procedures/SOPs</li> </ul>

<b>External factors</b>	<b>OPPORTUNITIES</b>	<b>THREATS</b>
	<ul style="list-style-type: none"> <li>• Implementation of LHS, providing legal, economic and technical support to NTP activities</li> <li>• Special funding provided to restore TB services during and after the COVID-19 pandemic</li> <li>• Presence on international and national NGO and partners whose mission is focused on migrants and refugees, both I Lebanon and in the bordering countries</li> </ul>	<ul style="list-style-type: none"> <li>• Un-precedent economic crisis limiting the Government capacity to increase the budget for health and implement the LHS plan</li> <li>• Political instability and security issues in the Region in absence of strong trans-border collaboration activities</li> <li>• Increased movement of migrants and refugees and IDPs might hamper the effort done so far to offer quality prevention, diagnosis and treatment services</li> <li>• Difficulties in implementing the health sector reform as per LHS specifically on integration of TB services within PHC, considering the sub-optimal HR available</li> <li>• Lowering external funding by donors</li> </ul>

## 7 (A) Core Plan, Gap Analysis

This paragraph addresses the gaps existing in the Lebanon, which were derived from the SWOT Analysis.

The Gap analysis describes the constraints and insufficiencies that have been identified and that can explain the current and expected weaknesses in the TB elimination strategy. It describes what has been lacking, missed or not achieved in the Country.

Following SWOT Analysis performed under Section 6, the following gaps have been identified:

- The capacity of NTP to implement MAF and integrated its activities with PHC is currently limited.

***Explanation:***

*Lebanon is facing Health Sector Reform and there are opportunities represented, for example, by LHS. There are plans to further integrate TB activities at the PHC level, with need for training and integrated models of integration between specialized TB staff and PHC staff. Human resources for health are lacking in some areas to drive and implement the process.*

- No END TB Coordination Committee implemented so far to guide the transition between vertical and integrated NTP activities

***Explanation:***

*As mentioned above there is an undergoing process of integration between specialized and PHC level staff. Presently the NTP activities are based on 9 TB centres under direct NTP coordination. Further integration of NTP activities with PHC activities has been planned in the LHS document, with a clear need for adequate human resources to allow implementation of the transition phase. No pivotal committee exists to drive the process, therefore implementation of END TB Coordination Committee is considered essential*

- Lack of internal funding for several core activities including HR among others

***Explanation:***

*Different documents including internal and external review in Lebanon suggest that funding of several NTP activities largely depends from external donors in different areas, and in particular for human resources.*

- Need for a comprehensive HR development/ training plan covering different areas, including M&E and drug management among others

**Explanation:**

*Training on crucial areas is necessary to ensure adequate human resources to drive the process of integration of specialized activities with PHC activities, which are necessary to embark in the pre-elimination phase. These areas include, among others, managerial and clinical training. From the managerial side: M&E, drug management, use of newly developed registers. From the clinical side: management of MDR-TB, DS-TB and TBI with the newly recommended WHO regimens, management and referral of clinical samples (particularly in the area of extra-pulmonary TB), active case-finding and screening of risk groups for TB infection and disease in adults and children; non-communicable diseases; operational research; approach to health education and counselling.*

- Important proportion of patients reporting to a non-linked private sector in absence of comprehensive MOU with the main private sector stakeholders

**Explanation:**

*A growing private sector has been observed in Lebanon in recent years, traditionally not linked to NTP guidelines and surveillance. A comprehensive mapping of the private sector institutions to approach and link via 'ad hoc' developed MOUs will allow to improve prevention, diagnosis and treatment services for TB in Lebanon, necessary to embark in the TB pre-elimination phase.*

- Given the high flow of migrants and refugees to Lebanon, the plans and SOPs regulating screening (including comprehensive screening) to them as well as to other risk groups are not complete to ensure universal access to quality services

**Explanation:**

*Lebanon is facing important flows of migrants and refugees, which need humanitarian assistance 'in primis' as well as adequate screening for TB infection and disease together with the necessary management of other health priorities. Specific plans and SOPs covering migrants and refugees as well as other risk groups need to be completed to support quality TB prevention, diagnosis and treatment in Lebanon.*

- Not all patients have access to social protection schemes

**Explanation:**

*Access to social protection schemes is considered a priority intervention within Pillar 2 of the End TB Strategy (Box 7). Presently about half of the patients in Lebanon are estimated to have access to social protection schemes and plans are needed to expand this proportion in order to impact the TB epidemic and embark in the pre-elimination phase.*

- Registers for TBI are not yet implemented in Lebanon, not allowing evaluation of treatment outcomes (TPT completion) and complete description of the TBI cascade of care.

***Explanation:***

*Although Electronic register in governmental hospitals and TB centres are in place since 2018 (details in Boxes 62-63t), paper-based register and excel sheet for contact screening is used in each TB centre (see list of R&R tools for details). However, there is no treatment follow-up or clarity on TPT outcomes due to lack in HR and coordination in collecting the data at national level.*

- No Central IPC Committee is established in Lebanon including representative for airborne diseases, as to ensure a national TB-IPC plan is implemented including national perspective and covering individual facilities

***Explanation:***

*TB-IPC is a priority for NTP to contribute reducing transmission of Mycobacterium tuberculosis within the community. No central IPC Committee is presently available in Lebanon to support, from one side the development of a national TB-IPC plan, and on the other side development of specific TB\_IPC facility plans.*

- No mapping on NGOs operating in Lebanon has been completed, as to plan the way of involving them in a coordinating manner into the new Lebanon NSP 2023-2027.

***Explanation:***

*Collaboration with the private sector and the different NGOs already operating in Lebanon in the area of TB (or potentially interested to collaborate in the future) is necessary to improve coordination and maximize the effectiveness of TB prevention, diagnosis and treatment activities. The first step to activate the process is to map the existing NGOs, identify their areas of action, interests and availability to collaborate with NTP, in order then to formalize pro-active collaboration.*

- Costed operational research plan with priorities and SOPs are not yet available to allow transparent access to ethics committees and other procedure necessary for activating OR

***Explanation:***



*Implementation of operational research activities is difficult in absence of a costed OR plan including the priorities for Lebanon. The availability of such a plan will be pivotal not only to guide NTP efforts to implement research activities, but also to attract interest and funds from partners and donors.*

## **8 (A) Core Plan, Vision, goal(s) and objectives**

To better understand the Vision and Goals of the Lebanon NSP 2023-2030 it is important to briefly summarize Targets and Milestones of the End TB Strategy, which are extensively reported in [Annex 1](#).

For TB incidence, the first milestone of the End TB Strategy is a 20% reduction in the TB incidence rate (the number of new and relapse cases per 100 000 population per year) by 2020 compared with 2015. The next 2025 milestone is a 50% reduction compared with 2015, followed by targets for reductions of 80% by 2030 and 90% by 2035. SDG 3 includes a target to end the global TB epidemic by 2030, with TB incidence per 100 000 population per year defined as the indicator for measuring progress.

Here below the **Goal and the 4 Objectives** of the Lebanon NSP 2023-2030 are summarized, Additional details are available in [Annex 1](#).

**Vision: Lebanon with zero deaths, disease and suffering due to TB.**

### **8.1 Goal**

**Goal 1A.** To approach the pre-elimination phase in Lebanon, with an incidence of 20 case per million in 2027 among the Lebanon-born (48.1 % decline from 2023 to 2030, e.g. 6.8% per year) with a reduction of 50% in the number of TB cases among non-Lebanon born (including migrants/refugees) between 2026 and 2030

**Baseline:** The 2021 incidence rate among native Lebanese was of 233 cases per 5.6 million population, which corresponds to 41.6 per million population (Box 25). To reach the double of the pre-elimination threshold of 20 per million, the decline will be of 48.1% (~50%) in 7 years with the goal of having ~55-65 cases in total by 2030 (see also Box 1.3 for 2035 projections).

In 2021, out of 540 cases estimated cases, 233 were among Lebanon born and 307 among non-Lebanon-born (468 notified, of whom 235 among non-Lebanese). In the 5 years between 2026 and 2030 the goal implies a reduction of 50% of TB cases among non-Lebanon-born, of 10% per year.

Around 40 to 50% of TB patients occurred among Lebanese and the rest among non-Lebanese, as a baseline the WHO estimated TB incidence for 2021 will be used which is 540; meaning 233 among Lebanese and 307 among non-Lebanese, and among them about 50% being refugees and 50% migrants.

**Impact indicator 1:** reduction of incidence among native Lebanese from 233 cases in 2023 (41.6 per million) to 56 in 2030 (20 per million, from NTP reporting). As shown in Annex 1, the indicator will be measured every year, but it was estimated to observe a reduction from 2025 on (year 3 to 5), as in year 1 and 2 an increase is possible as effect of improved programmatic activities

**Impact indicator 1 bis:** from 2026 to 2030 a 10% reduction per year of TB cases among non-Lebanon-born, to reach 50% (154 cases) in 2030. In parallel, this indicator, although measured every year, is expected to move downwards from year 4 (2026), to allow programmatic intervention to impact the TB epidemic among non-Lebanon born.

