„Support of regional cooperation between member states of the Regional Metrological Organisation COOMET“

Summary of the Evaluation Report

Project Data

Project No.:	BMZ-No. 2006.2039.3
PTB No.:	PTB-No.: 95250
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Period:	2007-12-0 1 – 2015-06-30
Evaluation Period:	2010-10-01 – 2014-12-31
PTB Working Group:	Q. 51
Project Coordinator:	Annette Kögler
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This report was elaborated by independent evaluators for the PTB. It reflects exclusively the evaluators' opinions and conclusions.

Project Description

Conditions and economic situation of the RMO COOMET:
COOMET as an association of National Metrological Institutions (NMIs) in Eastern Europe and Asia (and Cuba) was founded in June 1991 with the aim to support the NMIs of member countries in adapting new and internationally recognized working practices. Furthermore, COOMET should represent its NMIs on the same international level as other regional metrology organisations (RMOs) in Asia (APMP), Africa (AFRIMET), Europe (EURAMET) and Latin America (SIM).

The newly independent countries had to reorient themselves politically and economically. The previously direct dependence on the centralized Soviet system was overcome with the independence and the changes in Russia itself, but lacked the integration into global economic processes. COOMET member countries were members of the WTO and / or EU or obtained a special status as an EU partner. For these members grew not only political and trade opportunities and benefits, but also obligations. The RMO COOMET faced the task of ensuring cooperation between member countries on internationally accepted rules and practice, and to offer services to NMIs so that they can adapt their capacity to the changing demand.

At the beginning of the project COOMET had difficulties to fulfil its obligations in international cooperation in the field of metrology and to build up confidence in the services of its members. Cause of this was the low exchange of experience with other RMOs. An exchange between regional organisations and between NMIs within the RMO is necessary for building confidence in the services and also provides important impetus in the development of organisations. As a result of the low exchange, the evidence of service and product quality, and thus the participation in international trade, especially for small and medium-sized companies is considerably complicated.

The **overall goal of the PTB-Project** is: COOMET fulfils its obligations as RMO according to internationally recognized and proven methods. During the second phase of the project (12/2010 to 12/2014) the aims are mainly:

- Strengthen the COOMET organisation and the metrological service provision of its member states
- Improve the metrological measuring capabilities of the member states, and
- Continue the effort to fulfil the quality requirements in the metrological laboratories in accordance with ISO/IEC17025.

Approach of the project is an organisational- and system-developing advice with capacity building, in which the more advanced countries promote the development of metrology in less developed countries based on economic and technical requirements of the beneficiary countries.

Remark to the structure of the project:
One speciality of this project is that there is no direct political partner. The project doesn´t support individual members directly, but the COOMET network in its entirety.
Furthermore, PTB is on the one hand the implementing organisation of the project and on the other hand PTB has been an associated member of COOMET for more than 20 years and a number of its employees are directly involved in the organisational structure of COOMET.

During the field work the evaluators carried out about 60 interviews (sometimes repeatedly) with the heads and also staff of the involved NMIs. Furthermore with experts of PTB and international metrological organisations e. g. BIPM, OIML. In addition to the interviews the evaluators visited some institutions and labs.
The choice and number of participations in meetings (e. g. General assembly and TC meetings) as well as the duration of the stays were adequate to get an overview of the project and work of COOMET – a network of Regional Metrological Institutes - especially with regard to the estimation of the support from PTB.

Assessment of the project

Status of the change process
The current situation at the end of the project:
In the process of redesigning the QI systems in member countries COOMET has achieved significant progress in recent years through the project cooperation with PTB. COOMET as a RMO has been strengthened and their work is recognized not only by the member states, but also by international organisations.
The number of COOMET member countries has increased continuously in the last years and currently amounts to 20. Finally Turkey officially became status as an associate member during the 24th COOMET Committee Meeting on April 16th 2014 in Yekaterinburg.
COOMET is open to the National Metrology Institutions of countries from other regions to join it.
All member countries appraise a functioning QI as necessary and appropriate, to get access to international markets. However, the activities for implementing were done but with different intensity and also partially delayed.
Still, the fundamental differences between metrological control and voluntary calibration are not really internalized.
The service character of metrological work is hesitant understood and adopted as the orientation of the own work.

