

Ex post evaluation – Tajikistan

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Sector: 12263 Tuberculosis Control

Programme/Project: Tuberculosis Control in Tajikistan Phases I, II, III (incl. accompanying measure): 2004 66 151 (I), 2007 66 006 (II), 2008 66 467 (III)* and 2008 70 253 (AM)*

Implementing agency: Ministry of Health and Social Protection Tajikistan



Ex post evaluation report: 2016

		All projects (Planned)	All projects (Actual)
Investment costs (total)	EUR million	10.5	10.9
Counterpart contribution	EUR million	1.1	1.1
Funding (BMZ funds)	EUR million	9.2	9.2
Other donors	EUR million	0.2	0.6

*) Random sample 2015

Summary: The projects were closely linked both geographically and content-wise. The measures focused on strengthening the diagnostic and therapeutic capacities for treating tuberculosis (TB) by developing and expanding related infrastructure and equipment. This involved the rehabilitation of the national TB hospital "Macheton", including the construction of a new department for patients with multidrug-resistant TB according to the latest epidemiological hygiene standards (TB I and TB II) and the provision of diagnostic and surgical equipment (partly TB III). One floor of Macheton Hospital was equipped as a biosafety level 3 laboratory (TB II and TB III) and functions as the National Reference Laboratory (NRL). Furthermore, the projects comprised a twinning arrangement between the NRL and the supranational reference laboratory Gauting for the quality assurance of the NRL. The accompanying measures comprised training to maintain and improve quality and management. The measures carried out for Macheton amounting to EUR 1.6 million, financed as part of the current phase TB IV, are also assessed in the ex-post evaluation.

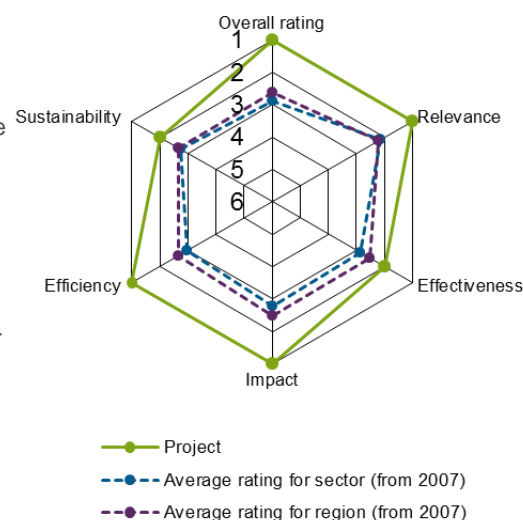
Objectives: Improving the diagnosis and treatment of the various forms of TB (**project objective** of all projects) in accordance with the DOTS strategy recommended by the WHO (Directly Observed Treatment – Short Course) was designed to make a contribution to controlling TB and therefore to achieving Millennium Development Goal No. 6 (Combat HIV/AIDS, malaria and other diseases) (**overarching development objective**).

Target group: The target group of the projects was the entire population of Tajikistan (currently 8.5 million inhabitants). As TB is still determined very much on a social basis and associated with poverty, it was assumed that particularly poor people would benefit from the measures.

Overall rating: 1
(all phases; Phase IV Macheton part included)

Rationale: The projects had a very positive impact on rationalising and boosting the efficiency of TB treatment under the DOTS strategy. The accompanying measures made good contributions to efficiency and sustainability. The risks for sustainability are much lower than assumed during the project appraisal. All told, the contribution of Financial Cooperation (FC) to improving TB control in Tajikistan is important and sustainable, complementing the work of other players.

Highlights: By regional comparison Tajikistan fares very well in controlling tuberculosis, with regard to treatment success rates for example (in spite of a high proportion of multidrug-resistant tuberculosis).



Rating according to DAC criteria

Overall rating: 1

Overall context

Since the three phases were very closely linked to each other in both content and location, they are evaluated jointly. For the TB IV project, renovation work and equipment deliveries for Macheton have been included in the evaluation, along with the associated part of the accompanying measure. The component for the rehabilitation of the hospital and the laboratory in Digmoj (Sughd Region) is currently in the implementation phase. After completion, it will also likely be subject to an ex post evaluation.

