STRATEGIC PLAN FOR DEVELOPMENT OF BUREAU OF METROLOGY AND METROLOGICAL INFRASTRUCTURE IN REPUBLIC OF MACEDONIA

2010 -2012

Skopje, March 2010

List of abbreviations

BoM - Bureau of Metrology
ME - Ministry of Economy
NMI - National Metrology Institutes
UNECE Agreement 1958 - United Nations Economic Commision for Europe (an international agreement to accept the Uniform technical regulations for wheeled vehicles and equipment and parts)
EU - European Union
NPAA - National Programme for Adoption of the acquis
EXIM - Integrated system for export, import and transport of goods and quotas
CGPM - General Conference for pounds and measures (General Conference on Weights and Measure)
CIPM MRA - Mutual Recognition Arrangement (Arrangement for acceptance of certificates of calibration)
BIPM - International Bureau of Metrology of Weights and Measures
EURAMET - European Association of Metrology Institutes
WELMEC - European Regional Organization for legal metrology
OIML-International Organization for legal metrology
IAAO - International Association for Assay Offices (International Association of institutions for testing precious metals)
Hallmarking Convention - International Convention for the control of precious metals
WP29 - World Forum for Harmonization of Vehicle Regulations (World Forum for Harmonization of regulations in the field of homologation of vehicles)
BERIS - Business Environment Reform and Institutional Strengthening
IPA - Instrument for Pre-Accession Assistance
TC-IM - Technical Committee for Interdisciplinary Metrology
DMS - Document Management System
MoI - Ministry of Interior affairs
IARM - Institute for Accreditation of Republic of Macedonia
ISRM - Institute for Standardization of the Republic of Macedonia
FEIT - Faculty of Electrical Engineering and Information Technologies
DPI - State Market Inspectorate
Tzu - Customs Administration
RIHP - Republic Institute for Health Protection

INTRODUCTION

The free movement of goods is the basis for creation of favourable conditions which the Member States of the European Union apply in accordance to the acquis communautaire. The principle of free movement of goods requires removal of all barriers to trade between EU Member States and the candidate country. In accordance with these principles, Republic of Macedonia as a candidate for EU membership, seeks to eliminate the possible trade and technical barriers to smooth integration into the EU internal market.

Bureau of Metrology is one of the institutions responsible for quality infrastructure, and which according to Chapter VI, "Harmonization of the legislation and enforcement" of the Stabilisation and Association Agreement (SAA) from 2001, it is necessary to take all necessary measures to the gradual harmonization of technical regulations in the field of metrology with those of the European Community. Article 73 of the Stabilisation and Association Agreement, related to the standardization, metrology, accreditation and conformity assessment, obliges the parties to encourage the use of technical regulations of the European Community, as well as European procedures for standards, acceleration the development of quality infrastructure and encouraging participation in the work of specialized European organizations.

In order to enhance the quality infrastructure, Partnership for Accession of the Republic of Macedonia to the European Union, takes a series of priorities, to be realized. in the nearest future as to Improve quality infrastructure in the country, that means opening the market for domestic products and increasing competitiveness, but take care of environmental protection, product safety, and access to information and knowledge. Improving the quality infrastructure, enables to overcome the barriers to trade and open access to global markets. Macedonia has common consensus to go towards aligning its legislation with the EU acquis, including improvement of the quality infrastructure that will facilitate the development of domestic industry, which will strengthen the country's economy, contributing to the welfare of all its citizens.

On the other hand, the National Programme for Adoption of the Acquis (NPAA 2010), as a key document of the process of EU integration, contains information about the necessary dynamics for the strengthening of institutions, including the key players of quality infrastructure. Priority goals related to the development of the Bureau of metrology, that the NPAA contains, in particular, include coordination of technical legislation in the field of metrology, but also strengthening its capacities, providing recognition of the metrological system of Republic of Macedonia by gaining full membership in international organizations in the field of metrology (EURAMET) etc.

Activities that are necessary for further development of the Bureau of Metrology, apply the necessary measures to achieve full compliance with the acquis communitaire, also are set out in the "Strategy for implementing legislation for the horizontal organizations (standardization, accreditation, metrology and market surveillance)", adopted by the Government on December 1, 2009.

Strategic Development Plan for the Bureau of Metrology and Metrologyl Infrastructure in the Republic of Macedonia 2010 - 2012, also represents a continuation of the med-term National program for development of metrological infrastructure 2006 – 2009 and along with the Policy for development of the National metrological infrastructure (adopted at the 16th Session of the Government of RM on November 21, 2006), as a basis for further realization of the mission to achieve sustainable development of the Macedonian economy and industry in the world globalization trends, as well as increasing consumer confidence in the products and services offered on the market in the country.