Out of the 20 full members or associates of COOMET 7 countries (2 BIPM member states, Russia and Kazakhstan, and 6 associates to the CGPM, Belarus, Cuba, Georgia, Republic of Moldova, Ukraine and Azerbaijan) participate in the CIPM MRA through COOMET structure. 5 COOMET member countries (Armenia, DRP Korea, Kirgizstan, Tajikistan, and Uzbekistan) have not yet become associates of the CGPM and therefore are also no signatories of the CIPM MRA.

Since the formulation of the goals of the PTB-project, further progress in regards of the change process has been achieved but this process is slow. Since 2010 none of the Euro-Asian COOMET members (Armenia, Kirgizstan, Tajikistan, and Uzbekistan) have become associate of the CGPM, so that they could sign the CIPM MRA. At least in the case of Armenia, Tajikistan and Uzbekistan (the technical auditor has visited the NMIs in 2013 or 2014 within the framework of his participation in other Q.5 projects) their metrological measuring capabilities have not yet reached a level sufficient for successful participation in the CIPM MRA. In several cases the smaller COOMET NMIs have achieved a significant improvement of their internationally recognized measurement capabilities:

Georgia: from no CMCs in 12/2010 to 9 CMCs in 9/2014; 6 participations in Key and Supplementary Comparisons since 12/2010; right to use CIPM MRA logo obtained on 03.06.2014

Kazakhstan: from 8 CMCs before 12/2010 to 29 CMCs in 9/2014; 16 participations in Key and Supplementary Comparisons since 12/2010; right to use CIPM MRA logo obtained on 13.04.2011

Republic of Moldova: from no CMCs in 12/2010 to 40 CMCs in 9/2014; 5 participations in Key and Supplementary Comparisons since 12/2010

A medium- and long-term challenge for the work of COOMET and its member countries are such facts as:

- difficulties in recruiting skilled metrologists, particularly from younger generations,
- the usually insufficient financial funding of the NMIs and their staff,
- new economic structures which slowly became visible and
- the partially very strong disparities in metrological capabilities between member countries

The project supports the RMO approach of completing the quality infrastructure of its member countries in the sense of a coordinated, internationally recognized system. Project interventions at macro and meso levels focusing on metrology combined with national quality policy follow the goal of introducing innovations that are in conformity with international standards.The support of COOMET structures and COOMET member NMIs participating in these structures is therefore seen by the evaluators as an important strategic initiative to support the success of the international metrology structures for reducing technical barriers to trade.

Causes and success factors for the observed results and change processes

Overview of results:

Effectiveness:

The evaluation of the project indicators evidences that the indicators 1 – 3 were fulfilled.

Indicator 1: At least two proven methods (calculation of measurement uncertainty according to GUM, implementation of QMS according to ISO/IEC 17025) are implemented by COOMET members

Measurement uncertainty according to GUM:
The method for calculating the measurement uncertainty was addressed in all seminars dependent on the measurands. The practical application was carried out in seminars, which were proceeding and finalizing the comparisons which were organised between SC 4.1 and the respective technical committee.
The implementation of the principle of calculating the measurement uncertainty according to GUM is still an important objective for many institutions within COOMET. The knowledge of the measurement uncertainty is the basis for the comparison and the mutual recognition of test results and an instrument for the systematic improvement of measuring systems.

The Quality Management System (QMS) according to ISO/IEC 17025:
Within the project a number of seminars and training activities, planned by TC 4 “Information and Training”, were carried out in the field of QM. In close coordination with the “Quality Forum” quality management training courses with theoretical and practical components were performed on an annual basis in the context of the relevant TC session. Further activities were e. g. the elaboration of procedures according to BIPM materials and auditor trainings. The number of available auditors for peer-review was increased but is still too low.

During the reporting period, the number of internationally recognized:

- NMIs including the designated institutes, working according to ISO/IEC 17025 raised from 21 (72,4 %) to 24 (80 %) and
- member countries raised from 11 (57,9 %) to 14 (70 %) [Georgia, Moldova and Turkey].

