

EXTERNAL EVALUATION – SHORT REPORT

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Strengthening Metrology and Quality Infrastructure in Bosnia and Herzegovina



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Project number: 2012.2296.7
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Executing agency: Physikalisch-Technische Bundesanstalt (PTB)
Implementing partner: Ministarstvo vanjske trgovine i ekonomskih odnosa Bosne i Hercegovine / Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MoFTER)
Institut za mjeriteljstvo Bosne i Hercegovine / Institute of Metrology of Bosnia and Herzegovina (IMBiH)
PTB | Working group: Q.51 Europe and the CIS
PTB | Project coordinator: Stefan Wallerath
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This is an independent evaluation. The contents represent the view of the evaluator and cannot be taken to reflect the views of PTB.

List of abbreviations

ANNT	Agencija za nadzor nad tržištem Bosne i Hercegovine / Market Surveillance Agency of Bosnia and Herzegovina
BAS	Institut za standardizaciju Bosne i Hercegovine / National Standardization Body of BiH
BATA	Institut za akreditiranje Bosne i Hercegovine / National Accreditation Body of BiH
BiH	Bosna i Hercegovinae / Bosnia and Herzegovina
BIPM	Bureau International des Poids et Mesures
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung / Federal Ministry of Economic Cooperation and Development, Germany
CIPM	Comité International des Poids et Mesures
CMC	Calibration and Measurement Capabilities
CW	CapacityWORKS
DAC	Development Assistance Committee
DAkKS	Deutsche Akkreditierungsstelle GmbH / National Accreditation Body of the Federal Republic of Germany)
DeGEval	Gesellschaft für Evaluation e.V. / Evaluation Society
EU	European Union
IFC	International Finance Corporation
iSTE	International short-term expert
EMPIR	European metrology programme for innovation and research
MiC	Metrology in Chemistry
OECD	Organisation for Economic Co-operation and Development
PTB	Physikalisch-Technische Bundesanstalt
QI	Quality Infrastructure
RS	Republika Srpska
SME	Small and Medium-Sized Enterprises
ToT	Training-of-Trainers

1. Project Description

The project 'Strengthening Metrology and Quality Infrastructure in Bosnia and Herzegovina' seeks to improve the local availability of metrology and calibration services, based on international good practices and demand in BiH; and to improve the national QI system through a coordination mechanism, and to be documented in the form of a strategic document or sectoral approach. The project has a budget of up to EUR 500,000. Instruments applied for the interventions are mainly short-term expert assignments, trainings and procurement of equipment. The implementation period of the project is from 01 / 2015 until 12 / 2017, whereas the evaluation covers the period until 10 / 2017.

2. Assessment of the project

The analysis based on the OECD-DAC criteria shows that the project achieved positive ratings across all criteria. Efficiency is rated with highest marks. Owing to this number of points (2.0), the project is given an overall rating of "successful".

1. Relevance	2
2. Effectiveness	2
3. Impact	3
4. Efficiency	1
5. Sustainability	2

Overall rating	2,0
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2.1 Status of the change process

This chapter applies the five OECD DAC criteria: relevance, effectiveness, impact, efficiency and sustainability.

Relevance

As outlined in the BMZ proposal, the core problem of the not fully functional BiH Quality Infrastructure (QI) is multi-faceted and detailed problems are stated such as a lack of a QI sector strategy, lack of coordinating mechanisms and lack of locally available and internationally recognized metrology and calibration services. This manifests itself, among other aspects, in an insufficiently coordinated political will to clarify strategic QI issues, a low competitiveness of BiH products and a low level of consumer protection from erroneous measurements and products.

The target group of the project consists of consumers, producers, traders and laboratories, that request national level QI services. Intermediaries are staff of state and non-state QI institutions, especially testing and calibration laboratories.

Interviewees ranked the relevance of the project outputs for their work with highest marks. Across the board, the practical knowledge and external opinions brought in by PTB experts were much appreciated.

In developmental perspective, improved QI is important for the target groups of consumers and producers. However, in BiH it appears to be not on top of the relevance scale and finds itself among more

predominant items that have a relevance for competitiveness of companies and safety of consumers such as rule of law, financing and education.