For that reason, the Bureau of Metrology have prepared Strategic Development Plan of the Bureau of Metrology and metrology infrastructure in Republic of Macedonia 2010 - 2012, which is based on a vision for the future development of the National metrology Infrastructure whose activities are string through almost all segments of everyday live. It is a comprehensive document that includes benchmarks for the implementation of the acquis in the field of metrology, together with target dates and clear responsibilities for implementation and effective enforcement of legislative measures and

strengthening the capacities in different sectors, and all directed towards full implementation of commitments arising from Article 73 of the Stabilisation and Association Agreement.

1. BUREAU OF METROLOGY - ROLE, RESPONSIBILITIES AND ORGANIZATION

Bureau of Metrology (BOM) is a legal entity within the Ministry of Economy, responsible for the tasks prescribed by the following laws:
1) Law on Metrology ("Official Gazette of RM" no. 55/02, 84/07 and 120/09)
2) Law on control of precious metals articles ("Official Gazette of RM" no. 23/95 and 22/07) and
3) Law on Vehicles ("Official Gazette of RM" no. 140/08) for the implementation of UN / ECE Agreement on International Adoption of Uniform Technical Regulations for wheeled vehicles and equipment and parts.

ROLE

Subject to the provisions of the Law on metrology, the Bureau of Metrology is a national metrology institution, competent and responsible for:

- Providing traceability of measurements in the country and the world
- Realization, preservation and maintenance of national measuring standards and certified reference materials and calibration of measuring standards and measuring instruments,
- Conformity assessment of the type of measuring instruments related to fulfilment of metrological and related to them, technical regulations - essential requirements specified by this and other laws and regulations adopted pursuant to this and other laws,
- Verification of measuring instruments,
- Metrological supervision on the quantities and markings of the quantities of pre-packed products
- Professional supervision over the enforcement of the provisions of this law and the regulations adopted pursuant to this law.

Bureau of Metrology represents the country in international and regional organizations in the field of metrology.

BOM has a leading role in the National Metrology System and as such, performs tasks and duties in the field of scientific, industrial and legal metrology.

According to the Law on control of precious metals articles, BOM is responsible for the control of the articles of precious metals, their composition and content (degree of fineness), the manner of their testing, marking, and fulfilment of the conditions placing on the market.

Under the Law on vehicles, the Bureau of Metrology is appointed for approval authority for recognition of homologation regarding the identification, evaluation of technical conditions and conformity of the vehicle and its parts and systems. BOM is the legal successor of the implementation of the UNECE Agreement 1958 - International Agreement on acceptance of Uniform technical regulations for wheeled vehicles and equipment and parts which can be installed and / or used on wheeled vehicles and the conditions for mutual recognition of homologation conducted on the basis of these regulations.
In addition, BOM is responsible authority for approval of homologation of motor vehicles.

ORGANIZATION

BOM is organized into three Sectors, Sector for calibration, Sector for verification, precious metals and homologation of vehicles and Sector for General Affairs, Financial Affairs and Information Systems, and Department for Human Resources and Department for Internal Revision. Sector for calibration consists of four departments, covering Laboratories for mechanical quantities, electrical quantities, physical quantities and other quantities. Sector for verification, precious metals and homologation of vehicles is comprised of four Departments as follows: Department for verification of mechanical measuring instruments, Department for verification of electrical measuring instruments, the Department for control of precious metals and Department of homologation of motor vehicles. Organizational structure is 46% fulfilled, from which 75% are with higher technical education.

Metrology council composed of experts of the metrological infrastructure, is functioning as an expert and advisory body to BOM, in carrying out activities and in preparing an opinion on the draft technical regulations etc.

2. BASIS FOR MEDIUM TERM PROGRAM FOR DEVELOPMENT OF METROLOGY INFRASTRUCTURE

Metrology system in Republic of Macedonia is developing in the context of European integration and key economic processes at national and international level. Macedonia is relatively small, but very open and dynamic market, that clearly advances in implementation of integration processes with the ultimate goal - achieving membership in the European Union.
Hence, the national metrological infrastructure, by providing reliable measurements should promote the introduction of innovations and project activities based on knowledge on the one hand, and to ensure implementation of the acquis communautaire in the areas of safety, life and health, environment and quality of life on the other side.
The role of BOM is to provide maintenance and development of the metrology system in Macedonia, which will achieve sustainable development and competitiveness of the Macedonian economy internationally
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2.1. Development of the legal framework (ACQUIS)