Some laboratories in different countries (Azerbaijan, Kyrgyzstan, and Uzbekistan) already work in accordance with ISO/IEC 17025 and GUM and prepare accreditations by internationally recognized accreditors or COOMET-peer review before.

Azerbaijan became an Associate of the CGPM on January 1, 2015 and has signed the CIPM MRA as a new member on January 28, 2015.

- **Indicator 1 was fulfilled to 80 %**. (24 member institutes out of 30 have fully implemented the calculation of measurement uncertainty according to GUM, and QMS according to ISO/IEC 17025)

Indicator 2: Elaboration and edition of at least 3 regional publications (reports, studies, flyers) per year in the field of metrology for improving the awareness of politics and economy.

Pavel Neyezhmakov (chairman of TC 4, vice president, responsible for information and training and former COOMET secretary) has worked out a basic presentation for members demonstrating the services and structure of the RMO. It can be used by all members.

Furthermore, he has presented the work and structure of the RMO COOMET in meetings of the JCRB, EURAMET, NCSLI and IMEKO. The ACTA IMEKO Bulletin has accepted and published an article from Pavel Neyezhmakov and Klaus-Dieter Sommer. Furthermore different COOMET-authors published and are currently publishing scientific articles in the magazine „Measurement techniques“.
In June 2013, it was published a conference volume with 23 presentations of participants of the 5th COOMET-Competition of Young Metrologists.

On the official websites “www.coomet.net” and “www.coomet.org” are published a lot of information about the work of COOMET and the field of metrology, which seem to be appropriate for improving the awareness of politics and economy.

- **Indicator 2 was fulfilled to 100 %**.

Indicator 3: All member states have participated in comparisons.

The COOMET member countries and thus their NMI have very different levels of development. For the advanced institutes of Russia, Ukraine and Belarus participation in regional and international comparisons is working routine. For the less developed NMIs the preparation, implementation and regularly completion of comparisons causes challenging tasks.

The project supports the initiation of comparisons with training character in order to qualify the inexperienced institutions and introduce them to that field of tasks.

All interested member countries can participate in the comparisons corresponding to their technical competence and in varying functions. Advanced countries are not only participants in comparisons. They often act as pilot laboratories or mentors and also provide lecturers for the accompanying seminars.

In the context of the evaluation it became clear that member countries such as e. g. Armenia or Tajikistan have not the capability (equipment, infrastructure and technical know-how) to participate fully in comparisons.

These member countries have participated according to their capabilities and attended tests and have gained experience, e. g. those relating to customs formalities when sending instruments.

Taking into account the participation of both countries in comparisons as observers as an internship, the indicator has been fulfilled.

- **Indicator 3 was fulfilled to 100 %.**

Impact:
The PTB project has a significant positive impact on the work of COOMET as a RMO within the CIPM MRA. The support of COOMET through PTB is well known by the international metrological community and is highly valued.

The equal involvement of participants from all member countries in events has led to a strengthening of self-confidence of the less developed countries. The discussions have become more open, problems are addressed directly and solutions proposed. The Competition of young metrologists only in English language may be mentioned as an example for enforcement of an innovation against opposition.

Workshops with practical application of theoretical input have led to a deeper understanding of new metrology methods of work and a greater engagement of participants. Learning processes have been initiated or accelerated. The training of the technical staff of the NMIs through the participation in technical seminars allows smaller NMIs to reach the capability for participation in intercomparisons in shorter time.

The exchange of experience between the NMIs and the representatives of other international organisations has fostered processes of change in the participating institutions.
Better trained staff and access to improved services enable export improvements. The result of enhanced capability of NMIs is an improved competitiveness through improved measurement accuracy. This helps also to enable improvement of production process or better quality control.

A number of COOMET countries has not yet completed the change from the Soviet legal metrology control system based on registration of measuring instruments and follow up verifications to a system of calibrations (with stated uncertainties), several countries not even started this process. This general conclusion can be drawn from the performed interviews and discussions. Azerbaijan became an Associate of the CGPM on January 1, 2015 and has signed the CIPM MRA as a new member on January 28, 2015.

