



SUSTAINABLE IMPACT

Examples taken from cooperation in quality infrastructure

Monitoring & evaluation

PTB's commitment

In the conception of its project work, PTB International Technical Cooperation has committed itself to focusing on impact. As an implementing agency for development assistance, it legitimizes and qualifies itself not by the manner and amount of input and output, but the key criteria for success are rather whether and how, in conjunction with its partners, the set objectives have been reached and whether the expected impact has been attained.

Project planning, impact monitoring as well as the fundamental checking of the conception, implementation and success of projects (external evaluation) are based on established procedures and are an integral part of internal quality management.

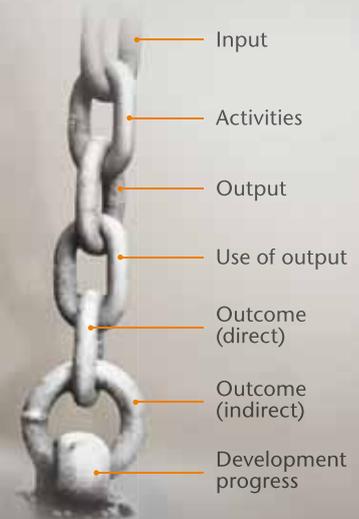
The approach is laid down in:

- PTB 2005; Wirkungsmonitoring in Vorhaben der Technischen Zusammenarbeit der PTB (Impact monitoring in projects of the PTB's Technical Cooperation Department), Braunschweig;
- PTB 2006; Wirkungsmonitoring – eine Arbeitshilfe (Impact monitoring – working paper), Braunschweig.

In the scope of project planning, implementation and checking for success, for quality control, the PTB International Technical Cooperation follows the "chain of impact" model. ■

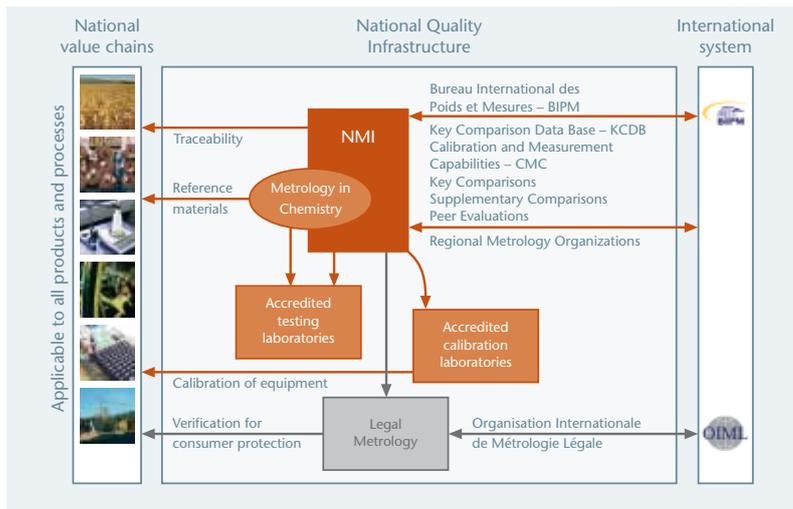
A chain of impact describes the planned impact of a project. This is required for checking at a later stage, whether the project has met its objectives.

How does a chain of impact work?



Examples of projects

Measurements are not a gift of nature, but much rather represent a convention. They have to be clearly defined and realized. These are tasks which are taken on, within the scope of metrology, by the national metrology institutes. In addition, a joint system has to ensure that e.g. a 1 kg weight used anywhere in the world can be traced back to the "original kilogram" in Paris. This dissemination of the units occurs, for the one part, voluntarily via a network of calibration laboratories, whose competence – as a rule – is verified by an accreditation. For the other part, it is carried out in the field of legal metrology by the verification service which examines and marks the measuring instruments which are subject to mandatory verification for compliance with the regulations, or takes action against non-compliance.



