

EXTERNAL EVALUATION - SHORT REPORT

Lead assessor: Fritz Kölling

Support to Mongolia's Quality Infrastructure with particular regard to the energy sector



Country/Region:	Mongolia
Project number:	2018.2122.2
Project term:	01.09.2019 – 31.08.2023
Lead executing agency:	Ministry of Energy (MoE)
Executing agency:	Mongolian Agency for Standardisation and Metrology (MASM)
PTB Section:	9.32 Asia
PTB Project Coordinator:	Irina Santourian
Date:	02.11.2023

This evaluation is an independent assessment. Its contents reflect the evaluator's opinion which is not necessarily equivalent to PTB's view.

List of abbreviations

BMZ	Federal Ministry for Economic Cooperation and Development <i>Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung</i>
CMC	Calibration and Measurement Capabilities
DC	Development Cooperation
EE	Energy efficiency
IEC	International Electrotechnical Commission
iKZE	Intermittent short-term experts <i>Intermittierende Kurzzeitexperten</i>
ISO	International Organization for Standardization
MASM	Mongolian Agency for Standardisation and Metrology
MoE	Ministry of Energy
NEC	National Electrotechnical Commission
NPTGC	National Power Transmission Grid Company
OECD-DAC	Organization for Economic Cooperation and Development – Development Assistance Committee
PTB	Physikalisch-Technische Bundesanstalt
QI	Quality Infrastructure

Executive summary of the project

Object of the evaluation was the project „Support to Mongolia’s Quality Infrastructure with particular regard to the Energy Sector”, which is part of the program “Energy Efficiency in Mongolia” of the German development cooperation. For now, it is the last bilateral project of PTB in Mongolia. The geographic scope is the whole country of Mongolia. After a modification offer, the implementation period was extended until 08/2023 and the budget was increased from 1,000,000 EUR to 1,250,000 EUR. The reason were the delays in implementation due to the COVID pandemic. The project has provided one coordinator, an intermittent short-term expert (iKZE) to advice on energy efficiency issues and a national consultant to assist the project team on site. Other short-term experts were deployed to provide specific thematic consulting services. For the procurement of laboratory equipment and consumables, 125,000 EUR were earmarked.

The module objective is: “Quality infrastructure services needed to increase energy efficiency are improved.” Political partner is the Ministry of Energy (MoE), main implementing partner the Mongolian Agency for Standardisation and Metrology (MASM). Important outputs were:

1. Improved services of selected metrology and testing laboratories. This included the development of a designated institute within the laboratory of the National Power Transmission Grid Company (NPTGC).
2. Improved organizational structures and processes of relevant bodies, considering good international practice. In particular, the project enabled the integration of international standards in the Mongolian standards system to meet the requirements of the stakeholders in the energy sector to increase energy efficiency (EE).
3. Increased knowledge about the relevance of QI services for increasing EE. This included the development of QI training materials, training of teachers and raising awareness amongst decision makers in the energy sector.

1. Evaluation of the project

For the International Cooperation Group of the German National Metrology Institute, the *Physikalisch-Technische Bundesanstalt* (PTB), project evaluations are an important instrument for the quality assurance of its cooperation and advisory services. They serve as a means of accountability vis-à-vis the partners and the Federal Ministry for Economic Cooperation and Development (BMZ), which finances the German contribution to the present project. The recommendations of this evaluation are also expected to serve the project partners, as well as other quality infrastructure (QI) institutions and stakeholders in Mongolia (such as regulators, laboratories, companies, and universities). The evaluation was carried out between April and June 2023 by the independent evaluator Fritz Kölling, based on the review of project documentation, online interviews with stakeholders, and self-evaluation of the project team. Specific topics of the evaluation were: sustainability of results; effectiveness of online training activities and practicability of online evaluations.

The six OECD/DAC criteria were used as an evaluation basis for this evaluation:

- Relevance: Is the project doing the right things?
- Coherence: How well does the project fit?
- Effectiveness: Is the project achieving its objectives?
- Impact (higher-level development results): What difference does the project make?
- Efficiency: How well are resources being used?
- Sustainability: Will the results last?

The following marking scale was used for the evaluation:

1	2	3	4	5	6
very successful	successful	successful to a limited extent	rather unsuccessful	mainly unsuccessful	entirely unsuccessful

Overall, the project received the mark: 2.

Relevance

By targeting the energy sector and specifically focusing on energy efficiency, the project addresses the needs and demands of Mongolia's energy sector. The objectives of the intervention are geared to the partners' policies and priorities. Mongolia's energy sector is undergoing significant transformation processes, including the renovation of the grid by substituting old Russian equipment, increasing energy efficiency to reduce air pollution and CO₂ emissions. In the project design, all relevant documents of the political and institutional framework have been considered.

Furthermore, it is geared to the German DC programme, the BMZ's country strategy and the BMZ's sectoral concepts. In terms of international relevance, the project aligns with various agreements and strategies, including the Sustainable Development Goals (SDGs) and the Paris Agreement (2015), and contributes to fulfill international commitments.