The process to participate in intercomparisons could be accelerated if the top level management of the NMIs would support in a stronger way the change from the control based verification system to a modern calibration and verification system.

The intended positive effects of the project are the improved orientation of the industrial and legal metrology, which work according to international standards and cover the basic needs of SME, consumer protection and environmental protection.

The indirect long-term impact for several member countries mainly consists of contributing to create the requirements for the trade agreement with the EU (DCFTA). This leads to an equal participation in forming the international trade of service and goods and also contributes to the creation and preservation of jobs.

- **The effects that could be observed in the context of the evaluation are classified as “good”.**

Sustainability:
All interviewed member countries have expressed great concern about the continuation of these processes without PTB support. On the other hand, fears of changes within the particular country or changes of management within the corresponding NMI are relatively small or negligible. Thus, this is a good basis for the sustainability of these changes and reduces the risk of suspension of initiated processes.
A sustainable impact was achieved in training courses which have been developed and implemented in the framework of the project. They were partially integrated into planned comparisons. Most sustainable are the changes by participants. They will be able to use developed skills.

As some of the COOMET NMIs have not yet reached the level to participate in intercomparisons, the need for such technical seminars and for other means of support will continue to be strong. There will be a need to expand the seminar topics into other important technical areas when the NMIs are ready to address these fields.

The sustainability of the project results depends on the following main aspects:

- **Securing the financial sustainability and independence**
  A significant risk for this process is the relatively high turnover rate of technical staff in smaller NMIs. As in many cases the salaries of technical staff of NMIs cannot compete with salaries offered by industry, there is a permanent danger for the NMIs to lose qualified staff.

  Until now COOMET does not charge any contributions from its member countries. The funding of the Secretariat and particularly the implementation of joint training measures, which require user mobility, are difficult without project support. The issue of long-term financial security for the work of the RMO and the related necessary organisational adjustments have been discussed several times in the project framework, however, could not be elaborated within the project period.

- **Engagement of *new metrologists and activities for human resource development***

  In the COOMET member countries increasingly work again young scientists and employees who have learned English in their educational career. This generational change will result in a better communication, as in former times bad knowledge of English lead to a lack of information.

- **Working according to international practice, management competence and collaboration in international networks**

  Over the last few years, some changes were realized in the administration of COOMET work. Professionalism and content of the regular work of COOMET

correspond to the tasks and role of the RMO with regard to international standards better than at the beginning of the project.

In some member countries quality management systems were implemented and therefore the working processes were redesigned and also with support from other projects.

The international recognition of NMIs demands a participation in international organisations such as COOMET and participation in intercomparisons. This work costs money and sufficient funds have to be provided for this purpose even if there is no sponsoring by other donors.

- **Ownership**
  All involved partners of the project are engaged to reach the objectives of the project. For the enduring existence and successful work of COOMET it is important that the NMIs assume more self-responsibility in cooperation.

  ➢ **The DAC-criteria “Sustainability” in the context of the evaluation is classified as “good”.**

Relevance:
The successor states of the Soviet Union, which represent the majority of the COOMET members, especially the Central Asian and South Caucasian countries and Moldova, possessed an insufficient metrological base structure, because they were only outposts of a centralized system. Overcoming this imbalance makes an equal integration into international economic cycles still difficult. The comparability of measurement results and thus the certificates of conformity are not secured, and this results in significant competitive disadvantages. The development of a quality infrastructure for countries e. g. of the Eastern Partnership (such as: Ukraine, Georgia and Azerbaijan) in accordance with international standards is a basic requirement for the conclusion of relevant trade agreements and the beginning of negotiations on an Association Agreement with the EU.

The main objective of the project was focused on strengthening COOMET to be able to fulfil its obligations as RMO according to internationally recognized and proven methods. Implementing the internationally accepted methods in metrology is essential for ensuring uniformity and accuracy of measurements worldwide. At least it is necessary to reduce technical barriers to trade, but also ensuring uniformity in other areas such as ensuring of public safety, health and environment, etc..