In the following, typical chains of impact for quality infrastructure projects will be presented using three examples. In Slovenia, the PTB supported the improvement of the metrological system, in Turkey, assistance was provided in setting-up a national accreditation system and in Brazil, the establishment and development of a calibration center was the subject of consultancy work. Three deliberately chosen examples because, on the one hand, they are elements of the closely interwoven whole which is quality infrastructure and, on the other hand, they represent a necessary prerequisite for taking part in the fair exchange of goods and services worldwide.

All the examples are results of ex-post evaluations by external evaluators. ■

Slovenia – the improvement of the metrological system

The approach

At the top of a national metrological system there is, as a rule, a legally anchored institution which maintains the national units such as mass, time or volume. This institution is, however, not only the guardian of these units, it also ensures their traceability to the international units, improves accuracy of measurement and guarantees the dissemination of the units to private and state institutions.



In Slovenia, the project started in 1995, during a time of change. The commencing transformation process leading to an export-oriented national economy was characterized by a market-economic model and linked to the perspective of joining the EU. The quality infrastructure in Slovenia could already look back at a long history at this point in time and was existent in a fundamental form.

The Metrology Institute of the Republic of Slovenia (MIRS) is part of this quality infrastructure. As an umbrella organization, it has decentralized its tasks and delegated them to university faculties, technological institutes and laboratories. This is an unusual, but thoroughly appropriate and cost-efficient institutional set-up, especially for developing countries and countries in transition. This type of decentralization, however, makes large monitoring demands on the umbrella organization.

Behind the simple sounding project goal "Improvement of the metrological infrastructure", there were four complex bundles of measures. These are necessary and typical innovations to guarantee a metrological system which is recognized worldwide as part of the quality infrastructure of a nation:

- orientation of the metrological system to the economic demands of the country
- ensuring the traceability of the state metrology and calibration system
- integration into international expert committees through partner qualifications
- application of EU standards by the MIRS in practicing certification

Support was given by Germany from 1995 – 2001 and amounted to 600 000 EUR. ■

A metrological system capable of functioning can be organized in different ways. In Slovenia's case it is heavily decentralized. The central monitoring of the system always remains, however, a state task in the sense of good governance.

The impact

<ul style="list-style-type: none"> • Advice on metrological and regulatory subjects, supply of equipment • Carrying out training measures; contributions to international events 	Output
<ul style="list-style-type: none"> • Political decision-makers use the metrological system to contribute to good governance • Improvement of expert competence • Carrying out high-quality calibration and testing services • Ambitious further development of metrological facilities • Applying for and preparing accreditation • Participating in international comparative studies (benchmarking)/cooperating in international working groups 	Use of output
<ul style="list-style-type: none"> • Adapted national legislation (initial formulation, modernization, harmonization) and regulatory directives • Accreditation of the institutional body of the decentralized system (custodian of standards) • Extension of the services offered • Improved self-financing ability (market orientation, project acquisition) of the institutions • (Associated) membership of international organizations 	Outcome (direct)
<ul style="list-style-type: none"> • Businesses expand into new markets • Health, environmental and supply companies offer high-quality services • Creation of a market for business-related metrological services • Competitiveness of companies increases; Slovenian products find recognition on the international market • Training and accompanying other local organizations and laboratories in their accreditation process (multiplication) • Demand of manufacturing companies, health care and environmental sector increases 	Outcome (indirect)
<ul style="list-style-type: none"> • Rise in exports; economic growth; increase of income and employment; transparency and reliability combine to build trust of those active in the economy; increasingly better functioning market economy 	Development progress

Turkey – setting up the accreditation system

The approach

The term "accreditation" is used in various fields to describe the situation in which a generally acknowledged authority certifies another body to fulfill a certain, useful characteristic. A diplomat, for example, becomes an official representative of his country of origin through the handing over of the letter of accreditation and is enabled to act according to international law and bindingly for this land. In economics, an accreditation also represents proof of competence. Certain international standards do not only have to be complied with, but the accreditation body must also be internationally recognized.