Law on Metrology ("Official Gazette of RM "br.55/02, 84/07 and 120/09) complies with European requirements and practices in general. Recent changes to the Law on Metrology, adopted in October 2009,allowed transposition of the Directive on measuring instruments (MID) 2004/22/EC, (NAWI) 2009/23/EC and Directive 75/107/EEC for measuring containers. Directive on units of measurement (80/181/EEC) is transposed into the Rulebook for definitions, names and symbols, area and manner of application, the obligation to use and way of writing the legal measurement units ("Official Gazette of RM", No. 104 / 2007), and Directives 76/211/EEC and 2007/45/EC relating to the pre-packed products are transposed in the Rulebook on the manner and procedure for metrological supervision and requirements which pre-packed products should meet in terms of quantities and allowable deviations from the highlighted quantity and list of nominal quantities of pre-packed products ("Official Gazette of RM", No. 83/2009). Measuring instruments directive (MID) 2004/22/EC was transposed into the Rulebook on measuring instruments"("Official Gazette of RM" No. 17/10). With the adoption of the Rulebook of measuring instruments, the old regulations for 33 types of measuring instruments are repealed (technical standards for such legislation is enacted before the independence of Macedonia and does not follows the development of the technique in the field of metrology, which appeared as an obstacle to entry into legal status of certain measuring instruments and the use of modular approach in the assessment of their compliance). Directive 90/384/EEC was transposed in the Rulebook for non-automatic weighing instruments which, is adopted on the basis of the Law on product safety, before any changes to the Law on metrology. continuously monitoring the state of legislation in the EU and participation in the working groups of the European Commission for preparation of secondary legislation in the field of metrology is required, to make adjustments in terms of development
Transposition of EU legislation in the field of metrology related to certain types of measuring instruments is in ongoing process, whose dynamics of transposition is given in the Action Plan for implementing the Strategic Plan for the development of metrological infrastructure in the country. All the employees of the Bureau of Metrology are somehow involved in the process of transposition of the above mentioned Directives.
In the period covered by the strategy, analysis of the situation in Macedonia regarding the use of certain categories of measuring instruments in the industry, their legal regulation and so on, will be implemented, and the existing national regulations, will continuously be reviewed, with priority given to those measuring instruments that have broad application in different fields in the country.

2.2. Development of organizational structure and facilities

Based on recent amendments to the Law on Civil Servants (Official Gazette of RM no. 14/09), a new systematization of the Bureau of Metrology is under preparing. Changes in working posts systematization, primarily due to the alignment of the existing organizational structure with the latest amendments to the Law on Civil Servants, as well as to upgrading the same with the Department for Internal revision and Department for General Affairs.
In terms of strengthening personnel, one should have in mind that there is still a lack of skilled personnel to effectively fulfil the tasks of the section of legal metrology. It is necessary to strengthen personnel in the departments for verification of measuring instruments and in the field of scientific metrology where minimum of two laboratory assistants in each lab is necessary).
In the period covered by the strategy, according to NPAA (National Programme for Adoption of the acquis), 6 new working posts should be fulfilled
Training of staff (new hires and existing staff on) is also one of the strategic objectives which significantly affect future work and development of the BOM in building recognizable metrology system. The training needs for of BoM staff by fields, is covered in more detail below points (point 2.3, 2.4, 2.5 and 6.2).

2.3. Industrial and scientific metrology

In accordance with the Law on metrology, the Bureau of Metrology has the task of achieving, preserving and maintaining national standards, which provides traceability through calibration and inter-laboratory comparisons.
Within the BOM, laboratory centre was established, which consists of the following national labs: laboratory for mass, laboratory for length, laboratory for pressure, laboratory for volume and flow, laboratory for electrical quantities, laboratory for temperature, laboratory for time and frequency , laboratory for density and laboratory for reference materials.
The calibration laboratories for mass, volume and flow, pressure, and temperature are operational for performance for the calibrations and issuing calibration certificates. Partially operational laboratories are electrical quantities, density and length, and laboratories for time and frequency and reference materials, in the future it is planned to equip with metrological equipment.
Traceability of the BOM standards is assured through calibrations or their direct comparison with other recognized metrology institutes and laboratories that are traceable to the International Bureau of Weights and Measures - BIPM (Paris, France).
Most of the measuring standards of BOM are realized or are planning to be realized on the secondary level. Calibration and measurement capabilities of BOM are not yet registered in the database of the CIPM MRA, although BoM, is signatory to CIPM MRA, arrangement, since 2007. Bureau of Metrology as a full EURAMET member, within the participation in work of technical committees, participates in inter-laboratory comparisons as to prove the competence. Inter-laboratory comparisons are necessary for the accreditation of Calibration laboratories in the BoM as well as in Quality Infrastructure. .
Laboratory staff working in BOM, has a different experience in the field of metrology. So far, most of lab staff have pased basic training in metrology and a specialized training in Turkey's National Institute of Metrology. In 2009, training of laboratory staff, was mainly realized within the framework of the Focus Group for Small NMI, formed as a part of the Technical Committee for interdisciplinary metrology, in EURAMET.
So far, the Bureau of metrology, on the basis of Article 5 of the Rulebook for the realizing, preservation and maintenance of national measuring standards and conditions for recognition of reference standards as national ("Official Gazette of RM" br.28/09), has decided to recognize two national measuring standards, with the “Decision on recognition of a national standard for measuring unit of mass”, no. 0302-2054/4 from 22.06.2009, and the “Decision on the recognition of a national standard for measuring unit of volume flow” no. 0302-2054/5 from 22.06.2009..
Procurement witr new equipping for the Laboratory Centre, will contribute in increasing the range of measurements on the one hand, as well as to contribute in achieving international recognition of the