Though a joint national strategy on QI is highly relevant for BiH, it was low on the project agenda due to political risks. In the evaluators' point of view the project's decision not to put too much effort into the development of the QI strategy proved to be right as the main difficulties for a joint strategy, the missing harmonization and cooperation between entity and state level, were not solved, and the participants from RS withdrew from this work stream. New windows of opportunities may emerge with the increasing demand for domestic harmonization vis-a-vis the situation as a potential EU candidate country. BiH companies are facing increasing competition, and in general the cost of compliance with EU regulations is higher in BiH than for EU companies. For instance, fresh fruits and vegetables can only be tested domestically for 50 residues, but for EU markets testing for 250 residues would need to be provided; regional approaches can make sense to reach economies of scale, but for common products like cement, which cannot be tested in BiH, but in Croatia, sufficient domestic capabilities would be needed.

- The relevance criterion is given the rating "successful".

Effectiveness

All indicators are achievable until the end of the project.

At the time of evaluation, the fulfillment of indicator #1 stood at 100 percent. The target value of five internationally recognized laboratories is reached, covering beyond mass and precious metals, the laboratories for temperature, time & frequency and the electricity. Indicator #2 is currently at 70 percent. Three out of five laboratories are likely to increase the number of annually performed calibrations by at least 50 percent. Indicator #3 measures the availability of at least two additional measurands with regards to the interlaboratory comparisons for national calibration laboratories. Plans have been made by which this indicator can be fulfilled in time.

According to the interviews, the project's activities were well prepared and implemented to the highest degree of proficiency. The project is mandated with the CRS code 33110 (Trade policy and administrative management) and an additional marker on 'participative development and good governance'. The project is found to be coined, quite significantly towards trade and development (Aid for Trade). By improving the metrological traceability small and medium-sized enterprises shall be given an opportunity to enhance the quality of products and manufacturing processes and thus their competitiveness. In addition, the risk shall be minimized that the consumer suffers from erroneous measurements and products that create hazards for health and safety. The development of a realistic and nationally coordinated sector approach for the development of the BiH QI is geared towards increased competitiveness with the European single and international markets and additionally to provide a signaling effect for inter-institutional cooperation in other sectors.

The key characteristic of this evaluation is to analyze the contribution of the project to improve a demand-driven metrology service infrastructure in BiH. On outcome level the objective of the project is that selected metrology services in BiH are offered in line with international best practices and utilized by a growing number of customers. The link from project intervention to utilization of results by a growing number of metrology customers is in a nascent stage. A first customer survey was conducted by IMBiH recently.

The evaluators have scored the set of three (3) project indicators (on outcome level) using the common SMART approach: Are the indicators specific, measurable, achievable, relevant and time-bound? The following table summarizes the results:

(0 = deficient indicator, needs adjustment; 1 = minor issue; 2 = adequate indicator)

Indicator	Fulfillment	Score	Comment / Clarification needed
<p>(1) The services of at least 3 additional laboratories are internationally recognized (ISO 17025 accredited or have CMC entries in BIPM database)</p> <p>Baseline value: 2 (2014) (mass, precious metals)</p> <p>Target value: 5 (2017)</p>	100%	2	<p>Currently at 5 Labs, covering beyond mass and precious metals, the laboratories for temperature, time & frequency and the electrical lab.</p> <p>The target value of 5 internationally recognized laboratories indicates the trajectory of the overall development, but no economic or technical metrics could be identified from which to derive this target value. No stakeholder raised objections to the meaning of this target value.</p>
<p>(2) At least 3 selected laboratories have increased the number of annually performed calibrations by at least 50%. (out of pressure, electrical, T&F, temperature, humidity)</p> <p>Baseline value: 7/17/1/9/1 (2015)</p> <p>Target value: v/w/x/y/z + 50 % (2017)</p>	70%	2	<p>48 (pressure), 21 (electrical), 4 (T&F), 11 (temperature), 4 (humidity).</p> <p>See comment on indicator 1 regarding target value which applies here, too.</p>
<p>(3) Interlaboratory comparisons for national calibration laboratories are available in at least 2 additional measurands.</p> <p>Baseline value: 1 (2014)</p> <p>Target value: 3 (2017)</p>	50%	2	<p>1 is reached for precious metals, 1 additional for NAWI. Weights and temperature is planned.</p> <p>See comment on indicator 1 regarding target value which applies here, too.</p>

All three indicators on outcome level measure change processes in metrology, to which the project is designed to contribute, but no indicator was applied with regards to the development of the national QI system, e.g. coordination and strategy of output 4. The PTB project coordinator, MoFTER and IMBiH have taken the decision to focus on metrology due to the high risk of a lack of political will to achieve coordination of the QI system at national level.