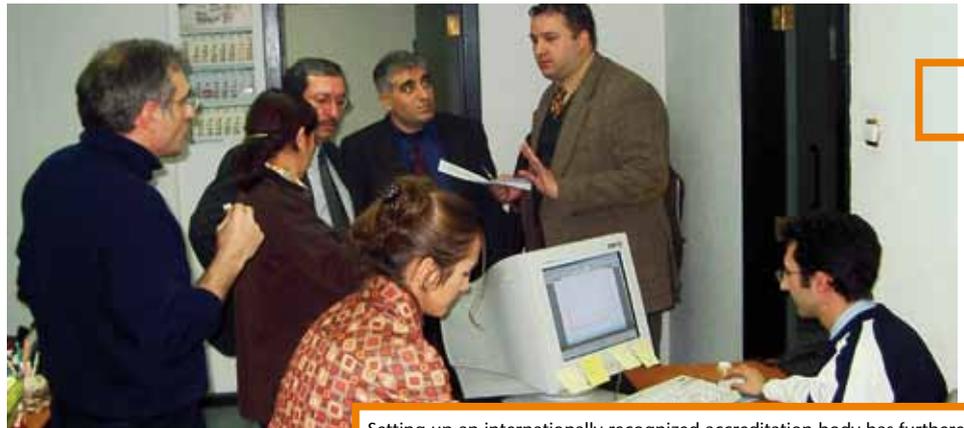
For Turkey to successfully participate in international competition and for its possible accession to the EU, an independent national accreditation system corresponding to international requirements is of great importance. An accreditation ensures, above all, the international approval of Turkish product and testing certificates and, thus, makes international trade easier.

At the start of the project in the year 2000, neither a unified nor an internationally recognized Turkish accreditation system existed.

The aim was Turkey's membership in the European and international club of accreditors (European co-operation for Accreditation, EA and International Laboratory Accreditation Cooperation, ILAC), by which Turkish declarations of conformity would possess global validity.

The project ran for five years. Germany's contribution came to approx. 1 million EUR.

The support was predominantly provided in advising management personnel (steering committees and working groups) on organizational and special issues at the Turkish accreditation body TÜRKAK and specialist quality infrastructure organizations. Furthermore, the so-called "interested parties" of the corporate economy were involved in the project and an active donor coordination with, above all, multilateral donors (World Bank, European Commission) was organized.



Setting up an internationally recognized accreditation body has furthered Turkey to participate in international trade.

The impact

<ul style="list-style-type: none"> • Establishment of an accreditation body TÜRKAK working according to international rules • Provision of highly qualified accreditation services for testing and calibration laboratories, inspection and certification bodies • Services comprise product, system and personnel certification 	Output
<ul style="list-style-type: none"> • The widely diversified services on offer meet with an over-proportional demand by state and private customers and have led TÜRKAK to the limits of its current capacity • Increase of accreditations (new applications) from 34 (2003) to 141 (2005) • Extension of monitoring audits from 6 (2003) to 87 (2005) 	Use of output
<ul style="list-style-type: none"> • Turkish industry was made sensitive to the advantages and necessity of accreditation • Political as well as economic decision-makers are convinced that accreditation creates trust and represents an instrument necessary in the international exchange of goods and services for the assessment of conformity • Through internationally recognized accreditation, the competitiveness of Turkish products and services on the global market could be decisively strengthened by integral value chains 	Outcome (direct)
<ul style="list-style-type: none"> • Quality consciousness in Turkey has increased in total • Signing the Multilateral Recognition Arrangement (MLA) with the European co-operation for Accreditation (EA), which envisages the mutual recognition of European accreditation bodies, took place in April 2006. The expectations of the project's impact formulated before the start of the project were thus clearly exceeded 	Outcome (indirect)
<ul style="list-style-type: none"> • The structural impact of the accreditation system as part of a comprehensive Turkish quality infrastructure lies in its contribution to reducing technical barriers to trade, as called for by the World Trade Organization (WTO) as well as in the increase of security, market transparency and consumer protection, which represent the elements of a modern economic structure and also essential criteria for EU accession 	Development progress

Brazil – setting up a calibration center

The approach



Calibration centers ascertain the error of measurement and the uncertainty of measurement of a measuring instrument and document this in the form of a calibration certificate. The requirement of international standards (e.g. ISO 9001) is fulfilled by this action.

a prerequisite for taking part in national and international trade.

