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**METHODOLOGICAL FOUNDATIONS OF REFORMING THE SYSTEM  
OF TECHNICAL REGULATION IN THE PETROLEUM SECTOR  
OF EASTERN EUROPE AND THE CAUCASUS**

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**Abstract.** *The conceptual directions of technical regulation system reforming of oil and gas industry in Ukraine, Belarus, Azerbaijan, Moldova, Armenia and Georgia, developed by a group of experts of the TACIS project «Harmonization of oil and gas standards and practices in Eastern Europe and the Caucasus" are presented in the article. These directions represent the frame of references and describe the recommended strategy for technical regulation subjects' actions in the oil and gas industries of identified countries, which are designed to convert them, and to harmonize with the technical regulation systems, developed in these countries, and established international practice. Solutions to the problem of technical regulation system's information support in the industry are given.*

**Keywords:** *technical regulation, standardization, harmonization, conformity assurance, New Approach, Global Approach, directives, oil and gas industry, information provision*

In a view with the declared conversion of the legislation of all countries of Eastern Europe and the Caucasus (Ukraine, Belarus, Moldova, Azerbaijan, Georgia, Armenia) in the sphere of technical regulation to the market model of the European Union, based on the New and Global Approach, which is characterized by the set of distinctive features described in [1], the following implications will come to force:

– harmonization of regulations is limited by the establishing of main security principles to which the products, that are shipped into the market, should correspond. For these products the free access to EU markets should be guaranteed;

– the authorities, responsible for industrial standardization, develop documents that contain the terms for usage in the production and delivery of products, that meet the essential requirements of EU directives;

– specification documents are not mandatory, but are documents of voluntary application;

– administrative authorities should require the conformity of products with the essential requirements of EU directives.

EU Directive of the new concept, that are collections of laws, include the basic requirements towards:

– certain provisions which relate primarily to safety, health and environmental protection;

– applied methods of conformity assessment;

– notified bodies, alleged participating countries to the European Commission.

Achieve procedures to reach product compliance with standards, are described in the regulations – EN (euronorms). As a rule, directives, applicable to a particular type of product, are considered together with the relevant regulations, the so-called "under-directive" standards.

The Global concept contains the basic principles of European policy in the field of conformity assessment. These principles are based on:

- introduction of modules (Fig. 1) for the phases of the conformity assessment procedures and criteria for their usage;
- application and notification of agencies, responsible for these procedures;
- CE marking of products;
- unified application of European standards on management and quality assurance (EN ISO 9000) and the requirements for testing laboratories, certification and accreditation bodies (EN 45000);
- mutual recognition of certification and testing results;
- organization of accreditation system and the application of comparative tests.

