

# Ex post evaluation – Uzbekistan



**Sector:** CRS Code 12250 (infectious disease control)  
**Project:** National Tuberculosis Control Programme IV  
 BMZ No. 2004 65 351\*, including B+A Training component BMZ No. 1930 03 399  
**Implementing agency:** Ministry of Health of the Republic of Uzbekistan



## Ex post evaluation report: 2018

		Project (Planned)	Project (Actual)	Training (Planned)	Training (Actual)
Investment costs (total)	EUR million	2.80	13.11	1.20	1.20
Counterpart contribution	EUR million	0.30	10.70	0.00	0.00
Funding	EUR million	2.50	2.41	1.20	1.20
of which BMZ budget funds	EUR million	2.50	2.41	1.20	1.20

\*) Random sample 2016

**Summary:** The priority area of the fourth phase of the Tuberculosis Control Programme focused on strengthening nationwide capacities to diagnose tuberculosis (TB). The measures included the development of laboratory diagnostics – in accordance with the updated guidelines of the WHO (one quality-assured culture laboratory per 5 million inhabitants) – by equipping five culture laboratories (Biosafety level BSL-2) in five oblasts, financing the replacement of six obsolete X-ray machines in five oblasts and in the Bukhara prison, as well as the quality-assured measures for the National Reference Laboratory in Tashkent and the equipping of the MDR-TB (multidrug-resistant TB) department in the central prison hospital of Tashkent. The regional B+ A Training measure (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan) included international conferences on MDR-TB and MDR-TB in prisons as well as seminars and training on the DOTS Strategy (Directly Observed Treatment – Short Course), on the monitoring of national TB control programmes and on HIV/TB co-infections in prisons.

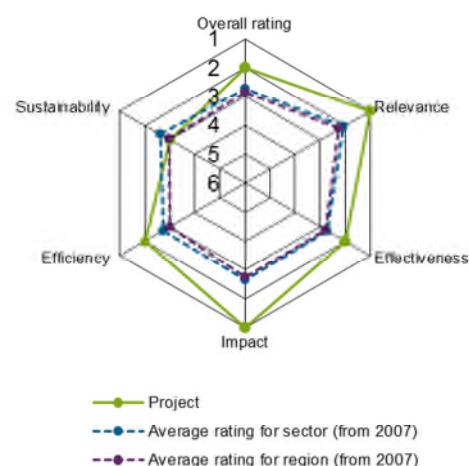
**Development objectives:** Improving the diagnosis and treatment of the various forms of TB (**outcome**) in line with the DOTS Strategy recommended by the WHO was to help break the TB infection chain and thus contribute to achieving Millennium Development Goal 6 (combat HIV/AIDS, malaria, and other diseases – **impact**).

**Target group:** The target group comprised the entire population living in Uzbekistan, which at the time of the programme appraisal meant 26 million people. Since particularly poor sections of the population are affected by tuberculosis, they especially stand to benefit from the project.

## Overall rating: 2

**Rationale:** The relevance and the developmental impact of the project are considered to be very good in light of the very positive contribution made to improving TB diagnoses, especially with regard to a country-specific problem (MDR-TB) that is particularly relevant in the fight against TB. We rate the project's effectiveness and efficiency as good. There are certain risks to sustainability (maintenance, ventilation, electricity supply). The level of sustainability is therefore rated as satisfactory overall.