The aim of the project corresponds to the action program of the German government creating fair trade opportunities and a gradual integration into the world market for transformation countries.
The project supports the development of the RMO. Project interventions at meso levels focusing on metrology combined with national quality policy follow the goal of introducing innovations that are in conformity with EU regulations and international standards. The (indirectly) intended improvements of merchandise traffic as well as customer-, environment-, occupational health and safety and sanitary protection are in line with the principles of the German development cooperation, which includes the encouragement of free merchandise

traffic and the protection of society against dangers due to inobservance of international accredited standards. The objective of QI structures is to protect customers from products of poor quality. The private sector also indirectly benefits from the project. Based on an improved QI, products can be produced conform to international standards and can be tested in situ which enables competitiveness on national and international markets. A decreasing rejection rate leads to reduced costs. Through making important QI services more easily accessible, the project fosters a more efficient working private sector and particularly the development of SME. This promotes employment, improves incomes and prevents from poverty.

The project also is in line with the German regional cooperation, to support the QI in countries located at Southern Caucasus. This policy is part of the European Neighbourhood Policy (ENP).

- **The DAC-criteria “Relevance” in the context of the evaluation is classified as very high.**

Efficiency:
In contrast to other projects, e. g. Twinning, the project is not provided with a long-time professional (RTA). Rather the project coordinator manages the transactions from Braunschweig. The current monitoring was performed by several trips of the project coordinator and the intermittent short-time expert. Furthermore, the ongoing monitoring was performed by the former COOMET Secretary and current Vice President, Pavel Neyezhmakov.

In logistical and organisational aspect the project benefited highly from the cooperation with other projects, e. g.: the Twinning project “Strengthening of the metrology and standardization infrastructure according to the best practices in the EU member states“ and the bilateral project “Support of the Quality Infrastructure in Georgia with special focus on Metrology”, and the Central Asia project “Support of the development of quality infrastructures in the countries of Central Asia with special regard to metrology and accreditation”, which promoted efficiency. In many cases synergy effects were achieved. The cooperation with programs of the EU was and is very good and is always taken into account in project planning and implementation.
For the project a documented financial monitoring on the level of activities was not demanded and does not exist in this detailed form.

For all new PTB projects from November 2013 on a financial monitoring was introduced to measure the efficiency, e.g. costs per activity (production efficiency) or input referring to achieved effect (efficiency of effects). For this purpose a financial monitoring shall give more precise answers.

Every respondent appreciated very precise work of the experts with excellent knowledge and very good organisation of activities (seminars, documentation …). The experts were very good selected for corresponding activities. As the most efficient activities were appreciated

the following ones: workshops, seminars and trainings. The most efficient results achieved by participants (for their work) during the project were as follows: an implemented and peer reviewed quality system, implemented new working procedures, introduction of uncertainty calculation in measurements, participation in intercomparisons.
Seminars and also meetings for project control in generally are held in conjunction with TC meetings. As a result, additional travel costs could be avoided, time was saved and the likelihood of seminar performance was increased.

The high level of expertise of the PTB experts used for short-term activities ensured a high level of efficiency in service provision.

The newly established interactive website “” uses the open source CMS software typo3. The establishment of the website with an e-learning platform was relatively cost-efficient.

Considering the long distances between the member states and the available usually very limited budgets of the NMIs, the new interactive website with the e-learning platform may enable an efficient way of knowledge transfer. However, this means a reduction in travel expenses, not a complete suspension of on-site training. Prerequisite for the realization of cost advantages is the systematic and complete provision of information and the active use of the contents. Another aspect is the existence of 2 websites (“www.coomet.org“ and “www.coomet.net“) which are still maintained in different ways. In the view of the evaluators a higher impact e.g. in the use, level of awareness (CI) and findability in the world wide web, no or at least less redundancies, would be achieved if only 1 website would be operated. The problem was already detected within COOMET and discussed several times, but should nevertheless be solved.

