

EXTERNAL EVALUATION – SHORT REPORT

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Metrology-Enabling Developing Economies in Asia: Promoting Regional Cooperation (MEDEA)



Country | Region: Asia

Project number: 2013.2239.5
Implementation period: January 2014 – December 2017

Executing agency: Physikalisch-Technische Bundesanstalt (PTB)
Implementing partner: Asia-Pacific Legal Metrology Forum (APLMF)
Asia Pacific Metrology Programme (APMP)

PTB | Working group: Q.52 Asia
PTB | Project coordinator: Sabine Greiner

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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

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| APLMF | Asia-Pacific Legal Metrology Forum |
| APMP | Asia Pacific Metrology Programme |
| BIPM | Bureau International des Poids et Mesures |
| BMZ | Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung |
| BSC | Balanced Scorecard |
| CC | Coordination Committee |
| 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 for the Federal Republic of Germany |
| DE | Developing Economies |
| DEC | Developing Economies' Committee Entity of APMP |
| DeGEval | Gesellschaft für Evaluation e.V. |
| MEDEA | Metrology-Enabling Developing Economies in Asia |
| MiC | Metrology in Chemistry |
| NMI | National Metrology Institution |
| OECD | Organization for Economic Co-operation and Development |
| PTB | Physikalisch-Technische Bundesanstalt |

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| QI | Quality Infrastructure |
| SI | Système International d'Unités |
| SME | Small and Medium-Sized Enterprises |
| ToT | Training-of-Trainers |
| WTO | World Trade Organization |

1. Project Description

The project 'Metrology-Enabling Developing Economies in Asia: Promoting Regional Cooperation' (MEDEA) has been implemented by PTB on behalf of the Federal Ministry for Economic Cooperation and Development, Germany (BMZ) jointly with the Asia-Pacific Legal Metrology Forum (APLMF) and Asia Pacific Metrology Programme (APMP).

The implementation period of the project is from 01 / 2014 until 12 / 2017, whereas the evaluation covers the period from 01 / 2014 until 06 / 2017. The project has a budget of up to 2,000,000 EUR. Instruments applied for the interventions are mainly short-term expert assignments, trainings and regional meetings. MEDEA is steered by a Coordination Committee (CC), which consists of three representatives of APLMF, three representatives of APMP and the PTB Project Coordinator. The "Overview of Work Packages under MEDEA" is transparent to all stakeholders and is available on the PTB website [here](#).

2. Assessment of the project

The project is given a rating of "successful". The overall assessment based on the OECD-DAC criteria shows that the project achieved positive ratings across all criteria. Effectiveness and efficiency are rated with highest marks.

2.1 Status of the change process

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

Relevance

The evaluator assesses a high relevance for MEDEA as documentation and interviews suggest that APMP and APLMF have been in need of an external catalyst like this project.

Across the board, the interviewees gave outstanding rankings for the relevance of the MEDEA outputs for their work and institutions.

In the assessment by interviewees MEDEA's support matches the needs of consumers and companies in the Developing Economies (DE) of the Asian region. The interviewees from developed economies like Australia, Japan and New Zealand see only an indirect benefit of their involvement in MEDEA by raising the capabilities of trading partners to reduce transaction costs.

Effectiveness

On outcome level, the objective of MEDEA is that APLMF and APMP have greater ability to support their members as they develop their metrology infrastructures within their own economies. Another objective was to have APLMF and APMP work more closely together.

All indicators are achieved or overachieved well before the end of phase.

MEDEA operates with an accurate, up to date and fully-fledged Results-Based Monitoring (RBM) Plan in English that is aligned to APLMF and APMP plans.

Several interviewees remarked that the activity planning and implementation did not deviate, because collecting monitoring data and subsequently base management decisions upon the data is common practice.

Impact

MEDEA is assessed by interviewees with a high perception rate of achieved change. However, above activity and output level perceptions are difficult to be supported with attributable, robust evidence.

The target group where impact of the project was aimed to manifest itself consists of the members of the APLMF and the APMP, who are organizations representing economies national level quality infrastructure and legal metrology authorities. The following countries were targeted by MEDEA in particular:

- Least developed countries (LDC) that were not yet network members: Bhutan, Cambodia and Laos.
- Countries without (full) international recognition: Indonesia, Nepal, Pakistan, Philippines, Sri Lanka.
- More developed countries that aim to play an active role in regional and international technical cooperation: PR China, Thailand.