**Highlights:** -



## Rating according to DAC criteria

### Overall rating: 2

#### Ratings:

Relevance	1
Effectiveness	2
Efficiency	2
Impact	1
Sustainability	3

#### General conditions and classification of the project

The “Tuberculosis (TB) Control Programme Phase IV” builds on the previous phases TB I, TB II, and TB III (financing of TB drugs according to the DOTS strategy, laboratory equipment, and medical consumables for TB diagnostics). The focus in Phase I was on the provinces of Karakalpakstan, Khorezm, and Tashkent, while Phase III prioritised the provinces of Fergana, Namangan, and Andijan. TB II focused on the provinces of Surkhandaria, Kashkadaria, Bukhara, and for the first time included prison hospitals in the programme. In addition to this, Phase II included the establishment of a National Reference Laboratory in Tashkent. In light of the increasing scale of difficult-to-diagnose (treatable) multidrug-resistant TB, Phase IV focused on the nationwide expansion of laboratory diagnostics by equipping culture laboratories (Biosafety Level BSL-2) in five provinces in accordance with WHO guidelines in force at the time of the programme appraisal (one quality-assured culture laboratory per 5 million inhabitants). Since the programme appraisal (2005), the diagnosis of multidrug-resistant and extensively drug-resistant forms of tuberculosis (MDR and XDR-TB) has undergone revolutionary changes thanks to pioneering innovations (tests using molecular biology). Despite these changes, the relevance of the diagnostic culture approach promoted by the project remains high today. According to current WHO recommendations, even when molecular biological tests are used for the initial diagnosis of MDR and XDR-TB, diagnostic microbiology remains indispensable in the differential diagnosis of resistance to specific second-line medications as well as for follow-up during treatment. German FC is currently assisting the Uzbek government in the fight against tuberculosis as part of the ongoing phases V (upgrading the regional laboratory in Samarkand to BSL-3 level) and VI (providing modern medical equipment to the national TB centre in Tashkent).

The project under evaluation complements similar programmes in the regional network of German FC in Kazakhstan, Kyrgyzstan, and Tajikistan. The cross-border nature of TB control was taken into account as part of a regional B+A Training component, which was also included in the evaluation.

#### Relevance

Since the collapse of the Soviet Union in 1991, tuberculosis (TB) has become extremely widespread in the Central Asian republics as well as the Caucasus, as the health care systems there initially collapsed, and the centrally and vertically organised tuberculosis control programmes of the Soviet era (including the provision of medication) ground to a halt. As a result, the number of registered cases of TB in Uzbekistan rose from around 9,000 in the late 1980s to more than 21,000 in 2005. At the time of the programme appraisal in 2005, the WHO estimated the TB incidence rate at 120 / 100,000 and the TB mortality rate at 14 / 100,000 inhabitants.

Of particular significance in Uzbekistan, and in Central Asia in general, was the high proportion of patients with multidrug-resistant TB (MDR-TB). This issue remains relevant today. Incorrect or inadequate long-term treatment has resulted in resistance to the usual tuberculosis medication in many patients. According to WHO estimates, 24% of all new cases and 63% of all relapses in Uzbekistan in 2015 were MDR-TB.

At the time of the programme appraisal, Uzbekistan had a central National Reference Laboratory (NRL) for tuberculosis in Tashkent. At the provincial level, however, there were no peripheral laboratory capacities to safely cultivate cultures for TB diagnosis (WHO specifications stipulated one quality-assured culture laboratory per 5 million inhabitants). In particular, the drug susceptibility testing (DST) carried out in

the NRL using cultures grown in the regional labs is important for the correct diagnosis and treatment of patients infected with drug-resistant strains of the tubercle bacillus. During the programme under evaluation, the Uzbek government's assistance in setting up and expanding five provincial culture laboratories (Biosafety Level BSL-2), in improving the capacity and quality of culture and DST diagnostics in the central NRL in Tashkent, and in promoting X-ray diagnostics at six locations was therefore highly relevant at the time of the programme appraisal.

In addition to German FC, the national TB control programme in Uzbekistan is supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), USAID, and Médecins sans Frontières (MSF). The various donor activities are centrally coordinated by the Uzbek Ministry of Health through bilateral agreements between the government and the relevant donor organisation. All the findings coming out of the evaluation confirm that, at the time of the programme appraisal, neither the Uzbek government nor other international donors were willing or able to invest in the urgently needed establishment of a network of regional culture laboratories. The assumed system of effects still rests on sound logic from today's perspective, anticipating that financing the establishment and expansion of diagnostic capacities – with the possibility of resistance diagnoses – will decisively contribute to controlling the (MDR)-TB epidemic. Since the programme appraisal (2005), MDR-TB diagnostics have been revolutionised due to ground-breaking innovations (introduction of molecular biological tests such as GeneXpert, Hain) which have been widely used throughout Uzbekistan and are increasingly available thanks to the commitment of the GFATM. Even with the use of molecular biological methods for the initial diagnosis of MDR-TB and XDR-TB, the relevance for Uzbekistan of the diagnostic culture labs funded through the project remains high. In its current guidelines on the use of molecular biological methods for the diagnosis of resistance to second-line drugs,<sup>1</sup> the WHO points to the need for culture laboratories for conventional resistance testing in addition to the use of molecular biological tests (second-line line probe assays) – since the latter are unable to sufficiently differentiate between specific resistances during testing – in order to ensure the targeted composition of drugs for the successful treatment of MDR-TB or XDR-TB. In addition, according to current WHO guidelines for the diagnosis of extra-pulmonary tissue samples, conventional diagnostic microbiology is currently still preferable to molecular biological testing. Last but not least, diagnostic microbiology remains indispensable as part of the follow-up of MDR-TB and XDR-TB cases already diagnosed (monthly cultures throughout the entire treatment period).