**Goal 1B:** To reduce the TB Mortality (case-fatality ratio) of 37.5% from 2023 to 2030, from 8% to 3%

**Baseline:** The 2021 TB case fatality ratio (calculated dividing the estimated mortality by the estimated incidence) was 8% (95% CI: 5-12)

**Impact indicator 2:** reduction of case-fatality ratio of 37.5% in 7 years (from NTP reporting)

**Impact indicator 3:** reduction in the death rate, evaluate by cohort analysis of treatment results from 3.2% in 2023 (21 out of 256, Box 22) to 1.6% in 2030 (50% reduction) as evaluated in the 2030 cohort (from NTP reporting)

## 8.2 Objectives

**Objective 1:** to increase the case detection rate/TB treatment coverage from 87% in 2023 to 90% in 2030 (3% increase in 7 years)

**Baseline:** The 2021 TB case detection rate/TB treatment coverage rate was 87,2%, (calculated as follows:  $471 \times 100 / 540$ , e.g. by dividing the notification rate by the estimated incidence rate: 471 notified patients /5400 estimated ones).

**Outcome indicator 1:** case detection rate of 90% calculated on 2030 data (notification rate from NTP reporting and estimated incidence rate from Global WHO report)

**Objective 2:** to eliminate TB in children (Lebanon and non-Lebanon-born, including migrants/refugees) by reducing the notified incidence of TB in children below 15 years of age from 6.78 per million in 2023 to 1 per million in 2030

**Baseline:** The 2021 notified incidence among children below 15 years was 6.78 per million (38 children)

**Outcome indicator 2:** Notified incidence in Lebanon-born and non-Lebanon-born children below 15 years of age reaching 1 per million in 2030 (6 cases) calculated on 2030 data (from NTP report)

**Objective 3:** To eliminate MDR-TB in Lebanon (among Lebanon born and refugees), achieving <1 MDR-TB case per million population by 2030

**Baseline:** In the 2022 WHO report (2021 data 7 cases are estimated (95%CI 4-11), corresponding to 0.13 cases per 100,000 population or 13 cases per million. In [Box 58](#) we see that among Lebanon born the MDR-TB cases were as follows: 1 in 2015, 6 in 2016, 0 in 2017, 1 in 2018, 4 in 2019, and 0 in 2020 and 2021.

**Outcome indicator 3:** detection of less than 1 MDR-TB case per million among Lebanon-born and refugees in 2030 (from annual NTP reports)

**Objective 4:** by 2024 a full description of the TBI cascade available in Lebanon with a) 90% TPT completion in Lebanon born and refugees patients by 2030 and b) 70% of eligible migrants receiving TPT

**Baseline:** *Description of TBI cascade in Lebanon not possible in 2021/2 for lack of TBI register*

**a)** *Baseline not available for lack of TBI register, estimated to be 50% (progression: 2024: 55%; 2025:60%; 2026: 65%; 2027: 70%; 2028: 76%; 2029: 83%; 2030: 90%)*

**b)** *As shown in **Box 53**, 35% of migrants undergoing TPT in 2020 (progression: 2024: 40%; 2025:45%; 2026: 50%; 2027: 55%; 2038: 60%; 2039: 65%; 2030: 70%)*

**Outcome indicator 4:** *90% TB completion in Lebanon born and refugees starting TPT in 2030 (from annual NTP reports)*

**Outcome indicator 5:** *70% of eligible migrants receiving TPT in 2030 (from annual NTP reports)*

## **9 (A) Core Plan, Strategic interventions to reach the NSP Objectives in Lebanon**

### **9.1 Explanation of the Goals**

**The Goals are focused on incidence and mortality.**

**Goal 1A** on approaching TB pre-elimination (the threshold by 2030 was posed at 20 cases per million), although top ambitious (and eventually difficult to reach) is important given the plan is focused on TB Elimination, first in the history of NSPs. In case this threshold will not be reached, it will anyway be approached in an important manner, creating anyway the background to reach pre-elimination by 2025. Based on the assumption that the decline of TB incidence observed in the last 2 years was likely influenced by different determinants (socio-economic and programmatic on top of the fluctuation of migrants' flows), the Goal 1A , focused on incidence, will include 2 indicators (respectively for Lebanese and non-Lebanese) with forecast of a downward trend from year 3 and 4, respectively. This

given sufficient time is necessary to observe an impact after implementation of the programmatic activities planned.

To make the Lebanon NTP Goal *SMART* (Specific, Measureable, Attainable, Relevant, Timely) both impact indicators describing incidence and mortality have been included. The mortality indicator is based on both the *TB case fatality ratio* (calculated dividing the estimated mortality by the estimated incidence) and the *death rate* derived from NTP cohort analysis of treatment results. For all of them reliable baseline values exist in Lebanon.

In summary the Goal includes a component covering TB Elimination in native Lebanon individuals (**Goal 1A**), which will orientate the different Objectives and SI; they are focused on reducing TB incidence at a level (<1 case per million), which will prevent TB to be a major public health problem in the future. In particular, Objective 2 and Objective 3 are those focused on TB Elimination, with Objective 4 including the core technical set of interventions to manage TBI, which are essential to pursue TB Elimination.

The **Goal 1B** is focused on the End TB Strategy targets, as to align the Lebanon NSP to the regional and global WHO plans and targets.

## **9.2 Explanation of the Objectives and related Strategic Interventions (SI)**

In order to ensure the necessary links with the recommendations of the December 2020 WHO Programme Review Objectives and SI were streamlined as summarized in **Annex 4**: for each recommendation of the Programme Review the specific SI covering them are indicate din the right column.

**Objective 1:** *to increase the case detection rate/TB treatment coverage from 87% in 2023 to 90% in 2030 (3% increase in 7 years)*

Higher case-detection rate (coupled with higher success rate, this covered by subsequent Objectives on drug-susceptible and drug-resistant TB and on high TPT completion) are crucial to lower both incidence and mortality. Reliable baseline values are available for this objective. This objective is therefore linked both to the Goal (to both its components, but mainly to Goal B) and the other objectives, all together creating the background for impacting the TB epidemic in Lebanon, covering well several aspects of the TB Elimination area 1 (diagnosis and treatment of DS-TB, private sector). This objective, although ambitious, has the potentiality to be reached.

*The SI are logically designed to cover the core aspects of diagnosis and treatment.*

They cover all the recommendations of the WHO Lebanon Programme review done in December 2020 (see last column on the right of Annex 4).

**SI 1.1** covers the laboratory network capacity, with a set of activities focused on the availability and quality (EQA) of diagnostic services as well as of the specimens' collection and management. Furthermore, it covers the rehabilitation of the laboratories damaged during the blast. Training and development/completion of the support documents is also included.

**SI 1.2** covers the quality of DS-TB treatment with a set of activities allowing to offer the best possible treatment for DS-TB patients in Lebanon (based on the latest WHO guidelines), as to reduce TB incidence and mortality and prevent selection of drug-resistant mutants of *Mycobacterium tuberculosis*. Adequate human resources (HR) and quality support supervision are also covered.

An OR-oriented survey on accessibility of health services is integral part of this package.

Training and development/completion of the related support documents is also included.

**SI 1.3** covers the quality of DS-TB outcomes with the essential components, which make this possible: reduction of stigma/patient's charter and related ACSM activities, universal access to social welfare schemes, guidance by a TB Expert End TB and a Trans-border Committee, systematic management of concomitant NCDs, as well as adherence and treatment monitoring interventions. Specific activities aimed at coordinating efforts of NTP and NCD departments, developing coordinated smoking cessation activities and gradually involving staff from PHC in active case-finding and management of anti-TB treatment and follow-up. A functional nominal, individual electronic register is also part of the package. Training and development/completion of the support documents is also included.

**SI 1.4** covers the involvement of the private sector (PPM activities) which are essential to reach both Goal 1A and 1B. The set of activities included in the plan allow Lebanon to have a sound PPM plan, with priority target partners to collaborate with and procedure to formally link them. Furthermore, specific activities cover the necessary adaptation of the recording and reporting tool to allow specific stratified analysis of case-finding and outcome data, which are necessary for monitoring and evaluation of the PPM plan.

**SI 1.5** covers the necessary integration with PHC services, which is essential to improve case-finding (but also to support improved treatment outcomes). This approach meet the principle of the LHS document.