Breakdown of total costs

	TB I		TB II		TB III		TB IV	
	2004 66 151		2007 66 006		Inv. 2008 66 467 AM. 2008 70 253		Inv. 2010 65 580 Only Macheton	
	(Planned)	(Actual)	(Planned)	(Actual)	(Planned)	(Actual)	(Planned)	(Actual)
Investment costs	2.9	2.9	2.4	2.8	5.2	5.2	1.6	1.8
Counterpart contribution	0.3	0.3	0.2	0.2	0.6	0.6		
FC financing (BMZ funds)	2.6	2.6	2.0	2.0	4.6	4.6	1.6	1.6
- Investment	2.6	2.6	2.0	2.0	4.0	4.0	1.6	1.6
- Accompanying measure					0.6	0.6		
Other donors			0.2	0.6				0.2

EUR million

The accompanying measure for Phase IV (2010 70 127) also applies partly to Macheton and partly to Digmoj. A precise separation is difficult, however, since Macheton employees trained their colleagues in Digmoj.

Relevance

Since the collapse of the former Soviet Union in 1991, tuberculosis (TB) has become extremely widespread in the Central Asian republics as well as in the Caucasus, as the healthcare systems there literally collapsed and the centrally and vertically organised tuberculosis control programmes ground to a halt. As the poorest of the former Soviet republics, Tajikistan was especially hard-hit by the structural upheaval, and also suffered through a devastating civil war (1992-1997) which caused enormous damage to infrastructure, some 50,000 deaths, and an exodus of human capital. The Tajik state was not in a position to cover running costs in the healthcare system, let alone to finance investments or maintenance measures.

At the time that the first phase was appraised, the TB figures were both alarming and confusing: the World Health Organisation (WHO) estimated TB incidence at 198 and TB mortality at 38 per 100,000 people. Ministry of Health (MoH) data was lower, at 114 for incidence and 13 for mortality. The case detection rates differed sharply as well: the WHO estimated that only 2-3 % of all TB cases were actually detected, while the Ministry assumed a figure of 30 %. Despite these discrepancies, the numbers clearly indicated a TB epidemic.

At that time, there was no functioning national TB hospital at the tertiary level; the Macheton was effectively in ruins. Although Tajikistan officially had a large number of hospital beds available for TB treatment, the majority of them were in run-down, poorly-equipped hospitals or sanatoria which fell far short of hy-

gienic standards for the handling of epidemics, and were associated with a high risk of infection for patients and staff.¹

The DOTS strategy (Directly Observed Treatment – Short Course) recommended by the WHO advises that TB patients be treated as outpatients whenever possible; nevertheless, the availability of hospital beds is crucial. In the initial phase of treatment, isolation is necessary, especially in highly infectious pulmonary cases (lung infection, so-called open tuberculosis), to prevent the disease from spreading further and to protect the community. Severe cases and those requiring surgical intervention also require inpatient treatment. TB is a disease that is associated with poverty and poor living conditions; free treatment – both inpatient and outpatient as per DOTS – has been and remains highly relevant for those affected.

In addition, there was no central laboratory in the country that could perform quality checks for peripheral laboratories or carry out drug susceptibility testing (DST). This diagnostic measure is increasingly important for the correct treatment of patients infected with drug-resistant strains of the tuberculosis bacterium (multidrug-resistant TB, or MDR-TB). Both of these functions of the National Reference Laboratory (NRL) are critically important for an effective implementation of the DOTS strategy. TB is among the most challenging diseases; diagnosis and treatment are difficult, placing high demands on the patience of those suffering from TB and on the training of medical staff. The coordination of laboratory diagnostics is becoming ever more important with the ongoing development of new techniques, which are also increasingly available in Tajikistan e.g. through the endeavours of the Global Fund.

Given this state of affairs, the FC projects are indisputably of very high relevance from today's perspective. All the findings coming out of the evaluation demonstrate that, at the time of the initial project appraisal (PA), neither the government nor other international donors were willing or able to make major investments in urgently needed infrastructure reconstruction. The division of labour at the time between the primary actors (Global Fund, USAID, Swiss Development Cooperation, Caritas Luxembourg, German FC) appears reasonable. The FC's approach, by which it takes responsibility in this context for the strengthening of infrastructure, remains a plausible one. The relevance of its achievements in ongoing TB control will remain high, especially in light of the high rate of MDR-TB cases which present the country and its health system with a new set of challenges.