To calculate the need for culture laboratories, the WHO has now dispensed with the calculation methodology recommended at the time of the programme appraisal, which was based on population figures (one quality-assured cultural laboratory per 5 million inhabitants). Current WHO recommendations are based on the number of diagnosed MDR-TB and XDR-TB cases in the country. With an estimated 5,800 MDR-TB cases in Uzbekistan (2015<sup>2</sup>), the figure of five culture laboratories funded under the project is still considered reasonable, or even falls short of the need.

The high priority given by the Uzbek government to tuberculosis control as part of the national health strategy framework was demonstrated by the high counterpart contribution of EUR 10.7 million for new construction and renovation measures at participating TB facilities. The special significance of diagnostic microbiology is also reflected in the concept of the national TB control programme, which routinely provides for the use of diagnostic cultures as part of the standardised diagnostic algorithm.

In addition to the bilateral programme measures, transnational deficits in TB control across Central Asia (including the consistent implementation of the DOTS strategy, MDR-TB difficulties, and the implementation of TB control programmes in prisons) were addressed through a regional B+A Training component (Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan). At the request of the governments involved, the B+A Training component was implemented by the WHO as an internationally recognised opinion leader on TB. The discussions with officials from Uzbekistan's health sector conducted as part of the evaluation confirm that international conferences and training on topics of TB control that are highly relevant across Central Asia as well as important professional exchanges between public health workers and those involved in the TB control programmes implemented in prisons were promoted.

---

<sup>1</sup> The use of molecular line probe assays for the detection of resistance to second-line anti-tuberculosis drugs: Policy guidance. WHO/HTM/TB/2016.07.

<sup>2</sup> Source: WHO TB Country Profile Uzbekistan 2015.

The programme objective is in line with Millennium Development Goal 6 (MDG 6, combat HIV/AIDS, malaria, and other diseases). Today, tuberculosis control remains a high global priority as expressed in target 3.3 of the SDGs.

**Relevance rating: 1**

### Effectiveness

The programme objective (outcome) as defined at the programme appraisal was to improve the diagnosis and treatment of different forms of TB. The following indicators were selected at the programme appraisal (PA) to measure the achievement of programme objectives: (1) Increase the DOTS case detection rate and (2) improve the DOTS treatment success rate.

From today's perspective, the programme objective and indicators continue to be considered adequate for the measurement of programme effectiveness. Improved diagnostics through the expansion of regional culture laboratories and the support of the NRL contribute to improved case detection and – thanks to the NRL's ability to test for drug susceptibility (DST) – to the correct identification of MDR-TB.

The attainment of the programme objectives defined during the appraisal can be summarised as follows:

Indicator	Status PA, Target value PA	Ex post evaluation
(1) Case detection rate	35% (2003), 60%	68% (2015) <sup>3</sup>
(2) Treatment success rate	81% (2003), 80%	87% (2014) <sup>1</sup>
(3) Number of diagnosed and treated MDR-TB cases	464 (2009)	2,647 (2013)

**Indicator 1:** The case detection rate is significantly above the target value at 68%. There is a direct causal results chain from the establishment and expansion of diagnostic capacities to improved case detection in Uzbekistan.

**Indicator 2:** The treatment success rate target value for new smear-positive cases was set at 80% at the time of the PA, in line with the standard used by the WHO at the time. The target value was actually slightly exceeded during the PA with a rate of 81% and had improved further to 87% by 2014, indicating a further improvement in patient care. The NRL and the upstream regional culture laboratories make a causal contribution here, in that the NRL ensures the identification of the type of drug resistance (using DST) based on the cultures grown in the culture laboratories, thus helping to ensure correct treatment. This is of great importance for the containment of MDR-TB in particular. It has been shown that treating MDR-TB cases with first-line drugs, or with the wrong choice of second-line drugs, encourages the development of extensively drug-resistant TB (known as XDR-TB).