metrological system of the Republic of Macedonia..Procurement of metrological equipment for the laboratory Centre of the Bureau of metrology, through BERIS (Business Environment Reform and Institutional Strengthening) project of the World Bank is an ongoing process. At this stage, the contracts for six Lots (mass, temperature, time and frequency, pressure, accessories and spectrometer) of the published tenders for 12 Lots, were concluded. The implementation of this component will allow full operation of laboratories already operating, and expanding the scope of work by equipping the laboratory for time and frequency. Traceability of the BOM reference standards should be continuously maintained through their regular calibration in NMIs and through participation in various projects of intercomparisons . In that context, in the next period (2010 - 2012), we need to work on preparing for entry of calibration and measurement capabilities of particular laboratories (mass, volume and flow, temperature and time and frequency) of BOM,in CMC database of CIPM MRA.
The advancement of metrology means organizing trainings and specializations for the staff of the Bureau of metrology, both from the scientific point of view and in terms of legal metrology. The training of the staffin the next period, will mainly be covered within IPA 2008 and IPA 2008 Regional projects and further realization of the trainings, as part of the Focus Group for Small NMIs. As a result of good experience of cooperation on the training of staff of BoM, with the UME - Turkish National Metrology Institute in previous years, this type of cooperation with the metrology institutes of the region and beyond, should be preferred in the future.
The recognition of national standards for pressure, temperature and volume of liquids in first run, followed by other standards (time, frequency, length, DC voltage, resistance, density, volume of gases, etc..),is one of the priority objectives, which BoM seeks to achieve in the future. Also, this strategic plan contains activities to support measurements in certain areas of metrology (Metrology of activity of radioactive sources, ionizing radiation, etc.), that are not involved in the development plan of the BOM. In this direction, BoM is going to prepare Register of secondary standards in the Republic of Macedonia and their holders. Accordingly, this will open the opportunity for some of them to be recognized as national standards, ie the process of establishing metrological traceability may involve other institutions that have opportunities and would show interest in formation of standards base,and to make the first step towards the development of distributed system for areas that the Bureau of Metrology does not have means to cover it (e.g, dosimetry, radiation, metrology in chemistry, etc.). This primarily refers to collaboration with institutions, scientific research institutes and others. The reference standards that some institutions has, could get status as an national standards, as well as those of the Bureau of metrology.

2.4. Legal Metrology

The legal metrology covers accuracy of measurements in terms of transparency of economic exchange of goods and services, protection of human health and animals, general product safety and as such is of great importance for each country.
In the Republic of Macedonia, legal metrology has some experience and tradition, but it should be made more effective, especially through regulation of the legal framework and strengthening the professional potential involved in this activity.
Within the legal metrology ,in the metrology system are operate services for pre-verification of mechanical and electrical measuring instruments For verification of measuring instruments in legal metrology, the Bureau of metrology, despite its own laboratory facilities, uses capacities of the laboratories of legal entities that are accredited or in the process of accreditation as inspection bodies and legal entities who have signed an agreement with the Bureau of Metrology.
Verification of measuring instruments intended for legal use in the Republic of Macedonia is performed by theBureau of metrology.
Metrological supervision of the pre-packed products, is part of the legal metrology, which is currently under development. The legal regulation concerning the pre-packed products is determined by adopting the Rulebooks on the manner and procedure for metrological supervision and requirements which prepacked products should meet in terms of quantity and allowable deviations from the highlighted quantity and the list of nominal quantities of pre-packed products

Another important segment of the legal metrology is the expert supervision over measuring instruments putt on market or usage in accordance with the legal provisions in the field of metrology. In addition, the domain of BoM responsibilities includes market surveillance on the hallmarking of articles made of precious metals, as well as supervision of the implementation of the prescribed conditions for the producers of the precious metals articles..
Due to increase of scope and application of new technologies, a high level of competence and expertise is increasingly important in legal metrology. For this reason, it is necessary to develop and maintain close cooperation in enforcement activities by the scientific and legal metrology. In any case, the trend is and is economically justified national metrological institutes to support the legal metrology with its metrological laboratories.
After the harmonization of regulations concerning measuring instruments covered by the Rulebook for measuring instruments, the next stage is its implementation. BoM, during which is covered by the strategy is necessary to develop an action plan for preparation and achieving status of a notified body for conformity assessment. In particular, the appointment of BOM as a body for conformity assessment will apply to certain categories of measuring instruments from the Measuring instruments Directive, which is transposed into the Rulebook for measuring instruments (water meters, and AWI and taximeters),as well as for the NAWI..
For this purpose it is necessary to supply adequate equipment to implement activities related to control of measuring instruments, and to upgrade technical knowledge, expertise and competence of staff. In that direction, within the IPA 2008 project, several activities are planned such as: development of working procedures, practical training, etc.. On the other hand, in the framework of TAIEX technical assistance trainings are planned, with the aim for improvement of knowledge and expertise for the implementation of regulations which are used in performing tasks.
In order to effectively carry out activities in other segments of the legal metrology - metrological supervision of packaged products, also it is need to ensure sufficient number of employees who can cover the whole territory of Macedonia. This, itself entails technical assistance and professional training of staff who will be included in the above activities.