Relevance rating: 1

Effectiveness

The objective of all projects was to improve the diagnosis and treatment of different forms of TB. The following indicators were selected at the project appraisal to measure the achievement of objectives: (1) Increase in the case detection rate (CDR), i.e. in the proportion of cases diagnosed through a positive smear test relative to the total number of expected cases, and (2) increase in the rate of successful treatment in cases with a positive smear test (the so-called treatment success rate). The targets for these indicators varied by phase. While the treatment success rate is an appropriate way to measure the hospital's effectiveness and that of the NRL (see below), the case detection rate is of limited use. Alongside methodological problems in the assumptions underlying its calculation, there is no direct causal results chain from the rehabilitation and outfitting of a hospital at the highest level of treatment to an improved case detection rate. The CDR is dependent on many factors, most of which play out at the level of peripheral health centres when patients first present themselves. For the NRL, the situation is different. With an average of 26,500 different tests each year², the laboratory makes an important contribution to improved case detection, and with its DST capability, it makes an extremely important contribution to the identification of MDR-TB.

The following additional indicators were used to evaluate effectiveness: (3) mortality at the Macheton Hospital; (4) number of patients treated relative to the number of beds; (5) treatment success rate for MDR-TB cases; (6) proportion of all new TB cases with a positive smear test for which drug susceptibility testing was performed. The achievement of the programme objectives can be summarised as follows:

¹ To some extent, such hospitals or TB centres can still be found today, but some of them are to be closed as part of further rationalisation measures.

² NRL statistics, 2013 to 2015. The total figure includes diagnostic tests (and external quality checks) in the domains of microscopy, cultures (liquid and solid media), and resistance testing for first-line drugs as well as second-line drugs.

Indicator	Status PA	Ex post evaluation
(1) Case detection rate	Status PA (TB I and II): 22 % (WHO 2005) Target value: 30 % (TB I), 50 % (TB II) Status PA (TB III and IV): 30 % (WHO 2009) / 50 % (MoH 2008) Target value TB III and TB IV: 50 %	2015: 77 %
(2) Treatment success rate in new smear-positive cases	Status PA (TB I and II): 84 % (WHO 2005) Target value: 85 % Status PA (TB III and IV): 85 % (WHO 2009) / 82 % (MoH 2008) Target: 80 % ³	79 %
(3) TB mortality in Macheton Hospital		2013: 3.4 % 2014: 2.5 % 2015: 1.8 % Nationwide 2015: 3.3 % (WHO) / 4 % (NTP*)
(4) Number of patients treated relative to number of beds (annually)	Patients (2004): 1,430 ⁴ Beds (2004): 700	Patients (2015): 2,159 ⁵ Beds (2015): 420
(5) Treatment success rate for MDR-TB cases		63.7 %
(6) Proportion of all new TB cases with positive smear test for which a DST is performed		100 % Global TB Report 2015

* National Tuberculosis Program

Indicator 1: The case detection rate has increased continuously and is significantly above the target value at 77 %. Due to the limited informative value of the case detection rate (see above), however, this indicator is not included in the evaluation.

Indicator 2: The treatment success rate for new cases with positive smear tests is 79 %, so that the indicator was (very nearly) achieved. Both the Macheton Hospital and the NRL have made a causal contribution here. The latest findings show that about 2,000 patients each year receive high-quality in-hospital treatment, including surgical measures, which are not available in certain parts of the country (e.g. in Khatlon Region). This represents a third of all cases recorded in Tajikistan (6,260 cases in 2014, and

³ The reduced target value for the TB III and IV treatment success rate, relative to previous phases, was a consequence of the worldwide reduction in treatment success rates in countries with a high proportion of MDR-TB cases (PA was performed in 2009).

⁴ The average number of inpatients treated in the years 2002 to 2011 was 1,432 per year.

⁵ The average number of inpatients treated in the years after rehabilitation (2012 to 2015) was 2,123 per year.

6,232 cases in 2015). The initiation of treatment and professional guidance for patients plays an important role in their compliance (i.e. in how closely they follow the treatment plan), and therefore for the success of treatment. The NRL contributes to correct and efficient treatment by verifying the quality of subordinate laboratories and by ensuring that the type of drug resistance is identified (through DST). This is of great importance for the containment of MDR-TB in particular, and an important contribution to preventing far more severe consequences. It has been demonstrated that treating MDR-TB cases with first-line drugs, or with the wrong choice of second-line drugs, encourages the development of extremely drug-resistant TB (known as XDR-TB).