DAC evaluation criteria

(1) Criterion	(2) Rating for criterion	(3) Weighting for criterion	(4) = (2) x (3) Weighted criterion (automatic)
Relevance	1	2	2
Effectiveness	2	2	4
Impact	2	2	4
Efficiency	2	2	4
Sustainability	2	2	4

Average of the weighted criteria 1 - 5	**2**
If effectiveness, impact or sustainability are accorded a numerical rating of "4" or poorer, the overall rating will be downgraded to "4" even if the average is better than "4". Under exceptional circumstances, should the sustainability be less important (weighting "1", see assessment grid), the overall rating will not be downgraded.	No, the overall rating is not downgraded.
Overall rating of the project/programme:	**2**

Strategy:
The project has a clear vision of which impact it wants to achieve and which instruments shall be used therefore. The strategy was developed based on the following aspects:

- Securing the support of and by Russia, in particular scientific support for the development of metrological base structures in Central Asia and the Caucasian countries
- Acquisition of important supporters for the project such as Ukraine and Slovakia
- A project coordinator within COOMET-structure (Pavel Neyezhmakov)
- The participatory elaboration of project contents
- Obtaining acceptance of the NMI directors for project contents
- A close cooperation with the heads of TCs and SCs.

Some COOMET member countries obtained funding within the framework of bilateral projects of Technical Cooperation and in the context of EuropeAid or the World Bank. In parts of the Quality Infrastructure some NMIs are therefore able to use the acquired competencies to pass on the knowledge and a contributory role in the sense of the overall objective of the project.

The interim evaluation in 2010 recommended to include the field of legal metrology into the work of the project. After providing successful seminars an important result of the event in 2012 was the initiation of improved relations with the OIML.

The focus of the project on creating structures and mechanisms, which stick to international practice, should create confidence in measurement results and more transparency and should also work against corruption. In this context, measures of QI could support the development to “good governance”. A permanent exchange of information with the different donors was put into practice in order to be able to react in time.

Capacity development is an essential and integral part of the sustainable project strategy.
The COOMET project addresses two levels to strengthen the organisational capacity and expertise of the partner institution. It promotes in a holistic process the institutional capacity of COOMET, which includes both the secretariat and the organisation of technical committees and subcommittees. The aspect of capacity development is aimed at COOMET in particular to strengthen individual capabilities, which are important for the member countries and their NMIs to motivate and coordinate intended change processes.

With the decision to build up and finance the modern and interactive website www.coomet.net, based on open source CMS software and international practice some existing main problems in operating the previous system (bottleneck in operating, programmer-specific computer language - not widely used system) could be solved:
The webportal can be edited by a number of eligible personnel and the contents can be extended as needed. For data maintenance and organisation of access rights system administrators have been trained.

The project has succeeded in strengthening the necessary institutional capacity to achieve a positive result.

In the view of evaluators the project pursues an efficient strategy. The conducted seminars are highly appreciated by the participants and by the national metrology institutes. PTB as the responsible organisation has an excellent reputation, which is also the result of this and other executed projects.

Cooperation:
According to the coordinator of the project and the iKZE, the collaboration and the flow of information within the steering team (both coordinators, iKZE and short-time experts) was excellent and contributed to a quick reaction to changed situations. In this connection, the consulting team could establish a very good contact, e. g. to the COOMET President´s Council, other RMOs and organisations, as well as created a trustful atmosphere.

The cooperation with other projects and institutions was aimed at achieving synergies. There was a frequent and extensive exchange of information.

It is very important to cooperate with the Technical Committees and the COOMET President´s Council. In particular this applies to the TC 4 “Information and Training” where the Subcommittee SC 4.1 deals directly with the tasks of developing and improving the metrological infrastructure of the smaller COOMET countries. This SC has been created especially to integrate the project into the RMO.

The technical area specific seminars have to be planned in close cooperation with the chairpersons of the technical committees of the JCMS, TC 1.1 – TC 1.12. The technical co-evaluator participated in 3 seminars. What he saw and heard convinced him that the seminars are well planned and executed. There is a very high level of satisfaction expressed by the participants.

The positive results of the project are a consequence of a good networking within the organisational structure of COOMET and with other donors and international metrological organisations e. g. EURAMET the cooperation with the secretary, Mr. Schmid and an excellent expertise and empathy of the deployed local and international professionals.

Steering structure:
The project has no separate steering structure. The superordinate steering is ensured by meetings of the PTB project coordinator, the iKZE and one of the vice-presidents of COOMET, Pavel Neyezhmakov, who is the COOMET internal project coordinator. The meetings were often held directly after the meetings of TC 4.