Finally **SI 1.6** cover the drug and reagents aspects, which are necessary to meet Objective 1, e.g. to improve the capacity of Lebanon to diagnose cases and treat them adequately

### ***Strategic Interventions (Objective 1)***

*1.1 to increase TB diagnosis laboratory capacities in such way that by 2024, each case with presumptive TB (pulmonary or extrapulmonary) will undergo sputum smear microscopy, culture and DST, in addition to Xpert, with adequate specimen collection and referral for extrapulmonary TB specimens to the NRL.*

*1.2. to ensure by 2024 that all DS-TB patients have consequently access to WHO-recommended regimens with drugs of proven quality (including shorter regimens where adequate);*

*1.3. to ensure that a treatment success >90% is achieved annually from 2023 on DS-TB cases*

*1.4. to identify the core institutions belonging to the private sector by June 2023 and link them to NTP activities by June 2024*

*1.5. to ensure from 2024 onwards an increasing contribution of PHC centres to support case-finding*

*1.6 to improve managerial capacity to procure reagents, drugs and consumables from 2024 onwards*

### ***Activities/sub-activities by SI***

*1.1 to increase TB diagnosis laboratory capacities in such way that by 2024, each case with presumptive TB (pulmonary or extrapulmonary) will undergo sputum smear microscopy, culture and DST, in addition to Xpert, with adequate specimen collection for extrapulmonary TB*

*1.1.1 Training for clinical staff on specimens' management including referral Y1Q2, Y3Q2*

*1.1.2 Training for clinical staff on diagnosis of extrapulmonary TB Y2Q2, Y4Q2*

*1.1.3 Develop and approve written SOP on ensuring cold chain for specimens Y1 Q3*

*1.1.4 Develop a written protocol for SS EQA, approved and distributed Y1Q3*

*1.1.5 Develop a written protocol for Xpert EQA, approved and distributed Y1Q3*

*1.1.6 Implement EQA activities in laboratories performing TB testing Y1Q4*

*1.1.7 Ensure increasing capacity to confirm EP TB diagnosis in children and adults with imaging (CT scan) and/or biopsy and/or mycobacteriological tests Y2Q2*

*1.2. to ensure by 2024 that all DS-TB patients have consequently access to WHO-recommended regimens with drugs of proven quality (including shorter regimens where adequate);*

*1.2.1 Update and distribution of the DS-TB guidelines with the new regimens included Y1Q3*

*1.2.1.1 Printing/distributing 150 copies of the guidelines Y1Q4*

*1.2.2 Training for clinical staff on the new WHO recommendations related to the shorter regimens for DS-TB Y1Q3, Y1Q4*

- 1.2.3 Develop human resources development plan for TB Y1Q2
- 1.2.4 Annual consolidation of supervision reports on relevant findings during supervision on the different aspects related DS-TB treatment Y1Q4
- 1.2.5 Develop and implement a systematic screening plan for TB disease focused on vulnerable populations (HIV co-infected, refugees, migrants and prisoners) Y2Q1
- 1.2.6 Implement a costed Operational Research (OR) Plan focused on DS-TB and the other priorities in Lebanon Y2Q3
- 1.2.7 Run, as part of OR, a need assessment survey on accessibility and coverage of TB care services which will help guiding management of prevention, diagnosis and treatment services Y2Q3

*1.3. to ensure that a treatment success >90% is achieved annually from 2023 on DS-TB cases*

- 1.3.1 Implement a functional, nominal electronic register at the national level to include hospitals, PHCCs and other institutions involved in TB detection and care Y1 Q4
  - 1.3.1.1 Trainings on the use of electronic register at the national level for staff of hospitals, PHCCs and other institutions involved in TB detection and care Y1Q4,Y2Q3,Y3Q3,Y4Q3
- 1.3.2 Nominate and activate End-TB guidance expert committee Y1Q1
- 1.3.3 Implement quarterly meetings of the End TB expert committee Y1Q2
- 1.3.4 Implement and activate the trans-border committee secretariat in coordination with an international organization (IOM?) Y1Q2
- 1.3.5 Implement twice a year meetings of the committee with relevant countries Y1Q4
- 1.3.6 Ensure political and financial coverage to ensure access of all TB patients to Social Welfare interventions Y1Q3
- 1.3.7 Establish formal collaboration NTP-NCDs department Y2Q1
- 1.3.8 Develop SOP for management of TB in patients with NCDs Y2Q3
- 1.3.9 Nominate NTP focal person for NCD (including diabetes and smoking cessation) Y2Q1
- 1.3.10 Develop a standard educational package to be administered to TB patients which includes smoking cessation Y2Q1
- 1.3.11 Train TB Centres' staff on smoking cessation principles and practices in collaboration with the Lebanon Respiratory Society Y2Q2
- 1.3.12 Plan a national ACSM campaign to promote the Chart via social media Y2Q4
- 1.3.13 Develop and circulate the TB patient's chart to reduce stigma, combat gender inequalities and promote human rights Y2Q2



- 1.3.14 Enhance DOT within a patient's centered approach, promoting supervision by family members, treatment supporters or VOT-Video-Observed Treatment (indicator; proportion of patients undergoing DOT via family members, treatment supporters or VOT) Y1Q4
- 1.3.15 Implement a plan to ensure availability of outreach teams for DS-TB Patients with mobility problems or lost-to follow-up/not reporting to health services Y1Q4
- 1.3.16 Ensure that all cases with severe TB, life threatening conditions, important co-morbidities and severe adverse events not manageable at home or on an out-patient approach are admitted in relevant departments (including intensive care units if necessary) Y1Q3
- 1.3.17 All patients undergoing TB treatment are proposed adoption of the PREVENT TB mobile application to foster treatment adherence Y2Q2

*1.4. to identify the core institutions belonging to the private sector by June 2023 and link them to NTP activities by June 2024*

- 1.4.1 Develop the PPM/private sector Plan Y1Q3
- 1.4.2 Compile updated list of relevant PPM partners (which include NGOs) Y1Q4
- 1.4.3 Define content, and procedures to implement MoU with the private sector partners identified Y2 Q1
- 1.4.4 Complete the implementation of the electronic register at NTP and all TB centres Y2Q2
- 1.4.5 Adapt and take advantage of the electronic register to include a code to identify the private sector institutions diagnosing or managing the patient Y2 Q2
- 1.4.6 Provide stratification of case-finding and treatment outcome data by public and private sector in the Annual TB report from 2024 onwards Y2 Q4

*1.5. to ensure from 2024 onwards an increasing contribution of PHC centres to support case-finding*

- 1.5.1 Develop SOPs for PHC focused on TB-related activities and distribute them to staff Y1 Q3
- 1.5.2 Distribute the SOPs to the PHC staff Y1Q4
- 1.5.3 Train PHC staff on active case-finding and management of treatment/follow-up Y2 Q3, Y3Q2
- 1.5.4 Develop a supportive supervision plan to ensure staff from TB centres perform supervision to PHC centres on active case-finding and management of TB treatment/follow-up Y1 Q4
- 1.5.5 Ensure an increasing trend of patients referred to NTP by PHC staff Y3Q1

*1.6 to improve managerial capacity to procure reagents, drugs and consumables from 2024 onwards*

1.6.1 Streamline drug procurement, storage and distribution with adoption of the QUAN-TB software Y1Q3

1.6.2 Ensure refresher training to procurement staff on relevant activities Y1Q4

**Objective 2:** *to eliminate TB in children by reducing the notified incidence of TB in children below 15 years of age from 6.78 per million in 2023 to 1 per million in 2030*

***The Lebanon NSP is focused on TB Elimination.*** The capacity to reduce (ideally eliminating) TB in children creates the background for subsequent TB-free generations. The present advanced level of contact screening and TPT prescription in children (both Lebanese and non-Lebanese- born) makes this Objective realistic, although ambitious. In case it will not be reached, it will anyway be approached, creating the background to reach elimination of TB in children by 2030. This Objective is well designed to be linked both with the Goals (upwards) and with the SI (downwards), covering TB Elimination area 2 (children are an important vulnerable group) and 4, which is crucial for TB Elimination.

Reliable baseline values and actual data exist for this objective, when the TBI register will be implemented.

*The SI are logically designed to cover the core aspects of TB Elimination in children.*

They cover all the recommendations of the WHO Lebanon Programme review done in December 2020 (see last column on the right of [Annex 4](#)).

**SI 2.1** covers the necessary activities necessary to ensure access of mother and children to health education/counselling activities, including training and development/completion of the core support documents.

**SI 2.2** covers the activities like training, development/completion of the support documents and M&E necessary to achieve what proposed under SI 2.1.

**SI 2.3** covers the core are of contact screening of children (who are contacts of infectious mothers), complementing the SI and activities for adults managed under Objective 4.

Finally, **SI 2.4** covers the remaining interventions needed to ensure high TPT completion rates in children, a requisite to epidemiologically impact the TB incidence trends in the years to come. Quality supervision and M&E are part of the package as well as training and development/completion of the support documents.

## ***Strategic Interventions (Objective 2)***

*2.1. 100% of the mothers of TBI children (or other persons caring them) and paediatric TB cases have access to education/counselling sessions by 2025.*

*2.2. 70% of NTP staff are re-trained based on the new NTP paediatric guidelines by 2024 and 100% by 2025 and onwards*

*2.3. 100% of children contacts of infectious mothers (or other persons taking care of them) are screened for TBI by 2027*

*2.4. >90% of children who start TPT complete it*

### ***Activities/sub-activities by SI***

*2.1. 100% of the mothers (or other persons caring children) of TBI children and paediatric TB cases have access to education/counselling sessions by 2025.*

*2.1.1 Development of a standardized module to administer education/counselling Y2Q1*

*2.1.2 Identification and training of staff to administer health education and counselling Y2Q3, Y3Q2, Y4Q2, Y5Q2*

*2.1.3 Calculation of the proportion of children and mothers (or other persons taking care of children) undergoing health education and counselling in the Lebanon to be reported in annual NTP report from 2024 onwards Y2Q4*

*2.2. 70% of NTP staff are re-trained based on the new NTP paediatric guidelines by 2024 and 100% by 2025 and onwards*

*2.2.1 TB paediatric guidelines developed, published and distributed to clinical staff Y1Q3*

*2.2.2 Training on the content of paediatric guidelines to staff of TB centres and PHC units Y1Q3, Y1Q4*

*2.2.3 Calculation of the proportion of children with bacteriological confirmation (who underwent gastric aspiration and not) to be reported in the Lebanon annual NTP report from 2024 onwards Y2Q4*