Cambodia became a member of APMP. According to interviews and the discussion at the evaluation workshop and Bhutan and Laos were further introduced to the benefits of the networks. Indonesia, Nepal, Pakistan, Philippines and Sri Lanka progressed towards international standards. And PR China, Malaysia and Thailand increased their role in regional and international technical cooperation.

In interviews and in the project documentation two items for impact could be identified:

- New general attitude for cooperation between scientific and legal metrology, e.g. joint meetings and sharing data in monitoring systems within and between networks.
- Result-oriented, connected thinking: Less isolated activities (training x, meeting y) , rather planning and operating in the MEDEA work packages. For the DE, the thinking in work packages was highlighted as a new and beneficial experience and the awareness of resources that are available and contacts made with similar economies to share experiences.

DE staff were trained by MEDEA within the region at advanced NMIs, e.g. Australia, China, Japan, Korea and Taiwan.

Efficiency

The efficiency is excellent. The key has been the establishment of the CC. This gave MEDEA a broader base of coordination and buy-in from stakeholders compared to the previous phase. Representatives from developed countries and DE alike mentioned, that if there was no MEDEA, they would not be involved to this level with regional cooperation, mobilizing of their own resources (staff time and logistics).

Sustainability

MEDEA has strengthened the abilities of APLMF and APMP to serve members. For instance, the annual needs assessment informs the management of the regional networks, training content has been made available to others via website, or many representatives of NMIs from DE feel enabled to approach colleagues of developed NMIs and make use of the advanced metrology infrastructure, or emerging countries show metrology leadership in the network, e.g. facilitated through providing trainers to deliver courses in Thailand and Malaysia. In the evaluation workshop, DE participants reaffirmed that results from MEDEA had been conducive for their countries to achieve international recognition.

According to interviews, PTB has been practicing close consultation with the Chair of the Developing Economies Committee (DEC) not least to address sustainability issues. The CC and PTB project management has frequently considered criteria of ownership and financial resources. A major limitation is the level of domestic funding for the networks.

Some interviewees were hesitant to answer the question about which changes in the regional or national metrology systems will be durable beyond the time span of the MEDEA project mandate. They stated that international developments and standards are now better known to DE participants, but many of them back in their metrology institutions after training had difficulties in reaching out to other QI institutions or to raise awareness of decision makers in their economies for quality and safety issues.

Several interviewees expressed concern about the aftermath when the MEDEA will be finished. There is widespread awareness among interviewees that a situation needs to be avoided in which both organizations might fall back to the original status.

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

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 project has successfully built an intervention strategy that allows achieving the intended results of the assignment. Both regional networks operate within the development strategies of their members, and within BMZ's Asia strategy (BMZ Paper 5 / 2015).

The close working relationship between APLMF and APMP is seen by stakeholders as a key strategic achievement of MEDEA (e.g. APLMF's Five Year Strategy 2017–2021, p.10). The networks intend to build on this success by exploring opportunities for future co-operation between the metrology regional bodies, which has been exemplified for instance by issuing a Joint Guide 1 (11/2016, 48 pp.) on metrology for the APEC region. The Joint Guide 1 addresses directors and managers who are responsible for the planning and implementation of their respective national metrology infrastructure. MEDEA has informed APLMF's Five Year Strategy 2017–2021 "MEDEA project and beyond".

MEDEA follows the strategy to systematize the implementation thoroughly with the CC, and that PTB; the regional networks APLMF and APMP and the respective NLMs and LMIs jointly select the right people from the target group for human capacity development.

The CC follows a common understanding of capacity development, which is mainly human capital oriented, but which does not include an explicit Capacity Development strategy.

Cooperation

MEDEA has achieved a high reputation in the realm of the two regional networks for its cooperative modus. It promotes interaction between NLMs and LMIs in the Asia Pacific region and has harmonized the implementation of technical information practices between the networks. MEDEA was attributed by the interviewees to have supported the improvement of the relationships between the involved organizations in an outstanding manner both at a regional level, and national level. The project is including the most relevant stakeholders needed to achieve realistic results in the given context. However, no mapping of the key and secondary stakeholders has been done. Though this field involves many stakeholders and is quite complex on national level, explicit knowledge of the agenda, arena and alliances of metrology institutions and international partners would help MEDEA and the networks to navigate. MEDEA cooperates with projects run by members of the regional networks, like the programs by KRISS of South Korea, wherever possible.