In spite of the Tajikistan's healthcare system, chronically under-financed and in need of reform, the treatment success rates are good by regional comparison and even compared to more developed countries: the treatment success rates in the "WHO European Region" have been falling for years, especially in countries with a high MDR-TB burden. In Tajikistan some 10 % of all new cases discovered and roughly 50 % of all repeated treatments fall into the MDR-TB category.⁶ A WHO report (2013) for Tajikistan revealed: "The treatment success rate for the 2012 cohort of new bacteriologically confirmed PTB⁷ cases was 79 %; this is below the WHO target of 85 % but is considerably higher than the regional average of 62 %."⁸

Indicator 3: Both overall mortality and TB mortality are low in the Machedon Hospital. In 2015, the mortality rate for TB cases was 1.8 %. The rates are therefore lower than the estimated nationwide TB mortality rate of about 3 % to 4 %. Especially in light of the fact that a large proportion of complicated cases are treated at the Machedon, this shows the high quality of treatment at this hospital.

Indicator 4: The rehabilitation of the hospital brought with it a reduction in the number of beds. Nevertheless, the number of patients treated each year has increased by about 50 % since the first project appraisal. Bed occupancy is about 80 %.

Indicator 5: The treatment success rate for MDR-TB cases in Tajikistan is 63.7 %, comparable to the Netherlands and Austria, and higher for example than in Great Britain (48 %) or Lithuania (35.1 %).⁹ In the WHO European Region, the average treatment success rate for MDR-TB is 56 % (2010).

Indicator 6: According to the Global TB Report 2015, 100 % of all cases in Tajikistan with a positive smear test result are submitted for drug susceptibility testing. According to national statistics, the proportion is 93 %. Further investigation revealed that the 93 % figure referred to the results; due to logistical problems (transportation), samples sometimes cannot be examined in time, and are therefore, reasonably enough, initially recorded in the national statistics as "not tested". However, additional samples are later requested for these cases, so an overall figure of 100 % DST may be assumed.

Effectiveness rating: 2

Efficiency

Timely implementation was very efficient: The TB I and TB II projects were completed ahead of schedule; TB III and the part of TB IV that is subject of the evaluation were implemented according to plan. Construction costs at Machedon Hospital were EUR 370 per square metre for high quality and no significant defects, which can be considered inexpensive in comparison to the costs for similar buildings (hotels, office complexes) in Tajikistan. Flexibility in execution and efficient interaction with other actors allowed the projects to be adapted to the needs of the time, and aligned with the plans of other donors (e.g. an MDR-TB ward was built, and the order in which two building sections were rehabilitated was reversed). Compared to other TB facilities that were visited in the context of the evaluation (regional hospital, health centres, laboratories), Machedon Hospital and the NRL score very well in terms of construction quality, epidemiological hygiene conditions, and maintenance costs. All areas that were visited, and all equipment that was examined, were in very good condition, and there is a good maintenance plan in place as well as

⁶ According to WHO estimates, 8.1 % or up to 50 %; according to an NRL survey in 2013, even 13% or 54%.

⁷ Pulmonary TB.

⁸ Extensive Review of Tuberculosis prevention, control and care in Tajikistan, 15-24 July 2013. World Health Organization. Regional Office for Europe.

⁹ Tuberculosis surveillance and monitoring in Europe 2015 (Table 24, pages 90-91).

adequately trained and motivated personnel. The accompanying measures also contributed to this. The NRL shares the task of TB analyses (cultures, microscopy) with the National Public Health Reference Laboratory (NPHRL), but it is the only laboratory in Tajikistan’s laboratory network that performs DST and external quality checks.

TB, and especially MDR-TB, represent a major burden for this poor country. The projects have made a positive contribution to TB control efforts, including savings in both microeconomic and macroeconomic costs. TB primarily affects men, especially the over-65 and 25 to 34-year-old age groups. The latter group typically includes the primary breadwinners and providers for their families. Affected individuals are restricted in their performance capacity and their availability on the labour market for long periods of time, and investments in effective diagnosis and treatment are sensible measures to limit productivity losses on both the individual and societal levels. The rationalisation approach promoted by FC aligns with the emphasis that the DOTS strategy places on outpatient treatment, and reduces overall economic costs in the medium term and minimises the potential of infection. Since 2005, the number of beds for TB has been reduced from 2,535 to 1,500 nationwide, and the average length of admission to Macheton Hospital has dropped from about 200 days to 47 days in 2015.

Efficiency rating: 1

Impact

The overarching objective in terms of development policy was to contribute to the achievement of Millennium Development Goal No. 6 (combat HIV/AIDS, malaria, and other diseases). TB incidence and TB mortality were selected as indicators. It was stipulated at the project appraisal for TB III and IV that the overarching objective would count as achieved when no further increase in TB incidence and mortality rates was recorded. In retrospect as well, the selected indicators are an appropriate way to measure the overarching effects in terms of development policy.