Unintended negative results have not been discovered by the evaluation.

- The effectiveness criterion is given the rating “successful”.

Impact

The project has built mainly human capacities and focused on outputs in the field of metrology. Interviewees stated as the biggest change the new IMBiH service orientation with a view to reach end users. Arguably, the regional approach (not measured) of training and coordination of capabilities on technical level within the Balkan region reaches impact level.

For broad, sector-wide impact the project outputs would have needed to connect with QI change processes beyond metrology. Efforts were made with the QI strategy retreat at Mt Vlačić, which brought together all key stakeholders in a unique way, but despite PTB's inclusive approach to no avail. The years since 2012 are widely perceived by partners as "lost years" for the QI sector (and beyond). The state level adaption of EU directives stalled. Still, the Council of Metrology is not existing. Recent positive signals for reform and modernization stem from the establishment of the Council of Standardization, and that a framework transport strategy and environmental protection strategy were agreed between BiH interest groups. The initial decision, to place the "QI-strategy issue" due to the high risks associated onto the output level only, proved to be realistic and appropriate. Whilst the impact to the users of metrology services is high, the project had no impact on QI change processes beyond metrology.

- The impact criterion is given the rating "rather successful".

Efficiency

In the assessment of all stakeholders interviewed, the project was given top marks for efficiency. The planning and implementation is in compliance with schedules.

It was remarked by interviewees, that PTB has been actively involving expertise from the region and not found to be pushing BiH institutions to send equipment to PTB laboratories or tie funds directly to procurement from German sources. The project has the reputation to fund the indispensable equipment and to engage trainers according to expertise fit for the situation, e.g. from LMK Slovenia and Greece or to send staff to Croatia for training.

Partially, a parallel document management and duplication of reporting processes was found by the evaluators.

In terms of the mode of delivery the project invests the funds mostly in human capacity development, which includes advisory services to partners, such as technical trainings, seminars, inter-laboratory comparisons, awareness-raising measures, development of planning and monitoring instruments.

According to files, 53% of the project funds were allocated (until 06/2017) to the output areas of metrology, and 6 % to the output area of QI strategy.

- The efficiency criterion is given the rating "very successful".

Sustainability

The key counterpart IMBiH is increasingly geared towards customer orientation, e.g. customer survey and customer visits were introduced during this project. However, according to all interviewees the customers are perceived to use metrology services because of mandatory requirements, not to seek voluntarily innovation or increase competitiveness. This mindset of customers is probably the biggest detriment to deep and broad systemic QI changes and thus to the sustainability of this project.

With regards to the staff and institution of IMBiH, the project contributed to change in the BiH metrology system that runs a good chance to be durable beyond the time span of the project mandate. The staff is

permanent, and the institute could avoid a negative trajectory of a “brain-drain”. The interviewees have been trained in the use of their own equipment which has or will lead to maintaining calibration and measurement capabilities (CMC), and has developed a mindset of customer-orientation. Previously donated equipment from third parties was put to use, and thus leveraged the funds provided by German Government.

The institute came up with new proposals for reform and modernization activities by end of 2016, and suggests continuing with the same scope, but to widen and deepen the range of services (e.g. pressure not yet submitted for CMC). As perceived by interviewees, strong leadership in the IMBiH and devoted staff have pushed this institution further ahead. However, recent changes are predominantly internal, with yet little prospects of changes in the inter-institutional setting and cooperation, and further QI institutions, such as accreditation, standardization and market surveillance show achieved and intended internal progresses and sound institutional planning as well. It applies for all levels – national and entity – that beyond metrology support for further QI pillars, such as accreditation, would play a meaningful role to achieve systemic improvements. The accreditation body BATA has agreed on a mid-term work plan (2018-2020) and submitted a list of 11 proposed activities to the project.