2.5. Control of the precious metals articles

The analysis and control of objects of precious metals, is treated as a separate field of metrology in the area of solid reference materials.
Under the legislation concerning the control of the objects of precious metals, jurisdiction of the Bureau of Metrology is to protect consumers. It is performed through several activities of the Department for control of the objects of precious metals, which are related to the control of producers by establishing conditions on the premises for production, control of the objects of precious metals through their examination in terms of composition and finesess and through supervision of the objects that are put on the market in Macedonia.
Following the example of institutions for testing precious metals in Europe and beyond, as well as to improve the performance of the Department, equipping of the laboratory for testing with sophisticated equipment that will allow non-destructive and quick examination of the objects. Equipment is in the process of procurement through BERIS project and it is expected to be operational in the second half of 2010.
At the same time, it is necessary to strengthen the capacities of the Department with adequate professional staff and specialized training, in order to perform tasks such:
- New legislation e.g amendment of the Llaw on control the objects of precious metals, which will facilitate the implementation of the provisions of the International Convention on the Control of precious Metals (Hallmarking Convention);

- Starting with supervision (control) of the objects of precious metals that are found on the market in the Republic of Macedonia
- Implementation of quality system in the laboratory for testing under MKC EN ISO 17025 and the Department for control of the objects of precious metals in accordance with MKC EN ISO 17020;
- Working more closely with other state institutions (market inspection, customs ...)

2.6. Homologation

According to the Law on vehicles, the Bureau of Metrology is approval authority and as such, the Bureau of Metrology has an important role in the process of homologation of vehicles in the country. In the latter period, a series of changes were made to the regulations relating to vehicles, so implementation of those changes remains ahead..
Pursuant to the Law on vehicles, Bureau of Metrology as authority for approval, has an obligation to follow the trends dictated by European legislation and UNECE Agreement in 1958 (United Nations Economic Commission for Europe) Treaty and to actively participate in WP 29 (World Forum for Harmonization of Vehicle Regulations) - World Forum for Harmonization of Vehicle Regulations.
Other activities ahead of the BoM in the section concerning the vehicles homologation:

- Participation in building infrastructure for homologation - Technical Services, authorized importers, service;
- Regular monitoring of work (supervision) over the bodies for homologation
- Cooperation with institutions whose activities in any way are connected with the process of homologation (MOI, IARM, ISRM, MTV) to improve it.

2.7. Services to the customers (technical features)

One of the missions of the Bureau of Metrology is to provide quality services for citizens in the area of their responsibilities - metrology, control of precious metals and homologation of vehicles. BOM provides services within its available capacity, from which, part of the services provided by the legislation, and others are necessary for the application of standards and best practices for ensuring the quality of the results of measurements. BoM performs duties impartially to all users - such as laboratories for calibrations and testing, inspection bodies for the verification of measuring instruments, the citizens – users of measuring instruments of massive nature(watermeters, measuring instruments for electrical and thermal energy, etc.) and indirect users such as as consumers, industry and scientific institutions.
On the other hand, to inform users of services, BoM, for a longer period has its own website www.BoM.gov.mk, where information is regularly updated. In the intranet of BoM, in 2009 material financial software (DMS) is applied to in order to facilitate the service to the users, but also as a basis for implementation of the Quality System Management. . Bureau of Metrology is also taking an active part in the proceedings of the EXIM (Integrated system for export, import and transport of goods and quotas), in which four types of licenses are issued: Decision to accept / reject registering measuring instruments into the Register of measuring instruments in BoM , (D-2 license), authorization for a type of vehicle, confirmation of the identification of single vehicle and a confirmation of conformity of a single vehicle.

In the future, in order to improve the quality of services to users, a range of activities should be performed, primarily related to:

- Introduction of additional services related to the procurement of new equipment - calibration services and ensuring traceability of measurements in the field of time and frequency, application of non-destructive (spectrometric) method for the control of precious metals,
- Training and Consultancy
- Maintenance of equipment and software programs (regularly updating and enriching the website, upgrading of software for financial and material operation)

Table 1. Comparative review of services to customers in the period 2007-2009

ACTIVITY / YEAR	2007	2008	2009
	(in numbers of performed services)		
1. Calibration of measuring instruments	158	233	346

2. Verification of electrical measuring instruments	101.452	99.846	231.964
3. Verification of mechanical measuring instruments	23.148	26.665	21.908
4. Decisions to enrol into register of MI	140	83	92
5. Licence for a single import	1.130	1.882	1.746
6. Total hallmarked items from precious metals	38.500	27.420	31.118
7. Decisions for sign for a manufacturer of prec. met.	19	25	29
8. Quantitative chemical analysis of PM articles	14	30	41
9. Certificates of type approvals of vehicles	108	648	381
10. Confirmation of conformity of single vehicle	5.631	3.645	4.407

The tendency of the Bureau of Metrology is to work on further development and improving quality, to provide increased services to customers.