**Indicator 3:** Due to the serious MDR-TB problem in Uzbekistan and given the programme's focus on the promotion of diagnostic microbiology, the number of diagnosed and treated MDR-TB cases was also used as an indicator at the EPE to assess the programme's effectiveness. The number of diagnosed and treated MDR-TB cases increased significantly from 464 (2009) to 2,647 (2013) during the programme implementation period.<sup>1</sup> The programme thus made a significant contribution to improving the diagnosis of MDR-TB cases through the use of diagnostic microbiology. Nevertheless, this figure represents less than 50% of the estimated total number of MDR-TB cases in Uzbekistan, which stood at 5,800 in 2015.<sup>4</sup>

The effectiveness of improving X-ray diagnostics by replacing obsolete machines at six diagnostic centres was rated as very good by all clinicians surveyed during the on-site evaluation as well as by the WHO.

<sup>3</sup> Source: WHO TB database, last accessed 29 September 2017

<sup>4</sup> Source: WHO TB Country Profile Uzbekistan 2015

This effectiveness was reflected only to a limited extent in the national statistics published by the WHO however, and the share of pulmonary and extra-pulmonary cases diagnosed using X-ray methods remained largely constant during the implementation period.

Discussions with officials from Uzbekistan's health sector and the WHO confirmed that conferences financed as part of the B+A Training component enabled the important transfer of knowledge between TB professionals from the four participating countries and served to improve monitoring of the national TB control programmes. It was also confirmed that the funded measures (including specialist seminars on TB and MDR-TB in prisons, TB information materials for doctors, and TB leaflets) have resulted in prisons becoming more involved in the national TB control programmes.

**Effectiveness rating: 2**

### Efficiency

The programme duration was appropriate. The Implementation Consultant began working in March 2007. The delivery of laboratory equipment for the NRL in Tashkent and of the X-ray equipment took place within a reasonable time-frame (2008/09). A new tendering procedure for the provision of laboratory equipment to the five culture laboratories at oblast level had to be launched twice (installation ultimately took place in 2010/11), which resulted in the actual programme duration being extended from 36 months to 50 months. This was mainly due to external factors. The provision of equipment to the regional culture laboratories was significantly delayed as a result, but remained highly relevant at the time of delivery. The final inspection took place in December 2013.

Sampling during the evaluation found that the FC-financed equipment is used as intended as part of the national diagnostic algorithm and that the laboratory capacities newly created under the programme are well utilised. In addition to modern molecular biological tests (e.g. GeneXpert and Hain diagnostic tests), FC-financed diagnostic cultures are still routinely carried out for all newly diagnosed cases. This is in line with current WHO recommendations<sup>5</sup>, and the allocation efficiency can therefore be rated as good.

The storage of consumables was found to be adequate in all TB laboratories visited; consumables and TB drugs were available in sufficient quantities at the facilities visited and are financed through the Global Fund or the Uzbek Ministry of Health. The condition of the inspected FC-financed equipment was good to very good in the majority of cases.

The total cost of the FC programme, which totalled EUR 2.41 million, was slightly higher than estimated at the programme appraisal (EUR 2.30 million) and is considered appropriate, particularly against the background of the mostly international tendering process.

**Efficiency rating: 2**

### Impact

The overarching developmental objective was to help break the chain of TB infection, thus contributing towards achieving Millennium Development Goal 6 (combat HIV/AIDS, malaria, and other diseases). The TB incidence and TB mortality rates were selected as indicators. It was stipulated at the programme appraisal that the ultimate objective would count as achieved when a reduction in the TB incidence and mortality rates was recorded. The selected indicators are also suitable for estimating the overarching developmental impact ex post, even if no clear causal association can be made between the changes and the measures under evaluation due to numerous influencing factors.

Based on the latest WHO figures, the overarching developmental objective was achieved. The targets, which included a reduction in the TB incidence rate from 120 / 100,000 inhabitants at the time of the appraisal (2005) to 79 / 100,000 (2015) and a reduction in the TB mortality rate from 14 / 100,000 (2005) to 8.8 / 100,000 (2015)<sup>6</sup> inhabitants, were achieved for both indicators.

---

<sup>5</sup> The use of molecular line probe assays for the detection of resistance to second-line anti-tuberculosis drugs: Policy guidance. WHO/HTM/TB/2016.07.