The budget of the project EUR 500,000 is in balance with the BiH budget line allocated for IMBiH for investments and which amounts to EUR 150,000 per year. The big-ticket item for modernization and a leap in sustainability that would extend to all relevant QI institutions is related to BiH as a potential EU candidate country, and the release of funds once the lack of a QI sector strategy will be overcome and the EU conditionality on that issue will be met.

PTB has sought to harmonize activities and realize synergies with PTB programs and those of third parties in the metrology and broader QI systems.

- The sustainability criterion is given the rating “successful”.

2.2 Success factors for the observed results and change processes

This chapter deals with the analysis of project management factors, i.e. the five CapacityWORKS (CW) success factors.

Strategy

The steering group judged the project strategy as being in line with the BiH development strategy, especially with a view to the EU integration. The project objective and indicators were seen to fit well into this strategy. In the activity fields of metrology, every goal was achieved, though only limited improvements in the other QI fields were made. The steering group made comments that the QI pillar of standardization is advancing, but progress in accreditation is slow. They supposed that market surveillance activities would have a high impact, and emphasized that the projects activities were closely coordinated with other projects in the sector.

The evaluators observed a lack of documentation of strategic considerations. For example, mapping of stakeholder and a Theory of Change could have made the project’s approach and work explicit and could have facilitated higher self-awareness and progress of stakeholders. Furthermore, a capacity building strategy which would need to address all three levels (sector, institutional and individual level) by definition was not defined. Activities were mainly focused on the individual level and have built human capacities in metrology institutions. Thus, institutional improvements took place around the introduction and

deepening of international quality management processes, exemplified for instance in the new CMC entries in the BIPM database.

Cooperation

The members of the steering group respect each other highly and are very content with their trustful relationship. IMBiH appreciated especially the joint planning and implementation of the project based on IMBiH needs.

Cooperation opportunities and synergies with similar initiatives from other donors were explored, but the conditionality of the EU regarding the lack of BiH QI strategy brought along that no window of opportunity could arise throughout the implementation period to involve funding from the EU.

Cooperation with other countries in the region was seen by the evaluators as highly beneficial. On the one hand, trainings in Croatia or Serbia or support from these countries or a PTB trainer from LMK Slovenia provided insights on how different elements of QI can be implemented. On the other hand, offering calibration services for less advanced countries like Albania or Kosovo in terms of QI development also strengthened the role and capacities of IMBiH. The steering team agreed that the cooperation between the BiH institutions (entity level and national level) did not reach a sufficient leverage. Only once all stakeholders were brought together in the project for drafting a QI strategy (Mt Vlašić retreat), but after RS withdrew officially at that point in time no follow-up activities were organized because of lack of options.

IMBiH's role in the project was perceived by some non-IMBiH interviewees as not entirely conducive to efforts to reach out to the entities, given that playing from the strong position, frictions broke open in the system (e.g. draft QI strategy).

In case the project had reiterated outreach activities to further QI institutions, it would have been advisable – but hard to implement due to lack of BiH countersigning of the project agreement – to define cooperation partners and the steering group transparently and formally.

Steering structure

The project is steered by an informal, but stable core group of PTB and IMBiH. The group operated smoothly to take joint decisions. The partners including the MoFTER felt included in all relevant decisions, which were either taken during the short-term visits of PTB's project coordinator or by email and telephone. The activities were implemented as agreed. Monitoring data was regularly retrieved by the project coordinator from the set of monitoring documents to file reports to the German Ministry (BMZ) and documented in different monitoring tables. IMBiH used the same and similar files to fulfill reporting requirement on BiH side. The RS withdrew officially after an initial workshop on the activity field of the drafting of strategic QI document on national level, but kept engaged in working level trainings, procurement of equipment and with high-ranking participation in the evaluation workshop.

The evaluators found that duplication of monitoring streams on planning and implementation of trainings could have been avoided between PTB and IMBiH. But still, all partners were content with the way the monitoring and – based on the data – the decision-making and steering worked out.

In principle, a formalized and broader steering structure could have strengthened relationships and built trust, ownership and commitment beyond the IMBiH, thus contributing to a higher leverage of the project to systemic results and to reach a broader change in the QI system. Since BiH opted not to countersign the project agreement, this path to involve stakeholders beyond the IMBiH would have been probably too hard to be managed without a permanent presence and given the rather limited budgetary means of the stand-alone project.