2.8. Quality system

The introduction of quality management system, certainly is a major strategic decision of any organization. As a duty, the requirement and necessity for introduced quality system and its validation by a third party or through its own statement, is growing continuously .
The introduction of the quality system in the BOM is based on the implementation of standards EN ISO 17025 in the area of calibration and EN ISO 17020 in the area of verification of measuring instruments. The management of BOM, and laboratory staff is fully committed to introducing a quality management system (QMS). Given that the BOM plays a key role in establishing the quality infrastructure necessary for providing quality support to the business community, the implementation of quality system should be realized in such a short period.
According to the medium-term program for development of metrological infrastructure 2006 - 2009, part of the activities in the sector for calibrations referred to the implementation of QMS in the Bureau of metrology. Time limits for fulfilling these tasks are exceeded, mainly due to delay completion of the World Bank BERIS where support to the implementation of quality system in the form of consultations, was projected.
In terms of the tasks associated with the introduction of quality system according to EN ISO 17025 in the Bureau of metrology, the frame is drawn and contains common documents and procedures that cover services to clients. Part of the laboratory staff of BOM has undergone some basic training for QMS: In the Bulgarian Institute of Metrology (training in the TA-IM EURAMET Focus Group) in BOM (conducted by experts from the Bulgarian Institute of Metrology).
Also, implementation of quality system according to EN ISO 17020 in the Department of verification will begin directly after the full implementation of the standard EN ISO 17025 in the Department of calibration. We also plan to implement appropriate quality system, as uniting,BOM the MKC EN ISO 9001 standard, but until obtaining full independence of BoM, it is not possible to make it certified.
Regarding the implementation of quality systems, the following activities are projected:

- Within the IPA 2008 project,technical support to the laboratories of BOM in the process of their accreditation will be provided. This is primarily due to consulting services on preparation general and laboratory procedures.
- Preparation of BOM for the presentation of introduced and documented quality system in accordance with EN ISO 17025 in the laboratory center before the Technical Committee for Quality in EURAMET.
- Establishing a framework and the development of procedures pursuant to EN ISO 17020 in the Departments for the verification of measuring instruments.
- Accreditation of laboratories for calibration and verification, according to EN ISO 17025 and EN ISO 17020, respectively.

2.9. Membership in the international metrological organizations

Bureau of Metrology is a full or associated member in several international and regional organizations, including:

• Full member of OIML - (International Organization for legal metrology) since 1995. OIML is an intergovernmental organization which includes membership of the Member States, countries that actively participate in technical activities, and appropriate representatives of observer states in the OIML. It was founded to promote global harmonization of legal metrology procedures.

• Associate member of EURAMET - European Association of Metrology Institutes , from 2006 and from May 2010 a full member of this organization, which deals with activities in the field of scientific metrology. EURAMETs technical activity is divided into 12 Committees in the areas of: acoustics, electricity and magnetism, flow and volume, interdisciplinary metrology, ionizing radiation, length, mass and related quantities, metrology in chemistry, photometry and radiometry, quality, thermometry and time and frequency. BOM , within the abilities participates in the work of committees on flow, thermometry , quality, volume and mass and related quantities and interdisciplinary metrology.
• Associate member of the Metr Convention - CGPM - General Conference for pounds and measures (General Conference on Weights and Measure), since 2006
• Signatory of CIPM MRA - (Mutual Recognition Arrangement) arrangement for acceptance of calibration certificates issued by the signatories of this agreement, since 2008. The purpose of this arrangement is to establish equality between national standards, their mutual recognition and recognition of certificates of calibration, as a technical basis for agreements related to international trade, exchange and other legal activities. One of the key conditions for the signing of this arrangement is the participation in inter-laboratory comparisons as a basis for entering the CMC tables.
• Associate member of WELMEC - (Regional European Organization for legal metrology) since 2008. The main objective of WELMEC is to establish a harmonized and consistent approach to legal metrology at European level. Currently 37 countries are members of WELMEC;
• Member of International Association of institutions for testing precious metals (IAAO), since 2009.
• Signatory of UNECE Agreement 1958 (International Agreement for acceptance of Uniform technical regulations for wheeled vehicles and equipment and parts which can be installed and / or used on wheeled vehicles and the conditions for mutual recognition of homologation conducted on the basis of these rules) and WP 29 - World Forum for Harmonization of Vehicle Regulations
Participation in the work of these organizations is of great benefit to the BOM, in terms of participation in projects of inter- comparisons i, trainings, exchanging experiences, using legal recommendations from OIML and WELMEC.