Steering of individual project activities were successfully carried out in close cooperation of project experts with responsible persons for the organisation from COOMET member countries.

The monitoring results and the analysis of the iKZE-reports contain the essential information for consultations with the partners on how to proceed.

On the other hand the steering on the operational level is fully integrated in the COOMET technical committee structure.

In TC 4 “Information and Training” / SC 4.1 “Support in Developing Basic Metrological Infrastructure of COOMET Member Countries” (chairperson is the project coordinator) the contents of workshops and seminars are planned in close coordination with other TCs.

Also detailed operational plans were elaborated for project control. If necessary, these have been revised. The project refers to the monitoring of activities and performances, which is available at any time in a clearly arranged and updated form.

Processes:
The processes of performance took place on different levels:
Project interventions at macro and meso levels focusing on metrology combined with national quality policy follow the goal of introducing innovations that are in conformity with international standards.

The project follows a two-sided, mutually complementary approach.

Macro-level:
The main focus is on the RMO COOMET. The coordination of the interests of member countries and a coordinated, joint creation of the metrological basis in the individual working fields of TCs and SCs is intended via the RMO and its organs. Furthermore the international recognition of COOMET and the metrological performance of NMIs in the member states are intended.

On the meso-level the consultation and support of the NMIs was essentially carried out with regard to organisational development and building up professional skills, advice and support in the organisation of intercomparisons.

The cooperation between the project coordinator and the iKZE of PTB is excellent.

Learning and innovation
PTB has a very high expertise which its partners appreciate a lot. It supports its partners with great commitment.

Approach of the project is an organisational- and system-developing advice with capacity building, in which the more advanced countries promote the development of metrology in less developed countries based on economic and technical requirements of the beneficiary countries.

Successful and sustainable learning is one key task of the project. This task is mainly fulfilled with the help of the conducted seminars. The learning process is focused on the knowledge transfer from experienced metrologists, having successfully participated in international comparisons, to technical/scientific staff of smaller NMIs. Besides the transfer of expert

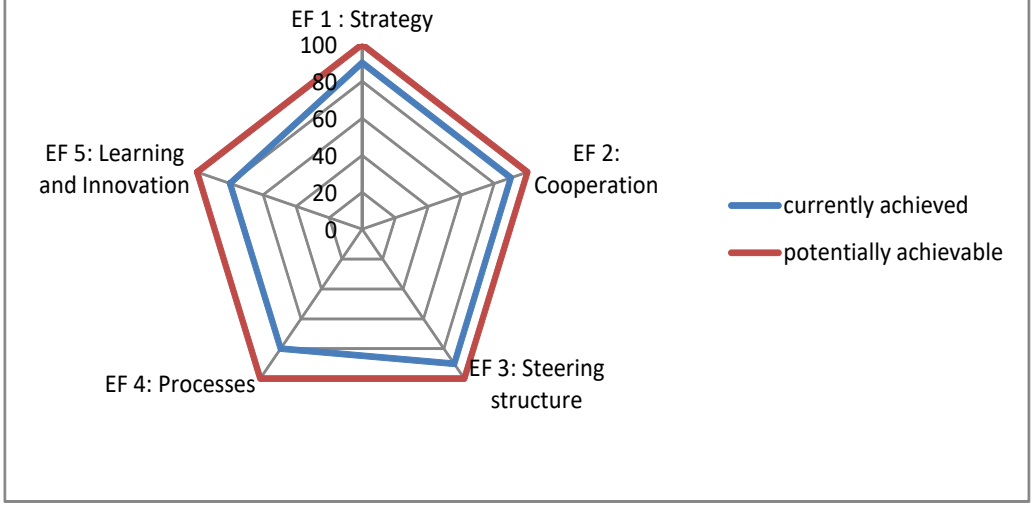
knowledge, subsequent practical trainings were arranged abroad e.g. in Germany in order to make use of the acquired knowledge and to put the theory into practice.
If technical staff from NMIs is trained, the whole institute profits from that training through internal knowledge transfer.