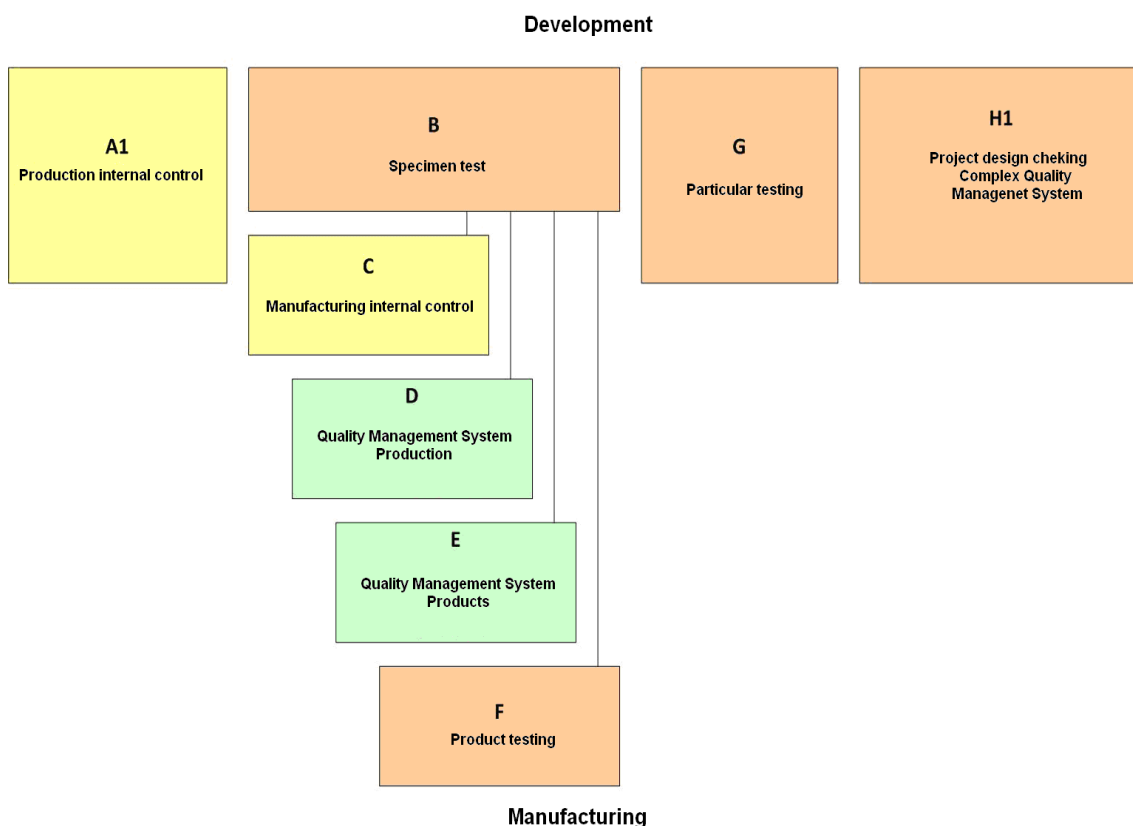


Fig. 1. Modules of conformity assessment in accordance with the Global approach

All considered countries in Eastern Europe and the Caucasus during the process of joining the World Trade Organization (WTO) and on the way to economic association with the EU transform their system of technical regulation in the direction of [2]:

- harmonization of profile legislation with the requirements of the WTO and the EU;
- introduction of the full base of European and International standards;
- infrastructure optimization of technical regulation;
- creation of the effective system of supervision over the safety of goods and services.

Despite of all the efforts over the last decade, the transition to a European model of technical regulation has not been fulfilled, since before the technical communities occurred before the task to reform the before existing system of technical regulation, and to ensure their sustainable functioning on principles that differ significantly from acting earlier and oriented to the internationally recognized standards and regulations [3].

The system of technical regulation contains the technical regulations (counterparts of EU directives), establishing mandatory requirements for products or related processes of design (including research), manufacturing, construction, installation, upgrading, operation, storage, transportation, distribution and utilization, needed to protect the people life or health, property of individuals and legal entities, state and municipal property, environment protection, life and health of animals and plants, as well as conditions, preventive actions to mislead purchasers.

Compliance with technical regulations can ensure the observance of standards requirements that the manufacturer selects on a voluntary basis. It can be any economically beneficial standards for users, including national and organization standards. In this case, the economic efficiency of certain standards application should not enter into conflict with the need to comply with the requirement of technical regulations, that are of higher priority in the sphere of technical regulation.

Oil and gas industry, that characterized by a high degree of potential danger, a global character, a tough economic competition and the growing requirements of the standards, requires particularly careful approach in reforming branch systems of technical regulation.

The implementation of state policy, which aims to reform the systems of technical regulation in the oil and gas industry, is a step in reforming the states current systems of technical regulations, which should operate and evolve following the new principles.

The following conceptual directions of reforming the system of technical regulation of oil and gas industry in Ukraine, Belarus, Azerbaijan, Moldova, Armenia and Georgia were develop by a group of experts of the TACIS project «Harmonisation of oil and gas standards and practices in countries of Eastern Europe and the Caucasus". These directions represent the views of the system and describe the recommended

strategy for action for parties of technical regulation in the oil and gas industries of these countries, that are designed to convert them, and to harmonize with the established systems of technical regulation in the described countries and set international practice.