This project aimed at satisfying the need of, above all, small- and medium-sized enterprises for calibration services as well as for training and advisory services in the scope of metrology. Support was given in three phases and was completed in 2004.

The German contribution to the project amounted to 1.77 million EUR.

At the beginning, the technical side was in the foreground, with above all, strengthening CERTI's competence in three-dimensional metrology. Compared to the measurement of length, which every handyman who has used a ruler knows, three-dimensional measurements are considerably more complicated as regards the use of measuring equipment and also the qualifications of the staff.

One of CERTI's customers, for instance, manufactures tubes for the cosmetic industry. These tubes have to be produced so that the snap-on lid fits exactly onto the tube. This means that neither the lid nor the tube may be damaged due to the thread being too short, nor that the tube does not close tightly enough because the thread is too long. This task is a typical – if relatively simple – challenge for three-dimensional metrology. The entire complexity of three-dimensional metrology becomes clear, above all, when vehicles are constructed.

Besides strengthening the professional supply side, the demand side was stimulated as the project progressed. This occurred by means of awareness-building measures as well as by organizational ones. Among other things, the use of three-dimensional metrology was, thus, initiated in medical diagnosis and therapy, a particularly effective field of work for metrology. ■

The impact

<ul style="list-style-type: none"> • Strengthening metrological competence • Internationally recognized accreditation of CERTI • Improvement of cost management and attainment of full cost recovery • Development of marketing concepts 	Output
<ul style="list-style-type: none"> • Companies and laboratories use the metrological and advisory services of CERTI to a large extent • State bodies consult CERTI 	Use of output
<ul style="list-style-type: none"> • The metrological competence of companies and laboratories increased • In socially relevant sectors, state bodies introduced, for example, health and consumer protection and control mechanisms • The supply with metrological services in the country was extended • CERTI became an interesting, competent partner for international cooperation projects and was thus able to continually improve its efficiency 	Outcome (direct)
<ul style="list-style-type: none"> • Companies and manufacturers as well as their products are certified according to internationally recognized standards • Waste of resources (e.g. health care) and deceit of customers and tax authorities (e.g. fuel supply) decreases 	Outcome (indirect)
<ul style="list-style-type: none"> • Increasing turnover leads to increasing employment and income at companies and manufacturers • The level of quality in health care, in particular for people with low incomes, and in consumer protection increases 	Development progress

Lessons learnt!

The three projects portrayed only convey a small portion of the PTB's Technical Cooperation. They clearly show, however, that sustainable impact at all levels of the chain of impact could and can be attained using relatively limited resources. In addition, the advice provided by the PTB enjoys high esteem from its partners. This approval and the contribution to macroeconomic development and to consumer protection are, however, frequently only perceived by experts in a conscious way. This is largely due to the nature of the specialized service. The technological and scientific content and the associated technology transfer can often only be deduced by decision-makers with difficulty and civil society can only experience the improved performance spectrum directly in a few cases. A working quality infrastructure at a national level possessing international recognition, is virtually invisible in the optimal case. It is, however, the decisive factor in facilitating the exchange of goods with products whose quality does not lead to health risks. Complex technologies are made compatible by metrology, the worldwide division of labor is not imaginable without



quality infrastructure. For this reason, the direct positive impacts become evident above all at the manufacturer's and are checked and proved there.

The increasing demand for support for complete quality infrastructure systems as well as for individual system components shows that developing countries and countries in transition are increasingly recognizing that they can only increase their added value, if the performance of the quality infrastructure is improved and the corresponding services are made use of.