Indicator	Status PA	Ex post evaluation
(1) No further increase in the incidence of tuberculosis (per 100,000 residents)	2005: 198 (WHO) / 130 (NTP) 2009: 198 (WHO) / 80 (NTP)	2014: 91 (WHO) / 76 (NTP)
(2) No further increase in tuberculosis mortality	2005: 6.8 % (NTP/WHO) 2009: 5.4 % (NTP/WHO)	2014: 3.3 % (WHO) / 4 % (NTP)

The targets were exceeded for both indicators. According to the WHO, incidence in Tajikistan has fallen continuously by 5.7 % per year since 2009.¹⁰ At the time of the ex post evaluation, additional effects became clear that are noteworthy in the context of TB control in Tajikistan. The Macheton Hospital with its high equipment standards made an important contribution to reducing the stigma of TB. Patients who were previously being isolated under sometimes miserable conditions now receive efficient treatment in a modern, welcoming hospital setting. As Tajik and international partners have repeatedly emphasised, this has clearly contributed to a change in perceptions of TB, to a reduction in the stigma associated with it, and to an understanding of TB as a curable disease, albeit a challenging one. In addition, the presence of this hospital has contributed to a lively scientific exchange among TB doctors and experts within the country. Among other things, this led to the establishment of patient hospitalisation criteria to avoid unnecessary inpatient treatment.

Impact rating: 1

¹⁰ Tuberculosis surveillance and monitoring in Europe 2015, WHO Regional Office for Europe (Mean annual change in rate – Table 3, page 63).

Sustainability

Various developments in recent years have contributed to a situation in which the running costs for the hospital can in all likelihood be paid for by the hospital itself, and in which the maintenance and ongoing operation of the laboratory are ensured. Funding of consumables, drugs and part of the maintenance costs (expensive filters for the laboratory) are ensured by other donors (Global Fund in particular) through 2017-18. Part of the hospital is equipped with a geothermal heating system, leading to a significant reduction in running costs. The ministry is continuing to take over a (slightly) increasing portion of the financing for the NTP. The departure from the bed-based financing principle for TB hospitals was decreed in late 2015 and reduces inefficient and misguided incentives in the system. The impacts of the management training program (FC-financed accompanying measures) are also clearly and positively felt. Together with Decree 600 from the government, these measures have led the hospital management to take a proactive attitude towards refinancing; at present, management can already cover part of the running maintenance costs by offering diagnostic analyses (e.g. CT, bronchoscopy) to non-TB patients on a paid basis. Hospital management and the NTP are also considering the possibility of using the hospital as a pulmonary specialist centre in the future as the need for TB services declines. Even now, the hospital's official title is the "National Center for Tuberculosis, Pulmonology and Thoracic Surgery". Working conditions are attractive (with the epidemiological hygiene conditions also playing a role), and more young doctors have joined the team in recent years.

Experts see the NRL as having all the necessary technical and personnel capacity to continue in its role as the reference laboratory and to carry out all DST analyses in the years to come as well. In some cases, laboratory personnel's long-term presence at the NRL has been ensured through 3-year contracts. The initially high turnover among laboratory personnel is no longer in evidence since the start of 2015. Other staff retention measures are also being considered by the hospital and the regional government.¹¹ Nevertheless, the situation with laboratory personnel may be seen as more critical than at the Machedon Hospital. Machedon's attractiveness (for medical personnel) will continue to increase with the construction of the new children's hospital on the grounds¹² as different types of expertise will come together and synergise. In the laboratory domain, there have been few attempts thus far to provide systematic training to young professionals on a national level, and laboratories have long struggled with a rather unattractive image.

Overall, the result clearly exceeds the expectations prevailing at the time of the initial project appraisal, when the risk to sustainability was evaluated as high. The project's positive effects are very likely to persist. Even if there is still a certain dependency on donor partners (e.g. the laboratory's operation is ensured in part by the involvement of the Global Fund), the sustainability is evaluated as good.

Sustainability rating: 2

¹¹ Land will be made available to Machedon and laboratory personnel to build houses on (according to the principle of hereditary tenancy). This strategy is also being pursued by the MoH for other hospitals and health centres in rural areas.

¹² The audit engagement has already been issued by the BMZ.

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).