*2.3. 100% of children contacts of infectious mothers (or other persons taking care of them) are screened for TBI by 2027*

*2.3.1 Training of staff of TB centers and PHC Units on screening of children contacts of infectious mothers Y1Q4, Y2Q4, Y3Q4, Y4Q4*

2.3.2 Calculation of the proportion of children contact of sputum positive mothers undergoing TBI screening to be reported in in the Lebanon annual NTP report from 2024 onwards Y2Q4

2.4. >90% of children who start TPT complete it

2.4.1 Training of staff of TB centers and PHC Units on the procedure to perform TPT in children Y1Q4, Y2Q4, Y3Q4, Y4Q4

2.4.2 Annual consolidation of supervision reports within the Lebanon NSP report on relevant findings during supervision on the different aspects related to screening and TPT of children Y1Q4

2.4.3 Calculation of the proportion of children completing TPT out of those initiating it to be reported in the Lebanon annual NTP report from 2024 onwards Y2Q4

2.4.4 Hiring a nurse/HCW in each TB centre to supervise TPT in children Y2Q4

**Objective 3:** *To eliminate MDR-TB in Lebanon (among Lebanon born and refugees), achieving <1 MDR-TB case per million population by 2030*

***The Lebanon NSP is focused on TB Elimination.*** The capacity to reducing (ideally eliminating) MDR-TB in native born Lebanese creates the background for subsequent MDR-TB free generations, testifying that the management of DS-TB is of quality. Furthermore, the Objective will implement activities which will hopefully be able to eliminate (or approach the TB Elimination threshold also on non-Lebanon born). The relative low MDR-TB incidence in Lebanon makes this Objective realistic, although ambitious. In case it will not be reached, it will anyway be approached, creating the background to reach elimination of MDR-TB in Lebanon by 2030. This Objective is well designed to be linked both with the Goals (upwards) and with the SI (downwards), covering TB Elimination area 3.

Reliable baseline values and actual data exist for this objective.

*The SI are logically designed to cover the core aspects of diagnosis and treatment of MDR as to allow its elimination.*

They cover all the recommendations of the WHO Lebanon Programme review done in December 2020 (see last column on the right of [Annex 4](#)).

**SI 3.1** covers the implementation of a specific, complete, electronic register to better manage MDR-TB, and the necessary training and M&E components.

**SI 3.2** covers the improved diagnostic approach to MDR-TB, which is necessary to prescribe adequate regimens. It included also the necessary training, supervision and M&E components.

**SI 3.3** covers the new approach to MDR-TB regimens as per WHO guidelines (with the training and documents' update necessary) and the interventions to support adherence (e.g. outreach teams) to reach high success rates, needed to Eliminate MDR-TB in Lebanon.

Finally **SI 3.4** covers the systematic team evaluation of MDR-TB patients via a national and/or international *TB Consilium*.

### ***Strategic Interventions (Objective 3)***

*3.1. To ensure that the MDR-TB register (electronic, specific page of DHIS2, page for MDR and pharmacovigilance) is implemented and utilized for 100% of patients by January 2024*

*3.2. To ensure that 100% of RR/MDR-TB patients are evaluated with a complete bacteriological profile including DST from January 2024 onwards*

*3.3. To ensure that 100% of MDR-TB patients are treated with WHO-recommended regimens (including shorter ones when indicated) and that follow-up is conducted as per WHO recommendations from 2023*

*3.4. To achieve >80% success every year from 2024 onwards*

*3.5. To ensure that 100% of DR-TB patients are discussed in the National TB Consilium and or GTN Consilium from 2023*

### ***Activities/sub-activities by SI***

*3.1. To ensure that the MDR-TB register (electronic specific page of DHIS2, page for MDR and pharmacovigilance) is implemented and utilized for 100% of patients by January 2024*

*3.1.1 The electronic TB register for MDR-TB is completed /updated by end of year 2023 Y1Q3*

*3.1.2 Clinical staff dealing with MDR-TB and surveillance/M&E staff are trained on the register's use Y2Q4*

*3.1.3 Calculation of the proportion of MDR-TB patients correctly registered in the updated register after January 2024 to be reported in annual NTP report from 2024 onwards Y2Q1*

*3.2. To ensure that 100% of RR/MDR-TB patients are evaluated with a complete bacteriological profile including DST from January 2024 onwards*

*3.2.1 MDR-TB guidelines updated based on latest WHO recommendations and distributed to clinical*

staff Y5Q2

3.2.1.1 Printing/distributing 150 copies of the guidelines Y5Q4

3.2.2 Training on the content of MDR-TB guidelines to staff of TB centres and PHC units (2 trainings for 30 persons each) Y5Q4,Y6Q1

3.2.3 Annual consolidation of supervision reports within the NSP report on relevant findings during supervision on the different aspects related to the complete evaluation of the MDR-TB patients' bacteriological profile Y1Q4

3.2.4. Calculation of the proportion of MDR-TB patients evaluated with a complete bacteriological profile including DST) to be reported in the Lebanon annual NTP report from 2024 onwards Y2Q4

*3.3. To ensure that 100% of MDR-TB patients are treated with WHO-recommended regimens (including shorter ones when indicated) and that follow-up is conducted as per WHO recommendations from 2023*

3.3.1 Training for clinical staff on the new WHO recommendations related to the shorter regimens for DR/MDR-TB and on management of adverse events Y5Q4,Y6Q1

3.3.2 Development of an annex of DR-TB guidelines to capture WHO recommended regimens 2022 Y1Q3

3.3.3 Update and distribution of the DR/MDR-TB guidelines with the new regimens included Y5Q4

3.3.4 Annual consolidation of supervision reports on relevant findings during supervision on the different aspects related DR/MDR-TB treatment and follow-up Y1Q4

3.3.5 Implement a plan to ensure availability of outreach teams for MDR-TB Patients Y1Q4

*3.4. to achieve >80% success every year from 2024 onwards*

3.4.1 Ensure all MDR-TB patients undergo health education and counselling session conducted by trained staff Y1Q2

3.4.2 Ensure documented DOT or VOT for all MDR-TB patients (indicator: proportion of MDR-TB patients under documented DOT or VOT) Y1Q2

3.4.3 Monitor the bacteriological conversion rate on a quarterly basis (Sputum smear and culture) and report late conversions, which are predictors of negative outcome (indicator: proportion of late bacteriological conversion) Y1Q2

*3.5. To ensure that 100% of DR-TB patients are discussed in the National TB Consilium and/ or GTN Consilium from 2023*

3.5.1 Nominate and implement a national team of MDR-TB experts in coordination with the End-TB expert committee Y1Q2

3.5.2 Define an electronic or telephone base procedure (SOP) to activate the national *TB Consilium* consultation Y1Q3

3.5.3 Ensure that all MDR-TB cases undergo a consultation by the GTN *TB Consilium*, taking advantage of the distance coaching opportunity Y1Q3

**Objective 4:** *by 2024 a full description of the TBI cascade available in Lebanon with a) 90% TPT completion in Lebanon-born and refugees patients by 2030 and b) 70% of eligible migrants screened receiving TPT*

This Objective has been identified to improve the area of TBI management in both native-born and migrants. As the Lebanon NSP is based on TB Elimination, area 4 is fully covered with this Objective. This Objective will allow to build on a better description of the TB Management cascade of Care (e.g. all steps from screening to TPT completion) with final focus on the proportion of individual completing TPT out of those eligible for treatment (high enough to boost TB Elimination) and, on the migrant side, a higher proportion of individuals screened and treated. Therefore, this Objective covers well also area 3. This Objective is well linked to both Goals and SI, being complementary to the other Objectives to impact the TB epidemic in Lebanon.

*The SI are logically designed to cover the core aspects of TBI management, which, as said, is pivotal to reach TB Elimination.*

They cover all the recommendations of the WHO Lebanon Programme review done in December 2020 (see last column on the right of Annex 4).

**SI 4.1** covers the capacity to describe comprehensively the TBI/TPT cascade of care, via the implementation of a TBI/TPT register, with the necessary training and M&E components.

**SI 4.2** covers the availability of shorter TPT regimens, with the necessary training and M&E components. Supervision, development of TB/HIV guidelines and systematic screening of vulnerable populations' activities complete the package.

**SI 4.3** covers the universal access of adult TB patients to health education and counselling sessions, completing what already planned under SI 2.1 for children.

Last but not least **SI 4.4** covers prevention of *Mycobacterium tuberculosis* transmission and implementation. It includes TB\_IPC national and facility plans and the ACSM activities focused on T prevention.