The evaluation found that in principle, the envisaged change objectives are agreed with the leadership of national metrology structures, but not all measures and forms of cooperation reflect the specific needs of the different participants, e.g. work package JOINT 4 on BSC.

Steering structure

MEDEA functions well with its formalized steering group, the CC. PTB is not present in the region with permanent staff. The project management is done from afar and involving half-time assignments of a PTB coordinator and an assistant. All key stakeholders have confirmed that they are regularly consulted about their perspective and that their feedback was incorporated into the steering of the MEDEA activities. There is no evidence that partners were left out of information and decision-making loops (except on budget). Steering decisions are based on sound monitoring data, and annual action plans. Data is processed jointly and transparently in excel GANTT charts (e.g. file name 2016_06_29 MEDEA GANTT PROGRESS) and visualized in PowerPoints (e.g. file name 2016-10-07_MEDEA 2016 Activities).

Elaborate regional capability surveys were done for legal metrology in 2015 and 2016, and same for scientific metrology in 2014, 2015 and 2016.

The insights and results from these regional capability surveys are widely appreciated among stakeholders of APLMF and APMP. These surveys inform decisions made by the regional networks and the CC to plan jointly. This MEDEA innovation will likely continue – in one form or another – for the planning of MEDEA 2 or over time after the end of the project.

Processes

The project supports APLMF and APMP processes on four fields of activities: (1) supporting the regional metrology specialist networks to develop instruments for capacity building geared to the needs of member states, (2) strengthening national metrology institutes and legal metrology authorities in member states to fulfil the criteria of international good practices, (3) promoting the mutual support and cooperation among members of both networks to support the development of metrology systems in member states, (4) promoting the cooperation of both Asia-Pacific networks with other regional metrology organizations worldwide.

It is widely acknowledged that MEDEA is very good at processes, and flexible to give opportunities to everyone to contribute. Some interviewees were impressed that though Germany has the most important role in funding, PTB is letting counterparts decide, work and grow.

APLMF has published the key information about the processes supported by MEDEA, including reports about the basic and advanced courses, [here](#). APMP was not found to publish this process information.

Learning and innovation

Key findings and recommendations from the previous 2013 evaluation have been observed by the project management. The learning system of MEDEA centers on CC meetings, sharing of documentation, e.g. mission and training reports, and needs assessments and surveys of national metrology institutions. Key information of MEDEA outputs is fully accessible to all interested parties on the MEDEA project website and to a large extent on the websites of the networks.

3. Learning processes and learning experience

A variety of experiences can be drawn from MEDEA depending on the focus of the interest. With a view to informing a subsequent phase the following experiences can be highlighted:

- 1) The CC has been vital to build leverage among partners and to mobilize resources for the agenda of MEDEA.
- 2) The success story of MEDEA builds around the changes that APLMF and APMP have better interaction, objective criteria for participation of members' participants, and that activities are a lot more contextualized in work packages and trainings focuses on subsequent action planning follow-up
- 3) The expected outcomes for some parts of the MEDEA work plan were not fully realized by stakeholders in charge for some work packages, such as the instrument bank (challenges with public procurement of donor nations and export and import stage customs) or the BSC (not to be done short-term and from remote and a deep commitment from NMI directors is needed).
- 4) The project did not apply CapacityWORKS during the implementation. Thus, stakeholders had no experience using the thinking of the management model, upon which the evaluation is based, and elements like the Capacity Development strategy were missed out.

4. Recommendations

For the period until the end of phase in 12/2017 (this phase), the evaluation workshop identified and confirmed several recommendations for action.

The recommendations for the next phase (*next phase*) are basically to continue in the same direction, to develop suitable indicators for actual change processes and to safeguard the sustainability aspect. The details of the recommendations are provided in the table below and are categorized according to the CapacityWORKS factors:

| Recommendation | Entity addressed |
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| Strategy / Cooperation | |
| 1) <u>This phase</u> : Make the implicit Capacity Development strategy of the regional networks explicit to inform the scaling up and safeguarding of sustainability aspects in the next phase. | <ul style="list-style-type: none"> ▪ CC ▪ PTB project coordinator |