Processes

In accordance with the BMZ mandate, the project supports change processes in the following five fields:

- 1) An increased number of IMBiH laboratories works with recognized QM systems.
- 2) IMBiH disposes of a regularly updated customer database.
- 3) IMBiH is actively promoting and presenting its services to potential customers.
- 4) A draft QI strategic document has been jointly prepared by QI institutions at state and entity level under the auspices of MOFTER.
- 5) Entity Metrology Offices dispose of qualified prepackage inspectors.

Sector-wide processes concerning all QI institutions have not been moving substantially for many years. This affected progress on output four to draft a QI strategic document. By law, all EU directives must be transposed into national legislation, but this is not implemented thoroughly in the field of QI (and apparently in other fields of the economy) whenever diverging interests and dichotomies of state and entity levels emerge. Stakeholders hold the opinion that political steps are needed first.

It appears, that unprecedented leverage arises from the QI-related questions from the set of 3,500 questions of the 12/2016 EC accession questionnaire as BiH shall respond with one voice.

Pressure groups for business and consumer interests exist, and stakeholders of the PTB project are connected to those groups, however the foreign trade chamber or the consumer protection council are not yet in the position to play a meaningful role in QI to overcome political obstacles to sector-wide reform.

IMBiH is perceived as the most advanced QI institution in BiH by external interviewees. This situation of IMBiH in relation to other sector institutions is perceived to have been the case before the start of the project. The evaluators support the assessment of the project coordinator that imbalances regarding the readiness of QI institutions (on the same and different governmental levels) to achieve change, e.g. discrepancies of speeds, extent of institutional independence, commitments and capacities, have led the PTB project with its limited funds and leverage (compared to e.g. EU projects) to focus on IMBiH. The project steering team confirmed that the inhouse processes of IMBiH (like QM systems, processes for CMCs as well as technical skills) were strengthened by the project activities.

To a considerable extent, the project has procured equipment. Based on a selection of the highest value of the equipment as stated on the procurement list the evaluation selected four items from three partners and assessed how the following equipment has been put to use.

- IMBiH: The vacuum chamber (procured 2016-02-01) was not in use (roughly one and a half year after procurement), as the first piece did not meet the BiH needs and the reclamation process is still ongoing. This situation points to possibly a too complex procurement field and arrangement between the partners, where many working hours had to be invested on working level and by management staff to make arrangements between three parties and to sort out issues.
- Humidity and temperature sensors incl. DAKKS calibration (procured 2015-10-01) are in use.
- RS Metrology Office: equipment for prepackage control (software, notebook, printer, balance, weights accessories) (procured 2015-10-01) is in use.
- Federation BiH Metrology Office: equipment for prepackage control (software, notebook, printer, balance, weights accessories) (procured 2015-10-01) is in use according to documentation().

The evaluators did not find the reform processes in the QI sector clearly defined. With regards to the scope of the project, a process landscape could be very useful to discuss and select the processes that

need to be focused on to reach the goals for better QI, which goes beyond the interaction and well-defined processes with IMBiH.

Learning and innovation

Project activities are well documented in expert and mission reports, and key information can be found in the project management files.

In interviews, plenty of examples were given of informal learning by exchange with inhouse colleagues as well as with other organizations in training on technical skills, on quality management as well as on how to prepare CMCs. Knowledge was apparently disseminated in IMBiH and in further institutions that received training.

Learning took place with partners outside BiH: IMBiH helped Moldova to become part of the metrology networks EURAMET and WELMEC. IMBiH also shared experiences of its involvements in the European Metrology Programme for Innovation and Research (EMPIR) with Moldova and Montenegro. Both countries used this information to apply for EMPIR projects. In addition, IMBiH offered trainings for metrologists with experts from Slovenia.

New services of IMBiH were documented according to international standards. However, lessons learned were not systematically documented. Innovation systems were not explicitly identified and supported, but innovations took place. For example, the occasion of the World Metrology Day was used to increase awareness for QI issues in BiH, or IMBiH conducted a 3-month customer survey and is using the results regarding calibration services, training courses, interlaboratory comparisons and consultancy to adjust its services.