#### ***Strategic Interventions (Objective 4)***

- 4.1 to ensure implementation of TBI register in all TB centres and centrally at NTP by January 2024, as to describe the TBI cascade of care and TPT completion rates in Lebanon*
- 4.2 to ensure availability of the different WHO-recommended regimens (including shorter ones) to treat TB Infection for all patients by 2024*
- 4.3 to ensure that all adults Lebanese and migrants/refuges at all ages undergo a standardized education/counseling session managed by trained staff by 2024*
- 4.4 to ensure prevention of transmission of Mycobacterium tuberculosis*

#### ***Activities/sub-activities by SI***

- 4.1 to ensure implementation of TBI register in all TB centres and centrally at NTP by January 2024, as to describe the TBI cascade of care and TPT completion rates in Lebanon*
  - 4.1.1 The existing electronic TB register for TBI merged with the software used by governmental hospitals for migrants screening by the end of 2023 Y1Q3*
  - 4.1.2 Clinical staff dealing with TBI and surveillance/M&E staff are trained on the TBI register's use Y1Q4, Y2Q2, Y2Q4, Y3Q2*
  - 4.1.3 Calculation of the proportion of individuals completing TPT out of those who started, and of the whole TBI cascade of care after January 2024 to be reported in Lebanon NTP annual TB report from 2024 onwards Y2Q1*
- 4.2 to ensure availability of the different WHO-recommended regimens (including shorter ones) to treat TB Infection for all patients by 2024*
  - 4.2.1 Training for clinical staff on the WHO recommended TPT regimens, including the shorter ones Y1Q2, Y1Q4*



- 4.2.2 Update and distribution of the TBI guidelines with the new regimens included in the guidelines Y1Q3
- 4.2.3 Develop and distribute, within the DS-TB guidelines, a chapter on TB/HIV guidelines including its TBI components Y1Q3
- 4.2.4 Annual consolidation of supervision reports on relevant findings during supervision on the different aspects related to TBI management Y1Q4
- 4.2.5 Develop and implement a systematic screening plan for TBI focused on vulnerable populations (HIV-co-infected, refugees, migrants and prisoners) Y2Q1
- 4.2.6 Calculation of the proportion of individuals who had shorter TPT regimen prescribed out of those who started to be reported in Lebanon NTP annual TB report from 2024 onwards Y1Q4
- 4.3 to ensure that all adults Lebanese and migrants/refugees at all ages undergo a standardized education/counseling session managed by trained staff by 2024*
- 4.3.1 All adults born in Lebanon or abroad participate in an educational session on TBI and TB disease taking advantage of the trained staff mentioned above Y1Q3
- 4.3.2 All patients screened for TBI are proposed adoption of the PREVENT TB mobile application to foster adherence Y1Q3
- 4.4 to ensure prevention of transmission of Mycobacterium tuberculosis*
- 4.4.1 Implement a national IPC committee with the NTP represented by a focal person to cover airborne diseases Y1Q3
- 4.4.2 Develop a national TB-IPC plan with priorities, including TB triaging and feasibility to implement UVGI in isolation rooms Y2Q1
- 4.4.3 Develop, as part of the national IPC plan, TB facility plans starting from TB Sanatorium and TB clinics Y2Q2
- 4.4.4. Mapping the non-TB health facilities managing TB patients (e.g. for screening, diagnosis and treatment follow-up) needing, based on the risk of infection, to develop a IPC facility plan Y3Q1
- 4.4.5 Develop, as part of the national IPC plan, specific IPC facility plans in PHC centres dealing with TB Y3Q3
- 4.4.6 Develop an ACSM plan as part of national ACSM activities covering TB prevention interventions as well as other priority ones Y2Q3

## 10 (A) Contingency measures in Lebanon

The Contingency measures are taken in the event of major disruption to the provision of TB services. According to the situation analysis, major disruptions of TB services are unlikely to happen in Lebanon (sections 1.3 and 1.4). Potentially, two are the areas of interest, namely the possibility of a resurgence of COVID-19 or of another viral pandemic and the worsening of the economic crisis. As mentioned in section 2.3, the effects of COVID-19 in Lebanon were lower than in other countries and the lessons learned have strengthened the health services and preventive measures have been taken to avoid future problems. Furthermore the pacification effort is continuing, as to render future disruption of health services related to this very unlikely.

The Contingency measures of the Lebanon NSP include, specifically, *the acute phase* (first 3 months), *the post-acute phase* (months 3 to 6), and eventually, *the protracted emergency phase*.

### 10.1 Acute phase (first 3 months)

During the initial acute phase of an emergency, an early rapid assessment of the impact on essential services, including TB services, should will conducted by NTP. Based on this assessment, the following interventions would be carried out:

- Situation analysis to assess the estimated number of people already on treatment, to map the health facilities where TB services are still functional (with information on the extent to which these services are still being provided and their quality);
- Establishment of a mechanism to ensure continuity of TB services in the health facilities providing TB services, including reorienting sample referral and transport mechanisms to ensure continuity of diagnostic services;
- Securing a uninterrupted supply of key drugs, prepositioning drugs and other commodities where there is a high risk of supply disruption;
- Facilitating the availability of relevant guidelines and SOPs in all operational health facilities and, where necessary, develop and distribute additional specific SOPs;
- Ensuring linkages with other health programmes and community services for comprehensive integrated health care, including services such as vaccination, nutrition, etc.;
- Ensuring coordination with all partners and stakeholders dealing with health-related issues in the affected area(s);

- Ensuring that TB is included in the health cluster response, and in the initial and subsequent health-assessment activities, including clear communication of any changes regarding the availability and accessibility of TB services;
- Ensuring that funds needed for TB services during the acute phase are included in the emergency appeals;
- Ensuring that adequate expertise is included in the evaluation of the situation of health services and the drafting of proposals depicting the specific response activities that need to be implemented.

## **10.2 Post acute phase (after 3 months)**

The following interventions will be implemented in Phase 2 (post-acute phase of an emergency):

- -Assessing (or reassessing) TB services, including supplies of drugs and commodities, with attention to quality of care;
- Ensuring the availability of relevant trained staff for affected locations based on local needs;
- Organizing supervision where needed using available modalities according to the kind of emergency (including virtual means where possible);
- -Establishing (or re-establishing) a tracking mechanism to retrieve the data of people registered for TB treatment;
- -Rehabilitating infrastructure and services for TB in the areas affected by the disaster or crisis;
- Facilitating the tracing of people whose treatment has been interrupted, to allow continuation and completion of treatment;
- -Disseminating key messages to partners and communities on where to access TB services;
- Actively pursuing involvement of the affected community (leaders and community health workers) in TB care and prevention efforts;
- -Ensuring that TB services are included in the post-acute phase needs assessment and resource mobilization efforts;
- -Developing an acceleration plan that adapts to the national TB plan, and budget in line with the post-acute phase situation and needs.

## **10.3 Protracted crisis Phase**

The following interventions will be considered in Lebanon:

- -Maintaining NTP leadership and strengthen the TB programme capacities at national and Sub-national levels;
- -Ensuring that TB is included in the relevant rapid assessments or situation analyses (e.g. mapping and identification of local partners);
- -Ensuring that TB is included in the evaluation of resource availability, identification of funding gaps and resource mobilization initiatives;
- -Strengthening integration of TB services in PHC and in community initiatives to reach affected populations;
- -Establishing a task force to identify and define the roles and responsibilities of stakeholders, develop SOPs and training materials, and define national guidelines on minimum service packages for quality TB services;
- -Ensuring an uninterrupted supply of TB drugs, supplies and commodities;
- -Developing or update strategic planning for TB services in this specific context.

## **11 (B): Budget plan**

### ***11.1 Introduction***

Once the M&E plan has been drafted and the activities and sub-activities of the NSP have been identified, they have been costed to provide an estimate of the resource requirements for implementing the Lebanon 2023-2030 NSP.

The *Lebanon Budget Plan* is aimed at providing both:

- an estimate of the resources required to implement the NSP interventions;
- a credible evidence for mobilization of funds from national sources and external donors.

### ***11.2 Methodology***

A costing process was undertaken by NTP to provide updated and credible costs of the relevant variables as of September 2022. The methodology used was one of the WHO-recommended ones, and

namely the *Top-down costing (or Parametric approach)* (38). This approach involves estimating the cost of delivering a TB service (e.g. hospitalization for a TB patient) by using a national average figure or expenditure accounts from a facility. It uses unit costs for TB services generated through a top-down costing method or a historic cost of an activity (e.g. laboratory maintenance) broken down into its individual components (e.g. laboratory maintenance for microscopy). This approach was preferred as faster, simpler and less resource intensive although sometimes less precise than other methods, as this is the first NSP for Lebanon and not all the information eventually available to apply other methods are available.

Unit cost (e.g. average cost of an intervention, commodity or output) for each activity was calculated in order to build up, after aggregating and totalling them, to produce the overall NSP cost. The resource needs estimates are presented by objective and by source of funding, as to identify the funded and unfunded elements of the plan (domestic vs donors' funding).

The costing process was finally validated during the Beirut Workshop in November 2022.

The detailed information are summarized in [Annex 7](#).

## **12. (C) Monitoring and Evaluation plan**

### ***12.1 Introduction***

This *monitoring and evaluation (M&E) plan* of the NSP defines and describes the indicators that are used in the framework of the national strategic plan for TB prevention, care and control in Lebanon in order to assess its achievement level in terms of impact, outcomes and output.

Each indicator used is expressed either as:

- An absolute number or
- A ratio which is a relation between a numerator and a denominator; in this relation the numerator might or might not be included in the denominator or
- A proportion which is characterized by the inclusion of the numerator into the denominator or
- A rate which is a proportion per unit of time.

The indicators used are calculated from the data generated through the existing information system of the NTP Lebanon.

The whole *Monitoring and Evaluation plan* and the set of indicators focused on TB take into account the EMR-recommended indicators (39) as to cover demographic and socio-economic determinants, risk factors, life expectancy and mortality, morbidity, health financing, health workforce, country capacity, health information system, medicines and medical devices, service delivery and service coverage.