The project addresses the demands of the target groups - users of QI services in the energy sector, who require clarity on quality requirements and a QI that offers adequate services to meet these requirements. Indirectly it also addresses the demands of private consumers of electricity. There are currently 800,000 electricity meters in Mongolia. Their reliability depends on these services.

The intervention's design is appropriate and realistic (in terms of technical, organisational, and financial aspects). The modes of delivery (instruments) have proved to be adequate. The goals are realistic but ambitious enough, and the budget has been sufficient to carry out the activities. The intervention's design has responded appropriately to changes in the environment, in particular to the COVID19 pandemic, which hit the project shortly after the beginning of the implementation.

Overall, the criterion received the mark: 1.

Coherence

On a general level, the project is designed in a complementary manner within German development cooperation. There is coordination and ongoing communication with a PTB project that works with the regional metrology networks Asia-Pacific Metrology Program (APMP) and Asia-Pacific Legal Metrology Forum (APLMF) - in short: MEDEA. On national level, activities are coordinated with the German Technical Cooperation *Deutsche Gesellschaft für internationale Zusammenarbeit* (GIZ) and the German Development Bank *Kreditanstalt für Wiederaufbau* (KfW). However, the project falls short in fully capitalizing on potential synergies with the other German projects and lacks systematic coordination with other donor programs. By improving coordination and collaboration with other stakeholders, the project could enhance its effectiveness and amplify its impact. It must be added that the planned exit of German development cooperation with Mongolia did not help to stimulate long-term cooperation between the implementing organizations.

Generally, the project complements and supports the partner's own efforts to improve the QI system for energy efficiency and strengthen the existing QI bodies. While the project demonstrates strong

engagement in international networks like the Asia Pacific Metrology Programme (APMP) and the International Electrotechnical Commission (IEC) (where MASM provides an Affiliate Leader representing developing economies since 2021) and facilitates the accreditation of internationally recognized laboratories, there is no systematic coordination with the activities of other donors or programs, such as the ADB and the new USAID project. This represents a missed opportunity for enhanced coordination and collaboration to achieve greater impact and avoid duplication of efforts.

Overall, the criterion received the mark: 2.

Effectiveness

The project has achieved its objective according to the agreed indicators, even though the COVID19 pandemic has hit the implementation heavily:

- Two relevant services of metrological laboratories could be established complying with international standards.
- 8 normative or regulatory documents have been prepared for adoption and 4 documents have even been adopted.
- The use of metrological services for electrical measuring instruments and testing has increased by more than 100%.

In addition, the project has produced other results: capacity building of laboratory staff, recognition in international networks and awareness raising about the significance of QI in the academic sector. The project activities, inputs and outputs have contributed significantly to the achievement of the objectives.

To assess the quality of implementation, the Capacity WORKS factors were assessed and provided input to the evaluation. With regards to strategy and cooperation, the project has identified the relevant stakeholders – both from the energy sector as well from QI. Besides MoE and MASM, other QI institutions and laboratories, power and transmission companies and the Mongolian University of Science and Technology (MUST). Only the participation of the private sector was rather low. The involvement of the main partners MoE and MASM in the steering structure has contributed to a continuing flow of information and decisions could be taken on time. The participation of the MoE guaranteed the political backing for the project. Within MASM, some of the core processes were identified and could be improved. One example is the process of establishing calibration procedures.

Unintended negative results could not be observed.

Overall, the criterion received the mark: 2.

Efficiency

The project shows good production and allocation efficiency. The achieved outputs demonstrate a reasonable level of production efficiency, indicating that the resources allocated to the project were utilized effectively. By reviewing the individual budget items under "3. Summary of actual costs," it can be observed that project management costs are relatively low, with most of the resources dedicated to knowledge transfer and a smaller portion allocated to equipment procurement. Generally, it had a lean project management structure without own office infrastructure and mainly based on virtual formats. The biggest part of the project budget (70 %) was spent for project staff and experts including national and international experts for trainings and consulting as well as their travel costs. The Modes of Delivery were suitable for achieving the objective. There were few inefficient activities. However, the procurement of important equipment was delayed due to internal PTB processes.

Considering the achieved results in relation to the financial resources used, it is determined that the intervention demonstrates a reasonable level of allocation efficiency. The objective has been widely

achieved even with less budget than expected. Potential for maximizing results at the outcome level using the same amount of financial resources, can be addressed by better using synergies with other German programmes or other donors. Other opportunities could have been the leverage of resources in the partner system, for example mobilizing funds from the energy sector.

Overall, the criterion received the mark: 2.

Impact (higher-level development results)

The higher-level development changes (impacts) have been described in the project proposal as contribution to superior programs such as the National Green Development Policy or the German-Mongolian Energy Efficiency Program. The latter has defined 4 indicators:

- Reduction of the specific CO₂ emissions
- Improvement of the efficiency of the power plants
- Increase in the level of economic cost recovery in the energy sector
- Additionally adopted laws, regulations, and standards to improve the framework conditions for energy efficiency

While the CO₂ emissions of Mongolia are still increasing and the efficiency of the power plants and the cost recovery have remained at the same level, the project has directly contributed to the last indicator of the German programme.