IMBiH staff mentioned in variations that in their view the biggest change in recent years had been the increase of confidence to use the new and modern laboratory equipment, to have higher self-confidence to conduct calibrations, but also having a better knowledge of the borders of what can be done and what not. These days, most staff would be brave enough to ask for advice and to find solutions jointly – with inhouse colleagues and external experts.

3. Learning processes and learning experience

- 1) The scope of the project is fine, until now. As the field of metrology is comparably well advanced, further pillars of a QI systems would need complementary strengthening in future.
- 2) In a challenging – if not since 2012 frozen – reform situation half a million EUR budget in a stand-alone is naturally very limited in its prospects to reach impact level, and should thus lead to adequate expectation management in the BMZ proposal, not least with regards to the target groups. At the time of the evaluation, the expectations of partners and German Embassy have been well informed and managed by the project staff.
- 3) Without permanent PTB presence in country, further donors, their political leverage and in-country presence are needed, such as EU and IFC, to fulfill the role of a lead donor when it comes to complex, interinstitutional transformation processes of QI strategy development. In the BiH context, PTB could provide technical expertise to strategy drafting, but strategy drafting not in a lead position.
- 4) Tools of CapacityWORKS could be very useful to discuss and select the processes that need to be focused on to reach the goals for better QI, such as a process landscape.

4. Recommendations

The 10 recommendations are provided in the table below and are categorized according to the CapacityWORKS factors:

Recommendation	Entity addressed
Strategy	
1) Define a narrative of the project (above activity level) that relates to the EU candidacy process and systemic uplifting the sectoral Quality Infrastructure (QI).	<ul style="list-style-type: none"> ▪ MoFTER ▪ IMBiH ▪ Entities ▪ PTB project coordinator
2) Identify leverage that arises from BiH as potential EU candidate country, e.g. what questions from the set of 3,500 from the 12/2016 EC accession questionnaire require better QI?	<ul style="list-style-type: none"> ▪ MoFTER ▪ IMBiH ▪ Entities ▪ PTB project coordinator
3) Conduct awareness raising activities for companies to identify and highlight QI benefits for BiH companies to use calibration and testing services. This goes beyond mandatory requirements to do so, but to foster innovation and competitiveness of the BiH economy.	<ul style="list-style-type: none"> ▪ IMBiH ▪ PTB project coordinator
Cooperation	
4) Involve partners that will allow BiH to be able to respond with “one voice” for the deadline in 11/2017 set by the Stabilization and Association Committee in 05/2017.	<ul style="list-style-type: none"> ▪ MoFTER ▪ IMBiH ▪ PTB project coordinator in coordination with EU and IFC
5) Realize cooperation with QI institutions beyond metrology, e.g. accreditation, in a new BMZ mandate. Refer to the BATA mid-term work plan 2018-2020, list of needs for trainings and workshops, e.g. medical lab, certification bodies.	<ul style="list-style-type: none"> ▪ PTB project coordinator ▪ BATA
Steering Structure	

<p>6) Establish a steering group (or tap in an existing one) that provides leverage for systemic uplifting of the BiH Quality Infrastructure (QI).</p>	<ul style="list-style-type: none"> ▪ PTB project coordinator ▪ MoFTER ▪ IMBiH
<p>Processes</p>	
<p>7) Ensure information exchange in digital ways by single document management for monitoring and filesharing.</p>	<ul style="list-style-type: none"> ▪ PTB project coordinator
<p>8) Consolidate the progress of the selected metrology services or terminate support by taking into account the list of IMBiH proposals 2018-2021, e.g. volumes, ionizing radiation.</p>	<ul style="list-style-type: none"> ▪ PTB project coordinator
<p>9) Encourage partners to do integrated QI pilots: Deepen and showcase sectoral cases for better QI for the BiH administration and the public, e.g. health (food safety, pharma and chemical products, medical labs).</p>	<ul style="list-style-type: none"> ▪ PTB project coordinator
<p>Learning and Innovation</p>	
<p>10) Document lessons learned (beyond activity and output level reports) and work on introducing disclosure as a standard procedure in order to make PTB experiences available for further QI stakeholders, i.e. BiH institutions and international partners.</p>	<ul style="list-style-type: none"> ▪ PTB project coordinator