The selected indicators are designed to be consistent with those of the Regional EMR Action Plan 2023-2030, whose structure has been followed (e.g. Global Indicators; MDG Indicators) with addition of the specific global and outcome indicators to cover Goal and Objectives. Furthermore, the presence of global indicators makes the Lebanon Monitoring and Evaluation plan consistent with the WHO End TB Strategy and the WHO Global TB report 2021 and 2022.

The Lebanon Monitoring and Evaluation plan does not propose specific internal Objectives, to be consistent with WHO guidance (38).

It is designed to guide NTP to perform quality M&E for the overall Lebanon NSP.

To collect appropriate data, the NTP information system uses standardized cases definitions (ex.: for new TB cases or MDR-TB cases) and has implemented standardized registers where information on individual cases is collected (see section 5.6 of the core plan for details) (Boxes 62,63).

At NTP Central Unit level, the compiled data, after quality check and elaborated from the Statistical Unit, are discussed internally and with the different units.

The findings of the analysis, and related reports are used to take public health decisions as per managerial cycle. For example, the assessment of the trend over time of TB notification and treatment outcomes are evaluated, as well as for the programmatic management of drugs' and supplies' or the management and organization of supervision or training activities.

A report on TB epidemiology and TB prevention, care and control activities in Lebanon is prepared every year, printed and forwarded to all those who need to be informed.

The Lebanon M&E Plan includes both continuous M&E and periodic reviews.

The continuous M&E is based on regular review meetings (e.g. quarterly or annually) at various levels. These review meetings enable early identification of implementation challenges and bottlenecks, which in turn can facilitate timely intervention to improve programme implementation.

Continuous M&E is complemented by periodic reviews, typically consisting of Mid-term NSP review and End-term NSP review.

The Mid-term NSP review will be organized during year 5 (2027) to preliminary understand whether the country is on track to achieve the strategic plan targets. Its main objectives are:

- to identify bottlenecks to implementation that should be rapidly addressed to accelerate progress towards targets;
- to identify best practices that could be scaled up in Lebanon; and
- to identify emerging challenges, threats and opportunities to be rapidly tackled, in order, if necessary to update the strategic plan accordingly.

The end-term review will be performed during the final years of implementation of the strategic plan (2029 or 2030), primarily to serve as a baseline to inform the future Lebanon NSP (e.g. 2031-2036).

### ***12.2 Steps to develop the M&E plan***

The steps to develop the M&E plan follows those recommended by WHO (38):

- 1) a small coordinating team was established
- 2) the planned activities and sub-activities were revised
- 3) the core indicators were selected (see below)
- 4) the draft M&E Plan was drafted by the core team
- 5) the plan was revised by a large group involving stakeholders in a specific webinar in early November 2022
- 6) the plan was discussed, fine-tuned and adopted during the Beirut workshop at the end of November 2022.

### ***12.3 Overview of the M&E system for TB in Lebanon***

The overall logic of the M&E Process in Lebanon is summarized in **Boxes 60-63**.

Data originated from the TB Units, which using the set of registers and forms summarized in **Boxes 62-63** are sent to NTP on a monthly basis. NTP performs quality check of the data submitted and

consolidates them within a quarterly report and the Lebanon Annual TB Report. Further analysis is conducted at the M&E Department (see section 5.6 of the Core Plan).

NTP Lebanon has developed and implemented a standardized information system. TB treatment registers and other forms and records are available in the TB centers where the diagnosis and treatment are undertaken. Standard definitions of TB cases and treatment outcomes are used in line with WHO definitions. The information on the bacteriological monitoring and follow-up of TB patients is available and included in TB treatment registers.

A focal person (usually the nurse or the DOT officer) in each TB center sends to the NTP central unit 3 excel datasets on a monthly basis:

- 1- *TB Laboratory Dataset*: which includes information about the samples collected/ tested and the tests' results
- 2- *Active TB Datasets*: which includes the list of TB patients who have been newly registered in the TB treatment register as well as follow-up information on TB patients who are already under treatment.
- 3- *Contacts Dataset*: which includes the list of contacts, the screening done, and whether or not TPT was provided.

Data received from the different TB units are compiled by the M&E officer at the NTP Central Unit. Compilation of data is followed by a validation step to ensure accuracy and completeness of data.

Data are then analyzed and reports including indicators related to notification, bacteriological confirmation, outcomes are generated on a monthly and yearly basis.

Currently, the NTP has launched a pilot phase for the implementation of DHIS2-Tracker based which stages are detailed in **Box 61**. It allows capturing additional information for each patient compared to the previous data collection tools such as TB determinants, NTRL data, adverse events, etc.

Standardized reports/ dashboard are still under development.

Data collection on DHIS2 is being done by trained data entry officers in each TB centre, the sanatorium and the NTRL. To be able to improve capturing data for presumptive TB cases, the software should be implemented at a national level in private and governmental hospitals, PHC centers and clinics.

Currently there is a plan to merge the TB registration software for screening migrants in governmental hospitals with the DHIS2.



The New datasheet for recording presumptive TB cases information and laboratory results was created in 2018.

### ***12.3.1 Recording and Reporting***

Overall, 24 forms and registers are used in Lebanon (**Boxes 62,63**).

They largely correspond to the WHO-recommended forms, which are adapted to the Lebanon-specific setting.

A set of forms are necessary to manage the patient (NTP Request Form for Mycobacteria testing, Patient File/ Treatment Card, Contact Screening Log, TB Treatment Referral/ Transfer Form), others to monitor the programme at the District level (Presumptive TB Log, Laboratory Register, Active TB Register, LTBI Register, NTRL Data), and other at the National level (Quarterly Summary Reporting Form (New and Relapse Cases, Yearly Summary Reporting Form (New and Relapse Cases and Outcomes), NTP Annual Report).

### ***12.3.2 Supervision and supervision forms***

As described into details in section 5.6, supervision is regularly planned and performed in normal conditions, although economic constraints are occasionally delaying the activities.

*Ad hoc* supervision checklists are used, and the results of supervision visits are used to take decisions.

The NTP central unit team (NTP manager, M&E officer and pharmacist) along with a team from the NTRL conduct supervision visits to the different TB centers in Lebanon on a quarterly basis to monitor numerous aspects, mainly related to:

- Active case finding
- Laboratory testing and Quality assured diagnosis
- Management of TB cases
- Recording and Reporting
- Infection control
- Drug management

The assessment Checklists used were designed based on the WHO framework for conducting reviews of tuberculosis programmes (40) and tailored to the Lebanon context.

During the supervision visits, staff are supervised during their routine work, they are then interviewed by the different supervisors, R&R tools are revised and quality checks are done. Specific indicators by centre are also calculated and compared to the targets. On the spot training/ recommendations are provided when necessary.

Following each visit, reports including findings and recommendations/ action points are generated by the different supervisors. During the next visit, the team monitors whether recommendations were met and action points were implemented. Strategic decisions are mostly done based on the findings of the supervision visits.

### ***12.3.3 Definitions used***

The latest WHO definitions have been captured by the Lebanon TB NSP 2023-2027, including the new outcome definitions and the new XDR- ad pre-XDR definitions.

### ***12.3.4 Indicators used***

A set of indicators is essential to monitor and evaluate the Lebanon NSP 2023-2030 both to evaluate the progress towards the Goals and Objectives and to assess the initial trajectory to approach the pre-Elimination phase, according to the spirit of the WHO End TB Strategy.

They are summarized in the [Annex 8](#) devoted to monitoring and evaluation.

The sets of Indicators have been developed: *Core Indicators*, *Global Indicators* and *SDG Indicators*

#### **12.3.4.1 Core indicators**

They include 3 Impact and 6 Outcome Indicators, as described in Section 9 above.

**Impact indicator 1:** *reduction of incidence among native Lebanese from 233 cases in 2023 (41.6 per million) to 56 in 2030 (20 per million, from NTP reporting). As shown in Annex 1, the indicator will be measured every year, but it was estimated to observe a reduction from 2025 on (year 3 to 5), as in year 1 and 2 an increase is possible as effect of improved programmatic activities*

**Impact indicator 1 bis:** *from 2026 to 2030 a 10% reduction per year of TB cases among non-Lebanon-born, to reach 50% (154 cases) in 2030. In parallel, this indicator, although measured every year, is expected to move downwards from year 4 (2026), to allow programmatic intervention to impact the TB epidemic among non-Lebanon born.*

**Impact indicator 2:** *reduction of case-fatality ratio of 37.5% in 7 years (from NTP reporting)*

**Impact indicator 3:** *reduction in the death rate, evaluate by cohort analysis of treatment results from 3.2% in 2023 (21 out of 256) to 1.6% in 2030 (50% reduction) as evaluated in the 2030 cohort (from NTP reporting).*

**Outcome indicator 1:** *case detection rate of 90% calculated on 2030 data (notification rate from NTP reporting and estimated incidence rate from Global WHO report).*

**Outcome indicator 2:** *Notified incidence in Lebanon and non-Lebanon-born children below 15 years of age reaching 1 per million in 2030 (6 cases) calculated on 2030 data (from NTP report).*

**Outcome indicator 3:** *detection of less than 1 MDR- TB case per million among Lebanon-born and refugees in 2030 (from annual NTP reports).*

**Outcome indicator 4:** *90% TB completion in Lebanon born and refugees starting TPT in 2030 (from annual NTP reports)*

**Outcome indicator 5:** *70% of eligible migrants receiving TPT in 2030 (from annual NTP reports)*

#### **12.3.4.2 Global indicators**

Below are outlined 11 *Global Indicators* adopted in Lebanon (adapted to complement the core and SDG monitoring indicators) including the 10 globally recommended indicators with the addition of a specific indicator for operational research.