In addition, it indirectly contributed to other impacts: The improvement of NPTGC laboratory as Designated Institute (DI) for high voltage / current is a precondition to reduce transmission losses and increase energy efficiency of the power grid. An increased awareness about the importance of QI and trained and competent human resources might lead to better quality, improved energy efficiency and cost-benefit ratio of products. The certification with ISO 50001 will lead to energy savings in industry. The project already contributed to the certification of one company, but there is no information about the results. The examples show that there is a high potential and a certain probability but no evidence for increased energy efficiency and reduction of CO₂ emissions.

The evaluation did not observe any indication for negative unintended impacts or negative trade-offs between the economic, social and environmental dimensions.

Overall, the criterion received the mark: 2.

Sustainability

Overall, the beneficiaries and stakeholders involved in the intervention demonstrate a reasonable level of capacity to ensure the continuation of positive results after the assistance has ended. The MoE is aware of the importance of QI in the field of energy efficiency and will continue promoting the development and implementation of standards. MASM possess the institutional structures and human resources to continue with this task and establish the necessary QI services. The NPTGC has hired a new staff member to take over responsibilities for the new service in high voltage and current measurements.

The intervention has made a considerable contribution to building the capacity of the stakeholders to sustain the positive results even after the assistance has ended. It has facilitated the development of institutional structures, enhanced human resources through training and capacity building initiatives, and provided financial support where necessary. Additionally, the intervention has fostered a sense of ownership and willingness among the stakeholders, reinforcing their commitment to continuing the positive changes achieved.

Risks for the durability of the results include fluctuation and/or reduction of staff in MASM, insufficient time for training local staff on new equipment (NPTGC laboratory), and financial constraints limiting MASM's participation in international organizations. However, there are opportunities for securing the intervention's benefits in the long term, such as further support and follow-up through international programs like USAID or PTB funded MEDEA, or through the participation in regional technical networks like APMP. Another option is the alignment of the started activities within the national "Standard and Development Program." The project addresses most of these factors and has proposed to the partners measures to mitigate risks and leverage opportunities.

Overall, the criterion received the mark: 2.

2. Learning processes and experiences

Within the Mongolian QI institutions, the project facilitated a capacity building in systematic project management. Based on deficits in time management, it became clear to the Mongolian QI institutions that improved planning and management of the resources used was crucial, e. g. when planning standardization projects. The quality of this training and the learning curve was highlighted by many interview partners.

An important learning process for MASM was the transition from the (old) Soviet system with fixed measurement ranges to a modern system with individual measurement uncertainties and calibration deadlines. Another important learning process for MASM was the participation in international comparisons. Within the framework of the entire project, this was possible in six cases, accompanied by international experts from PTB.

As reaction to the COVID19 pandemic, both – the Mongolian partners and PTB – gained experiences in virtual steering of projects, communication, and capacity building. When the pandemic started, this was a new topic. Since local assignments by the German project team were no longer possible, the project intensified virtual communication, e.g., through regular virtual meetings of the working groups.

For MASM, the cooperation with the academic sector was a new experience. Through the project, MASM staff encountered academic personal, for example, participated in the development of QI modules in the curricula of universities.

3. Recommendations *(a selection of the most important recommendations can be taken, if required)*

Recommendations to the partners:

- Maintain the presence in international organisations and networks and make use of other existing support programs, such as APMP / MEDEA, for training activities.
- Maintain the Working Groups as instrument for coordination between the partners (MoE, MASM, ERC).
- Involve the private sector stronger (industry and business associations).
- Go on with the efforts to create awareness for the importance of QI on higher political levels and link the ongoing activities with the "Standard and Development Program".
- In the energy sector, target new relevant topics, such as Renewable Energies.

Recommendations to the project team:

- Together with MASM and MoE, develop an exit strategy how to strengthen the capacities of the partners by the end of the project so that the processes can continue afterwards.
- Support MASM in the accreditation process to certify ISO 50001. There is a high interest on partner side to advance in this field, and, at the same time, a high potential for improving the energy efficiency in larger industrial companies, if they apply this standard.
- Seek synergies with other development partners for further support.

Recommendations to the International Cooperation Department (9.3):

- Improve the procurement procedures to avoid significant delays of equipment which is crucial for achieving the project objectives.
- An early coordination with the other German development institutions (GIZ, KfW) is recommended to link the QI interventions with the needs of larger investment projects (financial cooperation) or capacity development processes.

Recommendations to the evaluation unit of Working Group 9.01:

- For smaller projects such as the evaluated project, remote evaluations are a cost-effective suitable option.
- As a prior step, a short (one day) workshop with participation of PC and iKZE (including the Capacity WORKS self-assessment) could be helpful to discuss the project outputs and the monitoring of the indicators.
- For the criteria which are described with an even number of dimensions, the result may end up unclear: in case of coherence, for example, a “2” and a “3” in the dimensions will result in a “2.5” (which is something in the middle between “successful” and “rather successful”). This can happen as well for “relevance”, “effectiveness” and “efficiency”.



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