Given that the participation and representation of the Republic of Macedonia in international organizations in the area of metrology is the legal obligation of BOM, but also necessary for gaining international recognition to the metrological system of the Republic of Macedonia, in the future the Bureau of Metrology must actively participate in the work of committees, to attend annual meetings in these organizations. Proving the full-membership in EURAMET, launching activities aimed at joining the Convention on the control and marking of precious metals (Hallmarking Convention), are also goals to be realized in the future.

2.10. Cooperation with other National Metrology Institutions (NMIs)

Cooperation with other national metrological institutions is necessary for the development of metrology in general, and also is useful and important in terms of exchanging experiences, knowledge and potentials between the Institutes of metrological infrastructure. Bureau of Metrology has established cooperation with the following metrological institutes of the region and beyond:
• Memorandum for Understanding with Turkish Metrology Institute - UME, signed in May 2006. Cooperation with the UME, a longer period has been successfully carried out mainly in the form of general and specialized training of laboratory staff of BOM.
• Memorandum for Understanding with Metrological Institute of Albania, signed in January 2009;

• Memorandum for Understanding with the Institute of Metrology of the Republic of Bulgaria (BIM), signed in June 2009. Within the cooperation with BIM training of the employees from BOM about the quality system according to EN ISO 17025:2005 was realized
• Memorandum for Understanding with the Institute of Metrology of the Republic of Slovenia (MIRS), signed in June 2009.
In the next period, the Bureau of Metrology plans to expand regional cooperation with the National Metrology Institute of Republic of Serbia, Bosnia and Herzegovina, Croatia and Montenegro. Signing Memorandums of cooperation in the future, will tend to involveBoM to have exclusivity to have a role BOM as a transfer point for the provision of services between institutions. Cooperation with NMIs in the region and beyond, despite the exchange of experiences and knowledge should include activities related to the exchange of certain services such as calibration of standards, type approval of measuring instruments and other specialized technical services.

2.11. Cooperation in the country

Bureau of Metrology has signed a Memorandum of Understanding with several local institutions:
• Faculty of Electrical Engineering and Information Technologies - Skopje
• Faculty for Mechanical Engineering - Skopje
• Technical Faculty - Bitola
• Chamber of Small Businesses - KMB,
• Center for Crisis Management

The cooperation of the BOM with the Faculty of Information Technology and Electrical Engineering - Skopje, within the University Ss. Cyril and Methodius, covers the implementation of the project for the establishment of Master studies program in the field of metrology.
In March 2009, the Bureau of Metrology signed a Memorandum of Cooperation with IARM - Institute for Accreditation of Macedonia and ISRM - Institute for Standardization of the Republic of Macedonia, as key elements in building a quality infrastructure in the country.
The extending of cooperation in the future will be directed to:
- Intensifying the cooperation with institutions,
- Inclusion in the work of the Centre for Coordination of inspection bodies
- Concluding agreements with legal entities to implement a procedure for verification of measuring instruments, etc.

2.12. Popularization of metrology

Popularization of metrology is significant factor that can positively influence its future development. Although metrology in Macedonia has its history, a few years ago, its development was related mainly to the field of legal metrology.
An important segment of the popularization of metrology refers to proving the importance of metrology and the need for its development before national authorities, participating in decision making and creating necessary conditions for smooth functioning of the Bureau of metrology. It should be noted that in the last three years significant progress has been achieved because of the above reasons.
For its promotion, the Bureau of metrology, as in 2009, will continue with issuing of relevant publications (Gazette, brochures, etc.), in which despite the professional information and regulations, useful information for the general public will be published.
Bureau of Metrology shall be presented and promoted in both, domestic and international frames, with active participation in conferences and workshops in the field of metrology that will contribute to strengthening the Bureau of metrology, and the international recognition of the metrological system in Macedonia.
For awareness raising about the importance of metrology in everyday life, as well as knowledge about the legislation in the field of metrology, it is necessary at least twice a year to organize seminars and workshops for all potential users of services.
Also, for raising awareness and knowledge in the field of metrology, it is necessary to insist on cooperation with other scientific research institutions and higher education institutions, participation in

scientific projects, as well as to introduce the metrology issue in the programs of secondary education and higher education institutions

3. SWOT ANALYSIS

The analysis of the current metrology infrastructure in the Republic of Macedonia noted the following advantages, weaknesses, opportunities and risks.

ADVANTAGES
- Sustainable metrological infrastructure that proactively affect the Bureau of metrology;
- Same institution is responsible for legal metrology and scientific metrology
- New facilities and new equipment;
- A young engineering staff;
- Low fluctuation of employees.

OPPORTUNITIES
- BoM is a legal entity- semi independent initiation
- Approved program for continuous training and education of employees and narrow specialization in research institutions;
- Active assistance programs BERIS, IPA 2008, IPA Regional, PTB for SEE NMi and GTZ;
- Developed programs for bilateral cooperation with Turkey UME;
- The relatively advanced status of development, regarding to BoM neighbouring institutions.