The *10 global indicators* recommended by the End TB Strategy are included in the [Annex 1](#).

Indicator	Calculation	Target to achieve by 2027
TB treatment coverage	Number of new and relapse cases that were notified and treated, divided by the estimated number of incident TB cases in the same year, expressed as a percentage.	100%
TB treatment success rate	Percentage of notified TB patients who were successfully treated. The target is for drug-susceptible and drug-resistant TB combined, although outcomes should also be reported separately. This is complementary to Core Impact Indicator 3.	≥ 90%
Percentage of TB-affected households that experience catastrophic costs due to TB	Number of people treated for TB (and their households) who incur catastrophic costs (direct and indirect combined), divided by the total number of people treated for TB.	0%
Percentage of new and relapse TB patients tested using a WHO-recommended rapid tests at the time of diagnosis	Patients tested using a WHO-recommended rapid test at the time of diagnosis, divided by the total number of new and relapse TB patients, expressed as a percentage.	≥ 90%
TB preventive treatment coverage	Number of PLHIV newly enrolled in HIV care and the number of children aged <5 years who are household contacts of cases started on LTBI treatment, divided by the number eligible for treatment, expressed as a percentage (separately for each of the two groups).	≥ 90%
Contact investigation coverage	Number of contacts of index TB cases who were evaluated for TB, divided by the number eligible, expressed as a percentage.	≥ 90%
Drug susceptibility testing coverage for TB patients	Number of TB patients with DST results for at least rifampicin divided by the total number of notified (new and retreatment) cases in the same year, expressed as a percentage. DST coverage includes results from molecular (e.g., Xpert MTB/RIF) as well as conventional phenotypic DST results	100%

Treatment coverage, new TB drugs	Number of TB patients treated with regimens that include new (endorsed after 2010) TB drugs, divided by the number of notified patients eligible for treatment with new TB drugs, expressed as a percentage	≥ 90%
Documentation of HIV status among TB patients	Number of new and relapse TB patients with documented HIV status divided by the number of new and relapse TB patients notified in the same year, expressed as a percentage	100%
Case fatality ratio	Number of TB deaths (from a national vital registration system) divided by estimated number of incident cases in the same years, expressed as a percentage. This is used also as Core Impact Indicator 2.	≤ 5%
Number of operational research studies conducted to inform the implementation of national TB strategy	From annual report and other sources (Medline, OR plans from countries and reports from NTP managers)	

#### 12.3.4.3 SDG Monitoring Indicators

A set of **15 SDG monitoring indicators** are useful to complement the core and global indicators, as reported also in **Annex 1**:

1. HIV prevalence
2. Prevalence of diabetes mellitus
3. Prevalence of alcohol use disorder
4. Coverage of essential health services
5. Proportion of population with large household expenditures on health
6. Prevalence of smoking
7. Health expenditure per capita
8. Proportion of population living below the international poverty line
9. Proportion of population covered by social protection floor
10. Prevalence of undernourishment
11. Proportion of population using clean fuels and technology
12. Gross domestic product per capita

13. Income per capita
14. Proportion of urban population living in slums
15. Proportion of all TB patients who are < 15 years of age

### **13(D): Operational Plan**

The *Operational Plan* focuses on activities and sub-activities and should be consistent with the Core Plan and the other plan of the NSP package. It provides, for each activity and sub-activity, relevant and detailed information on the process of implementation, as presented in [Annex 9](#).

### **14 (E): Technical Assistance plan**

The *Technical assistance plan* provides, within the 2023-2030 Lebanon NSP, the details on the need for external technical assistance in terms of area/topic, timing, duration and cost. They are derived from the SWOT and Gap Analysis results, to be consistent with the Goals, Objectives and SI and the Operational Plan of the Lebanon NSP.

The areas identified are the following:

- 1) Laboratory NRL visit in year 1 (2023) and year 3 (2025) and year 6 or 7 (2028 or 2029), 1 week each. First visit to fine tune the laboratory network organization and early implementation of the NSP, second visit to evaluate the first 2 years of the NSP and advising for the remaining 5 years and the third to evaluate the first 6 or 7 years of the NSP implementation and inform preparation the future NSP.
- 2) MDR clinical expert, year 5 (2027), 1 week to participate into the TB training, establish link with the *Global TB Consilium* and establishing long-term distance coaching on difficult cases.
- 3) In-person programme review, year 2 (2024) to evaluate finale response to previous recommendations and early implementation of the plan, year, year 5 (2027) to evaluate mid-plan implementation and 2029 or 2030 to evaluate the overall NSP implementation and inform preparation of the future NSP.
- 4) M&E and surveillance expert, year 1 (2023) 1 week, to conduct training to focal persons and consultancy on necessary fine tuning of M&E.

Additional details are available in tabular format in [Annex 10](#)

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# ANNEXES

## **Annex 1: End TB Strategy**

### **Vision, goal, milestones and targets**

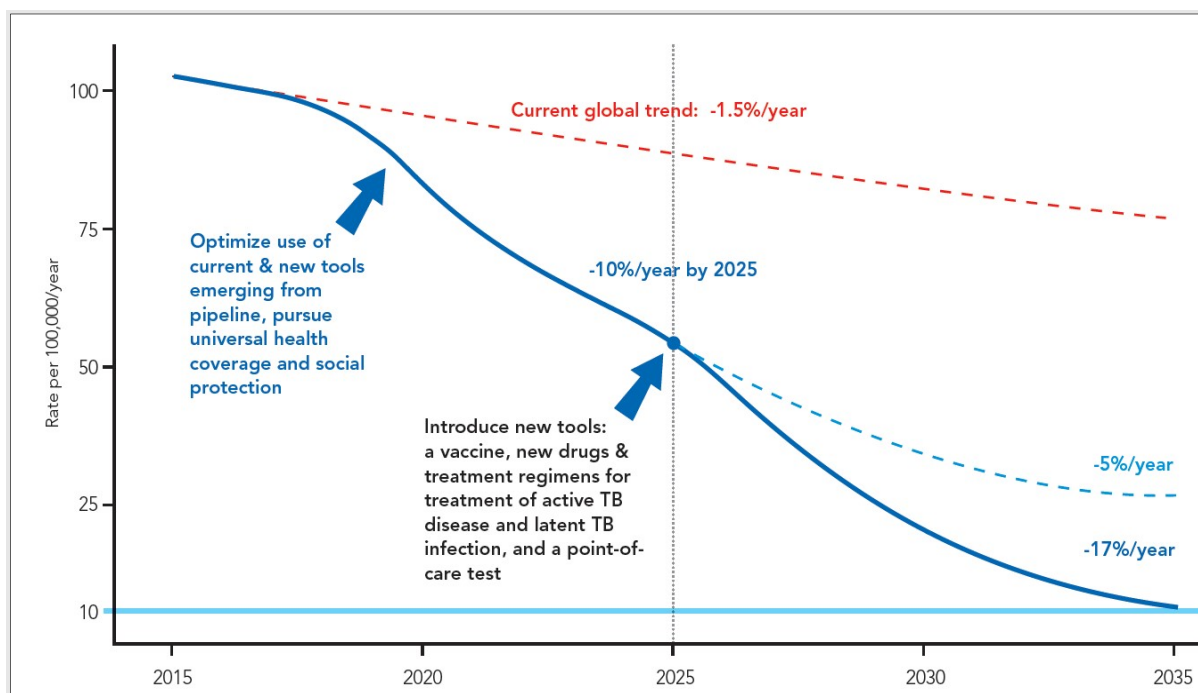
The Millennium Development Goal target “to halt and begin to reverse the incidence of tuberculosis by 2015” were achieved. Under the End TB Strategy, new, ambitious yet feasible global targets are set for 2035: i) achieving a 95% decline in deaths due to TB compared with 2015 and ii) reaching a 90% reduction in TB incidence rate from 110 cases per 100,000 in 2015 to 10 cases per 100,000 or less by 2035. An additional target, proposed to ascertain progress of UHC and social protection, is that by 2020, no tuberculosis-affected person or family should face catastrophic costs due to TB care. Milestones that will need to be reached before 2035 are also proposed for 2020, 2025, and 2030. The hereafter table presents key global indicators, milestones and targets of End TB Strategy.

#### **Reducing incidence and mortality**

A key milestone is a 75% reduction in TB deaths by 2025, compared with 2015. This will require two achievements. First, the annual decline in global TB incidence rates must accelerate from an average of 2% per year in 2015 to 10% per year by 2025. A 10% per year decline in tuberculosis incidence is ambitious yet feasible; it has been projected on the basis of the fastest rate documented at national level, which occurred in the context of universal access to health care and rapid socioeconomic development in Western Europe and North America during the second half of the past century. Secondly, the proportion of incident cases dying from tuberculosis (the case-fatality ratio) needs to decline from 15% in 2015 to 6.5% by 2025. It has been modelled that rapid progress towards universal access to existing tools combined with socioeconomic development can lead to a 75% reduction in TB deaths. Furthermore, improved tools, such as a rapid point-of-care test and improved TB treatment regimens are likely to emerge soon from the research and development pipeline thus facilitating achievement of the milestones.