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| <p>2) <i>Next phase: Continue MEDEA in the same direction, and focus the work packages with a view to allow the networks and their members to establish robust impact stories.</i></p> | <ul style="list-style-type: none"> ▪ CC |
| <p>3) <i>Next phase: Prepare the partners for a possible phasing out by:</i></p> <ol style="list-style-type: none"> i. supporting a review of the networks' funding model, to map and involve further international partners and increase funding from members. ii. continuing to make tools available to DE, e.g. through eLearning. iii. promoting Communities of Practices from the DE to deliver trainings by more advanced DE to others iv. Identifying and utilizing relationships of "Sister NMs". | <ul style="list-style-type: none"> ▪ CC ▪ PTB project coordinator ▪ Network members |
| <p>Steering Structure</p> | |
| <p>4) <u>This phase</u> and <i>next phase: Continue the CC.</i></p> | <ul style="list-style-type: none"> ▪ CC |
| <p>Processes</p> | |
| <p>5) <u>This phase</u> and <i>next phase: Ensure higher staff continuity and that if changes occur, make sure that knowledge is transferred to successor and roles and commitments in core processes between PTB and the regional networks are reaffirmed.</i></p> | <ul style="list-style-type: none"> ▪ PTB Q 5 |
| <p>6) <u>This phase:</u> Assess the status of JOINT 4 work stream "One-year consultancy for directors on Balanced Score Card Tool (BSC)". Follow-up with the involved NMs.</p> | <ul style="list-style-type: none"> ▪ CC ▪ PTB project coordinator |
| <p>7) <u>This phase:</u> Assess the status of APMP 5 work stream "CMC Publication" and complete the list of updates on CMCs.</p> | <ul style="list-style-type: none"> ▪ APMP coordinator ▪ PTB project coordinator |
| <p>8) <u>This phase</u> and <i>next phase: Follow-up on staff action plans that are regularly drafted by participants after trainings and workshops. This shall contribute to tailor the support of the regional networks based on the</i></p> | <ul style="list-style-type: none"> ▪ PTB project coordinator ▪ Secretariat of APLMF and APMP |

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| <p>feedback from national implementation of the action plans.</p> | <ul style="list-style-type: none"> ▪ Network members |
| <p>9) <i>Next phase</i>: Possible focus topics as discussed in the evaluation workshop:</p> <ol style="list-style-type: none"> i. Metrology, e.g. core areas of traditional weights and volumes including fuel dispenser, verification of weighbridges, volumetric scale mounted tanks, mechanic and electronic scales, water meters, electrical meters, rice moisture meters, produced and pre-packaged goods, fuel and LPG dispensers and taxi meters. ii. Tackle the ineffectiveness of pattern approval by exploring the option to develop a program of Conformity-to-Type for the region. | <ul style="list-style-type: none"> ▪ CC |
| <p>Learning and Innovation</p> | |
| <p>10) <u>This phase</u>: Document and share what works on activity and output level. Examples are Joint Guide 1, web portal etc.</p> | <ul style="list-style-type: none"> ▪ PTB project coordinator |
| <p>11) <u>This phase</u>: Analyze what did not (yet?) work well and put the CC into the position to decide about the future of those activities. Examples are the instruments bank (APMP 2) equipment donation, BSC at director level (JOINT 4), action plan follow-up.</p> | <ul style="list-style-type: none"> ▪ PTB project coordinator |
| <p>12) <u>This phase</u>: Showcase impact. Gather evidence of project effects on regional and national level covering the following case studies.</p> <ol style="list-style-type: none"> i. Malaysia. Mass measurement experts. ii. Indonesia. Metrology for airline Garuda Indonesia. iii. PNG. Gaining international recognition and needs assessment iv. PR China. Customer benefits from Reference Materials in chemistry v. Thailand. NMI consulting services to SMEs vi. Thailand. Trainings in MiC. | <ul style="list-style-type: none"> ▪ APLMF Chair ▪ PTB project coordinator ▪ Network members |

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| <p>13) <i>Next phase</i>: Complementary to applying selected CW tools the special character of promoting and safeguarding the sustainability of network development can be appreciated by further clarification of the following three elements:</p> <ul style="list-style-type: none">i. Connectivity<ul style="list-style-type: none">▪ Membership: The people, institutions and countries that participate.▪ Structure: How connections are structured and what flows through.ii. Health<ul style="list-style-type: none">▪ Material resources needed to sustain itself.▪ Rules and processes: Internal systems and structures.▪ Members' advantage: The network's capacity to create added value.iii. Results<ul style="list-style-type: none">▪ Outputs documented and shared to signal progress.▪ Outcome and impact: attribute change in the partner system (regional and national) to APLMF and APMP. | <ul style="list-style-type: none">▪ PTB project coordinator |
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