The learning processes have led to the fulfilment of the project mission to promote regional cooperation within COOMET member countries. Interviewed persons appreciated this fact. The knowledge gained through seminars, courses and trainings gradually eliminate differences in knowledge between countries and has led to better cooperation. This is the base for innovation of COOMET organisation for the stabilization and recognition of COOMET as a RMO in the context of European and international metrology organisations.

Success factors of Capacity WORKS

Please insert in these two columns the absolut percentage values per success factor

	currently achieved %	potentially achievable %
EF 1 : Strategy	90	100
EF 2: Cooperation	90	100
EF 3: Steering structure	90	100
EF 4: Processes	80	100
EF 5: Learning and Innovation	80	100



Learning processes and learning experience

The following experience and learning processes result from the project:

- The special structure of the project approach with direct involvement of PTB-staff in COOMET bodies and simultaneous flexible steering by the project manager led significantly to success of this complex project.
- It was based on the most urgent needs of less-developed countries for metrology services and the approach that more advanced countries promote the development of metrology in other less developed countries on the base of economic and technical requirements.
- To increase the effect of activities, awareness measures for stakeholders should be carried out in the respective member countries. Therefore, the elaborated knowledge of the TC 4 workshop "Experience and recommendations from awareness activities in COOMET member states" from, 22 October 2014 should be used.
- The very good knowledge of the current situation in the region at the beginning of the project, the mentality of wide spectrum of participants covered by the project and the ability to prepare and manage the project, so that it is beneficial for each participant, despite large differences of metrology level assurance in COOMET countries.
- The mastery of Russian among English and the understanding of the history and current development problems of the member countries were important facts to build up trustful contacts with the COOMET President´s Council, its bodies as well as its member countries and staff of NMIs involved.
- The inclusion of legal metrology in the promotion of the project has significantly increased the capability of COOMET and its member institutions.
- In particular, the cooperation and the flow of information within the German project team (coordinator, iKZE, Pavel Neyezhmakov and experts) were excellent and contributed to short-term responses to changing situations.
- According to the learners, trainings in combination with practice (e. g. intercomparisons) have achieved the highest success of learning
- Seminars in generally are held in conjunction with TC meetings. As a result, additional travel costs could be avoided, time was saved and the likelihood of seminar performance was increased.
- The cooperation with other QI projects increased significantly the effectiveness and broad effect of inputs and activities. At the same time this gave contribution for raising awareness by the project partners.

Recommendations

The analysis and evaluation of the previous chapter leads to the following recommendations:

Positive aspects:

The information about positive experience given in “Learning processes and learning experience” should be retained for future projects. At this point, the evaluators decided not to list this again.

Capabilities for improvement:

- **Indicators**
  - In the formulation of the indicator No. 1 was not clearly defined when the “implemention of two proven methods” is fulfilled. This offers space for interpretation
    - Is it sufficient for fulfillment if some laboratories are already working according to the ISO/IEC 17025 and GUM?
    - “COOMET member”: only full members or full and associate members are taken into account? Does the indicator refer to all members or the majority?
    - It should also be noted that the “ISO/IEC 17025” is not a "method" but a standard
    - The fulfillment of ISO/IEC 17025 includes the fulfillment of measurement uncertainty according to GUM

  - The formulated indicator provides examples which are suitable for its fulfillment. However, the cost of creation and content validity are very different (for example: study vs. Flyer). According to the evaluators a more homogeneous and ambitious level of requirements would have been preferable

  - In the formulation of the indicator No. 3 was not defined when “participation in comparison” is fulfilled. This offers also space for interpretation

  - Indicators should also measure effects

- To evaluate the efficiency of a project, a **financial monitoring** with accurate assignment of activities and inputs for each project should be done.

- A higher impact e.g. in the use, level of awareness (CI) and findability in the world wide web, no or at least less redundancies, would be achieved if only one official website with complete information about COOMET and its member countries would be operated.

- When storing the extensive project data such as Reports, minutes, planning data, etc. guidelines regarding the syntax should be made. This makes finding of project-related files easier, especially in view of the fact of the large number of PTB-staff with temporary working contracts.

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