In order to sustain progress beyond 2025 and achieve by 2035 a 90% reduction in TB deaths and a 90% reduction in the incidence rate from 110 cases/100 000 to less than 10 cases per 100,000, there must be additional tools available by 2025. In particular, a new vaccine that is effective pre- and post-exposure, and better diagnostics, as well as safer and easier treatment for tuberculosis infection, will be needed. Achievements with existing tools complemented by UHC and social protection would be remarkable but would not be sufficient to maintain the rate of progress required to achieve the 2035 targets. For new tools to be available for introduction by 2025, greatly enhanced and immediate investments in research and development will be required. The Figure below shows the projected acceleration of the decline in global TB incidence rates with optimization of current tools combined with progress towards UHC and social protection from 2015, and the additional impact of new tools by 2025.

#### **Box 1.1: Projected acceleration in the decline of global tuberculosis incidence rates to target levels**



### The contribution of Universal Health Coverage and social protection

Globally, in contrast to improvements in the coverage of essential health services, the level of financial protection for expenditures on health has worsened. The proportion of the general population facing catastrophic expenditures on health (using a threshold of >10% annual household income or expenditure) rose from 9.4% in 2010 to 12.7% (927 million people) in 2015. The WHO End TB Strategy target to reduce the number of TB deaths by 75% between 2015 and 2025 is only feasible if, by 2025, everyone who develops TB disease can access high-quality treatment, such that the case fatality ratio (CFR; the percentage of people who develop TB disease that die from it) can be reduced to about 6.5%. This is a level already achieved in high-income countries. In addition, the End TB Strategy target to reduce TB incidence by 80% between 2015 and 2030 is only feasible if, by 2025, the annual decline in TB incidence can be accelerated to 10% per year, a rate of reduction previously documented only in the context of progress towards UHC and socioeconomic development

### Indicators to monitor regional and national progress in implementing the main components of the End TB Strategy

Indicators and associated targets are required to monitor the implementation of the key components of End TB Strategy. They aim at monitoring the progress within a national planning cycle, typically 3-5 years. Ideally, these indicators should be measured annually to help foster accountability for achievement of targets, prompt changes to policy, strategy and interventions when targets are not on track to be met and allow regular and accurate assessments of progress. Measurement at a disaggregated level, for example for specific subpopulations or geographical areas, is also desirable to allow for better adaptation of the country response.

Here below (**Box 1.2**) is the set of 10 recommended core operational indicators.

Indicator	Calculation	Target to achieve by 2027
TB treatment coverage	Number of new and relapse cases that were notified and treated, divided by the estimated number of incident TB cases in the same year, expressed as a percentage.	100%
TB treatment success rate	Percentage of notified TB patients who were successfully treated. The target is for drug-susceptible and drug-resistant TB combined, although outcomes should also be reported separately. This is complementary to Core Impact Indicator 3.	≥ 90%
Percentage of TB-affected households that experience catastrophic costs due to TB	Number of people treated for TB (and their households) who incur catastrophic costs (direct and indirect combined), divided by the total number of people treated for TB.	0%
Percentage of new and relapse TB patients tested using a WHO-recommended rapid tests at the time of diagnosis	Patients tested using a WHO-recommended rapid test at the time of diagnosis, divided by the total number of new and relapse TB patients, expressed as a percentage.	≥ 90%
TB preventive treatment coverage	Number of PLHIV newly enrolled in HIV care and the number of children aged <5 years who are household contacts of cases started on LTBI treatment, divided by the number eligible for treatment, expressed as a percentage (separately for each of the two groups).	≥ 90%
Contact investigation coverage	Number of contacts of index TB cases who were evaluated for TB, divided by the number eligible, expressed as a percentage.	≥ 90%
Drug susceptibility testing coverage for TB patients	Number of TB patients with DST results for at least rifampicin divided by the total number of notified (new and retreatment) cases in the same year, expressed as a percentage. DST coverage includes results from molecular (e.g., Xpert MTB/RIF) as well as conventional phenotypic DST results	100%
Treatment coverage, new TB drugs	Number of TB patients treated with regimens that include new (endorsed after 2010) TB drugs, divided by the number of notified patients eligible for treatment with new TB drugs, expressed as a percentage	≥ 90%
Documentation of HIV status among TB patients	Number of new and relapse TB patients with documented HIV status divided by the number of new and relapse TB patients notified in the same year, expressed as a percentage	100%

Case fatality ratio	Number of TB deaths (from a national vital registration system) divided by estimated number of incident cases in the same years, expressed as a percentage. This is used also as Core Impact Indicator 2.	≤ 5%
Number of operational research studies conducted to inform the implementation of national TB strategy	From annual report and other sources (Medline, OR plans from countries and reports from NTP managers)	

However, an adaptation to the specific regional needs is necessary with the additional of other indicators.

A set of **15 useful SDG monitoring indicators** are useful to complement the core:

1. HIV prevalence
2. Prevalence of diabetes mellitus
3. Prevalence of alcohol use disorder
4. Coverage of essential health services
5. Proportion of population with large household expenditures on health
6. Prevalence of smoking
7. Health expenditure per capita
8. Proportion of population living below the international poverty line
9. Proportion of population covered by social protection floor
10. Prevalence of undernourishment
11. Proportion of population using clean fuels and technology
12. Gross domestic product per capita
13. Income per capita
14. Proportion of urban population living in slums
15. Proportion of all TB patients who are < 15 years of age

### Box 1.3. Targets and milestones in the Lebanon

Indicator	2020 milestones (2023 in the plan), used as baseline	2025 milestones (2027 in the plan)	2030 milestones (2030 in the plan)	2035 targets
Reduction of mortality (case-fatality ratio)	8%	6.5%	5%	3% from 2023)

Reduction in TB incidence rates in Lebanon-born per million population	233 cases 41.6./ Million population	~155/165 cases ~30/ Million pop (~30% reduction from 2023). <i>The indicator will be measured every year, but it was estimated to observe a reduction from 2025 on (year 3), as in year 1 and 2 an increase is possible as effect of improved programmatic activities</i>	~114/124 cases ~20/Million pop (~50% reduction from 2023)	~55/65 cases ~10/Million pop (~75% reduction, from 2023)
TB affected families facing catastrophic costs due to TB	0	0	0	0

## **Annex 2: Documents reviewed to inform the Lebanon 2023-2030 NSP**

- Joint Review of TB Program Report – 2015
- Desk Review of TB Management in Lebanon – 2018
- NTP Annual Report – 2021
- National Guidelines for Tuberculosis Prevention, Care and Elimination in Lebanon – 2017
- WHO support to the humanitarian response in Lebanon – 2016
- Health Strategic Plan- Strategic Plan for the medium term 2016-2020, Ministry of Public Health, Lebanon
- National Strategic Plan 2017-2021 ‘Towards Tuberculosis Elimination in Lebanon’
- OCHA Annual Report 2019
- Lebanon Crisis Response Plan 2017-2020
- Global TB Report 2020 and 2021
- Reports of GDF and GLC evaluation missions.
- UNRWA Annual Report 2019
- WHO document: The End TB Strategy
- Tuberculosis Joint Programme Review – Republic of Lebanon, 14-18 December 2020
- Lebanon Health Sector Strategy Framework (LHS), Vision 2030: Bridging Crisis Phase to Developmental Agenda in Lebanon (Draft 13 July 2022)
- Health Sector Overview draft document
- ‘*Ad hoc*’ data provided by NTP

## **Annex 3: Recommendations External Review Mission 2020**

- “END TB” should be included in the National Health Agenda
- Constitute “END-TB” guidance committee on priority
- Initiative to call for action to “END-TB” to involve international and domestic stakeholders and investment partners.
- Extend the services physicians and health care workers beyond 2020 who are supported by MOPH
- LRM services as NTRL for advanced TB diagnostics to be continued
- Update / Develop TB guidelines as per WHO recommendations for the care and prevention of childhood TB, TB-HIV, drug resistant TB and latent TB
- Institutionalize private sector engagement in TB care and prevention.
- Develop training action plan and newer innovative techniques to train health care workers
- Expansion of TB diagnostic services based on assessment or survey
- Establishment of trans – country patient support secretariat to improve cross border referrals
- Linkages of TB patients to social welfare schemes to be strengthened



- Build plethora of activists and supporters to eliminate TB related stigma
- Streamline the existing system of drug storage and delivery mechanisms
- Strengthen supervision and monitoring of programme managers and inculcate the usage of digital technology for recording and reporting

#### **Annex 4: Status of the Recommendations of the External Review Mission, 14-18 December 2020 and matrix to link with the NSP Strategic interventions (SI)**

See 'ad hoc' word file

#### **Annex 5: Lebanon responses on the 8 areas relevant for TB Elimination, questionnaire, EMR Regional Elimination Plan**

See 'ad hoc' word file

#### **Annex 6: Analysis of results of supervisory visits, Lebanon NTP report 2021**

See Annex II, Annual TB report 2021

#### **Annex 7: Tables of the budget plan**

See excel file

#### **Annex 8: Tables of the M&E plan**

See word file

#### **Annex 9: Tables of the operational plan**

See excel file

#### **Annex 10: Table of the technical assistance plan**

See word file