WEEKNESEES
- Under staffing up to 40% and a long training period for the Lab's staff;
- Needs for additional equipment to complete the operating capabilities of BoM;
- Slow implementation of quality systems;
- Insufficient activity for promotion of metrology in the country;
- Lack of proactive professional associations in metrology .

THREATS
- If our EU neighbours are not fully open to cooperation;
- If a low level of development of the neighbours who are not members of the EU is maintained;
- If public awareness of metrology in the country, is not raised;
- If stiil no good coordination between stakeholders in quality Infrastructure
- If there are delays in implementing the EU integration processes.

Strategy 2010 - 2012 and action plan for that period are based on detecting elements above, to overcome the problems arising from vulnerabilities and risks on the one hand, and the impetus for further development based on strengths and opportunities on the other side.

4. Strategic Planning

Highlighted elements below of strategic planning, are laid down mostly to ensure realization of the vision and fulfilling the mission of the BOM.

Vision: metrological system in the Republic of Macedonia to provide the necessary metrology services in all strategically important areas of national level and to ensure international recognition of measurements and calibrations carried out in the country.

Mission: The mission of the BOM is to ensure the functioning and development of the metrologyl infrastructure that will contribute to environmental protection, improving the quality of products and provision of life and support the competitiveness of national economy. To identify the actors of the national metrology system that will be involved in meeting the strategic objectives.

Providing quality of products and services that achieve a better placing on the market, in great manner depends on the development of the metrological system in both - entities involved in production and service activities and Bureau of Metrology as holder of the metrological system of the Republic of Macedonia
To summarize, strategic objectives under the responsibilities BOM can be classified as:

- Strengthen BoM personnel in the part of legal metrology and in the part of scientific metrology, as well;
- Equipping of laboratories and expanding the scope of its work starting with operation of the laboratory for time and frequency, sound, etc., and equipping laboratories to support the verification activities;
- Improvement of technical knowledge, expertise and competence of existing staff and training new employees;
- Intensifying the cooperation internationally;
- Intensifying the cooperation with institutions within the Republic of Macedonia;
- Introduction of systems for quality management;
- Popularization of metrology.

The objectives covered by the strategy are interconnected and depend on each other. activities around the implementation of some of the goals already started and are continuing to take place continuously in the future.
The time period is provided for the realization of strategic objectives set in the Strategic Plan is three years as the optimum time period for planning the development process, the quality and essence of the strategy would potentially be violated. The realization of strategic goals is important and necessary condition for the maintenance and further development of metrological infrastructure internationally. The action plan attached hereinafter (Appendix 1), is determined the dynamics of the realization of strategic objectives and actions arising from them.

5. Financial aspects

The dynamics of the realization of strategic objectives and the quality of the further development of metrology, largely depends on the funds available. Bureau of Metrology as the main carrier of the metrology infrastructure in the Republic and its development, it is necessary, despite the legal development of the metrology to develop rapidly in terms of scientific metrology. The development of scientific metrology would have be based on continuous development and upgrading the capacities of national laboratories and achieving traceability of national standards to international standards.

Bureau of Metrology has substantial revenues and with its development and improvement of services, also seeks to increase revenue on the basis of increasing the number and availability of services, which will significantly facilitate faster and more efficient development of metrology. infrastructure
In addition to own funding, also projects revenues of the European Union (IPA, GTZ and others) and the project of the World Bank - BERIS, are necessary is to be used to strengthen the capacity of the Bureau of Metrology, mainly in terms of purchasing metrology equipment and raising the level of expertise of its staff.
Funding the development of metrology by obtaining further support for the use of EU funds (IPA 2011), use of the mechanisms of the Law on Civil Servants, in the sense of reward as a tool for motivation of employees, properly directing the funds from its own budget for purchasing and maintenance of equipment and continuous training of personnel, is an important segment that affect the realization of strategic goals.

6. MONITORING THE STRATEGY

Strategy for development of metrology is implemented through annual work program of the Bureau of Metrology. For each annual work program, at the end of the year report on activities performed within the year is prepared (as required will be taken into account indicators such as the questionnaire as a

basis for improving service quality, financial performance indicators, etc.) and is compared with indicators and deadlines given in Appendix - Action Plan under Strategic Development Plan of the Bureau of Metrology of and metrological infrastructure in the Republic in 2010 - 2012.

7. CONCLUSION

The obligation of each state through the implementation and coordination of activities of the institution,, such as the Bureau of Metrology is to provide a system that will continuously be maintained and developed in full to professional, technical and legal capacity.. Strategy for the Development of metrology infrastructure in Republic of Macedonia is a document that trace the paths for further development of metrology, whose outcomes are touching almost all segments of the everyday live.
The realization of these objectives largely depends on the financial resources which will be available. Moreover, it is important to have professional staff and who will plan activities and implement them, necessary for international recognition of the metrological system of the Republic of Macedonia.
The most significant support in the realization of strategic objectives, in the first development of the metrology infrastructure, is expected from the Government of Republic of Macedonia.

Appendix: Action Plan