<sup>6</sup> Source: WHO TB Country Profile Uzbekistan 2015



Indicator	Status PA, Target value PA	Ex post evaluation
TB incidence rate	120 / 100,000 <sup>7</sup> (2005), reduction	79 / 100,000 <sup>8</sup> (2015)
TB mortality rate	14 / 100,000 <sup>9</sup> (2005), reduction	8.8 / 100,000 <sup>10</sup> (2015)

During the EPE, additional impacts became clear that are noteworthy in the context of the fight against TB in Uzbekistan. The project enabled the nationwide expansion of diagnostic microbiology, and thus introduced the diagnostic algorithm standardised under the national TB programme across the board. The programme was therefore of structural importance for the MDR-TB diagnostic model still used today for all newly diagnosed TB cases in Uzbekistan.

In addition, the promoted diagnostic microbiology enables the diagnosis of XDR-TB cases that cannot be fully covered by modern molecular biology testing methods (such as GeneXpert, Hain), but which are particularly serious and widespread in the Uzbek context. The project has thus achieved more far-reaching effects than was originally intended.

Furthermore, the TB facilities renovated using the substantial Uzbek counterpart contribution (hospitals, hospital premises, laboratories) help to enable tuberculosis patients to be treated in a welcoming, modern environment. Patients who were previously treated and isolated in sometimes bleak facilities now receive efficient treatment in a modern, welcoming hospital setting.

**Impact rating: 1**

### Sustainability

The programme has helped to establish diagnostic microbiology nationwide as part of the national TB diagnostic algorithm, which continues to be routinely used for all newly diagnosed TB cases even beyond the programme implementation. With its increased focus on the diagnosis of resistant forms of TB, the programme has also taken into account lessons learned from previous phases (TB I-III) and epidemiological developments in the country.

During the visit to the NRL Tashkent as part of the EPE, it was discovered that the reference laboratory's ventilation system has been out of operation for 3.5 years, and therefore the safe operation of the laboratory is not guaranteed. This represents a significant health risk for those working in the laboratory (this was made clear to the MoH). According to the WHO and the Global Fund, there are plans to use savings from the Global Fund programme to replace the NRL's ventilation system. A corresponding request was submitted to the MoH. Due to several changes of Minister of Health and Deputy Minister of Health since the end of 2016, the MoH's feedback on this request is still pending.

The maintenance of the installed equipment was intended as a counterpart contribution from the Uzbek side at the time of the programme appraisal and was to be carried out by an Uzbek company under the responsibility of the MoH. In order to strengthen the capacities of this company, additional training measures were to be carried out for its staff and sufficient funding made available for this purpose (Uzbek counterpart contribution). During the on-site EPE spot checks, it was found that most of the FC-financed equipment was functional even after the programme implementation had been completed. However, according to the Consultant's final report, the quality of the maintenance work carried out is not sufficient to ensure the sustainable use of the FC-financed equipment in the medium and long term. This assessment was also confirmed by the laboratory staff at the facilities visited. In an exchange with the MoH, therefore, the need for sustainable and high-quality maintenance of the purchased equipment was emphasised.

The lack of a stable supply of electricity in the laboratory in Samarkand, which was further expanded to a BSL-3 biosafety laboratory as part of the follow-up project TB V, poses a risk to the sustainable operation

<sup>7</sup>Source: WHO TB database, last accessed 29 September 2017

<sup>8</sup> Source: WHO TB database, last accessed 29 September 2017

<sup>9</sup> Source: WHO TB database, last accessed 29 September 2017

<sup>10</sup> Source: WHO TB database, last accessed 29 September 2017

of this laboratory as well as to equipment financed under Phase IV but which is not currently in use. A solution is being worked on jointly with the Uzbek government under the framework of the TB V programme.

A continuous supply of laboratory consumables (funded by Global Fund), and of first and second-line drugs, was ensured at the facilities visited. It is positive to note that the procurement of first-line drugs and, to a lesser extent, second-line drug financing have recently been taken over by the Uzbek government, which has successfully reduced its dependency on donors.

Overall, the current sustainability of the programme is rated as satisfactory, however this rating could be improved upon if the challenges mentioned are tackled in a timely manner.

**Sustainability rating: 3**

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

Projects 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:

<b>Level 1</b>	Very good result that clearly exceeds expectations
<b>Level 2</b>	Good result, fully in line with expectations and without any significant shortcomings
<b>Level 3</b>	Satisfactory result – project falls short of expectations but the positive results dominate
<b>Level 4</b>	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
<b>Level 5</b>	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
<b>Level 6</b>	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).