The PTB International Technical Cooperation has learned from this experience. The advice given now follows the systemic approach and is supplemented by awareness-raising measures at the level of the manufacturers, the consumers and the political decision-makers. Furthermore, we have increased our engagement in linking service providers from the quality infrastructure sector more closely with suppliers of so-called *business development services*. The latter has already helped to make QI's contributions to the product-specific value chains more efficient.

PTB's International Technical Cooperation

The PTB, the National Metrology Institute of Germany, with its 1,400 staff members is rather a *global player* in the world of metrology. It faces the responsibility involved for society, economy and science. This is why the orientation and impact of PTB is not restricted to the national borders.

Since the start of German development assistance about 40 years ago, PTB's International Technical Cooperation has been cooperating worldwide with developing countries and countries in transition.

During these four decades, not only has a lot been achieved but also a lot has been learned. Today the technical cooperation is focused on the requirements of partner countries acting in a global world. Partner countries have to set up or improve their quality infrastructure and adapt it to international agreements. Only in this way can they participate in international trade and secure consumer, environment and health protection. Moreover quality infrastructure enables fair trade and contributes to a socially oriented development.

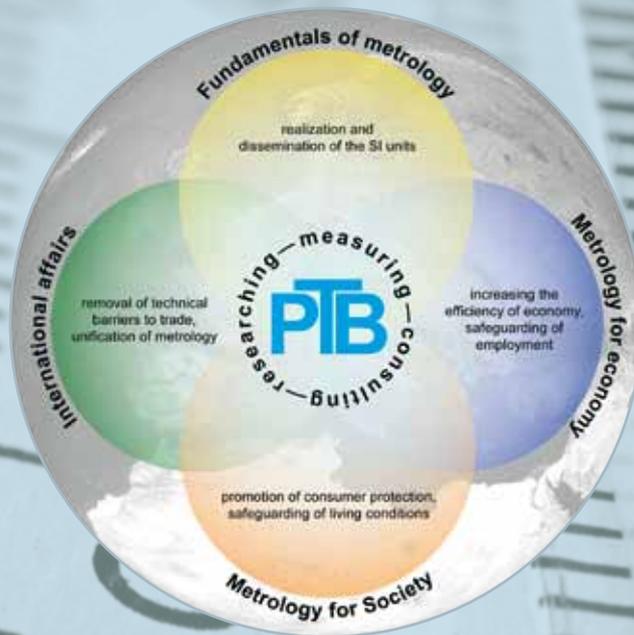
The international tasks of PTB include representation in all kinds of international organizations in the domain of quality infrastructure. This participation at the same time enables and commits PTB to consult and support its partners according to international standards and *best practices*.

The clients of the Technical Cooperation projects are, above all, the German Ministry for Economic Cooperation and Development (BMZ), which finances the majority of projects with PTB participation. But also the European Union, the World Bank and other organizations are customers of PTB. For the implementation of projects a network of strategic partners is available.

All in all, the global networking of PTB has, above all, one objective: the international harmonisation of quality infrastructure and its mutual acceptance. ■

Imprint

Publisher:	Physikalisch-Technische Bundesanstalt, Bundesallee 100, 38116 Braunschweig, Germany
Responsible:	Dr. Marion Stoldt (PTB)
Editorial staff:	Manuela Behrendt (PTB), Martin Kaiser Martin Kaiser
Text:	
Layout and Realization:	Jenko Sternberg Advertising Agency (www.jenko-sternberg.de)
Photos:	Physikalisch-Technische Bundesanstalt, Aboutpixel (www.aboutpixel.de)
As of:	February 2008



Contact

Dr. Marion Stoldt

Technical Cooperation Department

Tel: +49 531 592-82 00, Fax: +49 531 592-82 25

marion.stoldt@ptb.de

www.ptb.de/q5

Physikalisch-Technische Bundesanstalt

Press and Information Office

Bundesallee 100, 38116 Braunschweig, Germany

Tel: +49 531 592-30 06, Fax: +49 531 592-30 08

presse@ptb.de

www.ptb.de