Deregulation of economy and expansion of autonomy of business entities require development and improvement of technical regulation in the petroleum industry of any state to ensure a transition from a priority reflection of state interests in the regulations to ensure the balance of governments, oil companies, their customers and suppliers interests.

The role of technical regulation should be adequate the changes, happening in countries and oil and gas industries, and to conform the international practice.

The main policy objectives of oil and gas industries in the area of technical regulation are:

- providing technical, technological and environmental safety in the petroleum industry;
- improving the quality and competitiveness of products and services of oil and gas companies, including international markets;
- promoting the conservation of the priority markets for national oil companies, trade and economic, scientific and technological partnerships;
- promoting the application of innovative technologies, knowledge and experience in the oil and gas companies through technical regulations and documents on standardization;
- promoting the elimination of technical barriers in trade relations of oil and gas companies and their counterparts, both in the international level and within the country.

The main directions of technical regulation in the oil and gas industry are:

- a) creation of modern technical regulation infrastructure in the oil and gas industry, providing:
  - participation of all stakeholders in the development of technical regulations and their enforcement in the activities of companies;
  - participation in national and international standardization;
  - creation and development of standardization system of oil and gas companies;
  - conformity validation of products, services and works, respectively, produced, provided and executed by oil and gas companies and for them, to the requirements of standards and conditions of their use;
  - creation of a unified oil and gas industries information system on technical regulation;
- b) training (skills development) of the professionals, working in the field of technical regulation.

The concept of technical regulation defines the three areas of application:

1. establishing mandatory for the application and performance requirements for the technical regulation objects (technical regulations);

2. establishment of rules and characteristics to their voluntary re-use to achieve order in the spheres of production and circulation of products and to improve competitiveness of products, works or services (standardization);

3. identification of compliance requirements to the object of technical regulations (conformity assessment).

Relations arising from the application and enforcement of mandatory requirements, are relations between the state, establishing such requirements in the legislation, including technical regulations, and the parties of law, that are obliged to apply and observe them.

Standards applied on a voluntary basis, may belong to two categories: national and organization standards. Industry standards are excluded from the massive of standardization documents.

In case of national standards absence concerning the specific requirements of technical regulations, or objects of technical regulation, the codes of practice can be developed.

Conformity assessment is carried out in the form of state control (supervision), accreditation, testing, registration, conformity, acceptance and commissioning of the facility, which construction is completed, as well as in some other form, including the examination, carried out in accordance with the requirements of other legislation acts. Moreover, the priority form of conformity is a voluntary certification, which is carried out to establish compliance with national standards, organization standards, codes of practice, systems of voluntary certification, contracts conditions.

### **The principles of technical regulation in the oil and gas industry**

Technical regulation of oil and gas industry should be in accordance with the following principles (Fig. 2):

– conformity of technical regulation towards the level of oil and gas industries development, including the level of its scientific and technological development;

– subordination of technical regulation towards solving of priority tasks of countries oil and gas industries, concerning security of oil and gas industry activities and production capacity, conforming current and future requirements of its quality and application properties, while ensuring the balance with economic efficiency of their decision and unconditional implementation of legislative requirements;

– application of uniform rules for determining the requirements for products, manufacturing processes, operation, storage, transportation, marketing and utilization, executing of works or providing services;

– unity of the technical regulations requirements applying in oil and gas companies, regardless of species or features of transactions;

– coherence between documents on technical regulation, acting in oil and gas industries at all levels;

– maximum usage during documents development for technical regulation the provisions of documents, existing in oil and gas industry that have confirmed to be effective during the application in the natural gas industry;

– the conformity assessment in the form of voluntary certification in the system of voluntary certification independence of manufacturers, vendors, contractors and purchasers;

– determination the direction and amount of spending in the area of technical regulations based on specific measurable outcomes and performance indicators, including an assessment of the economic efficiency of developed documents in the field of technical regulation (technical regulations, standards, codes of practice), including estimates of financial and economic implications of their introduction for the parties of oil and gas industries.

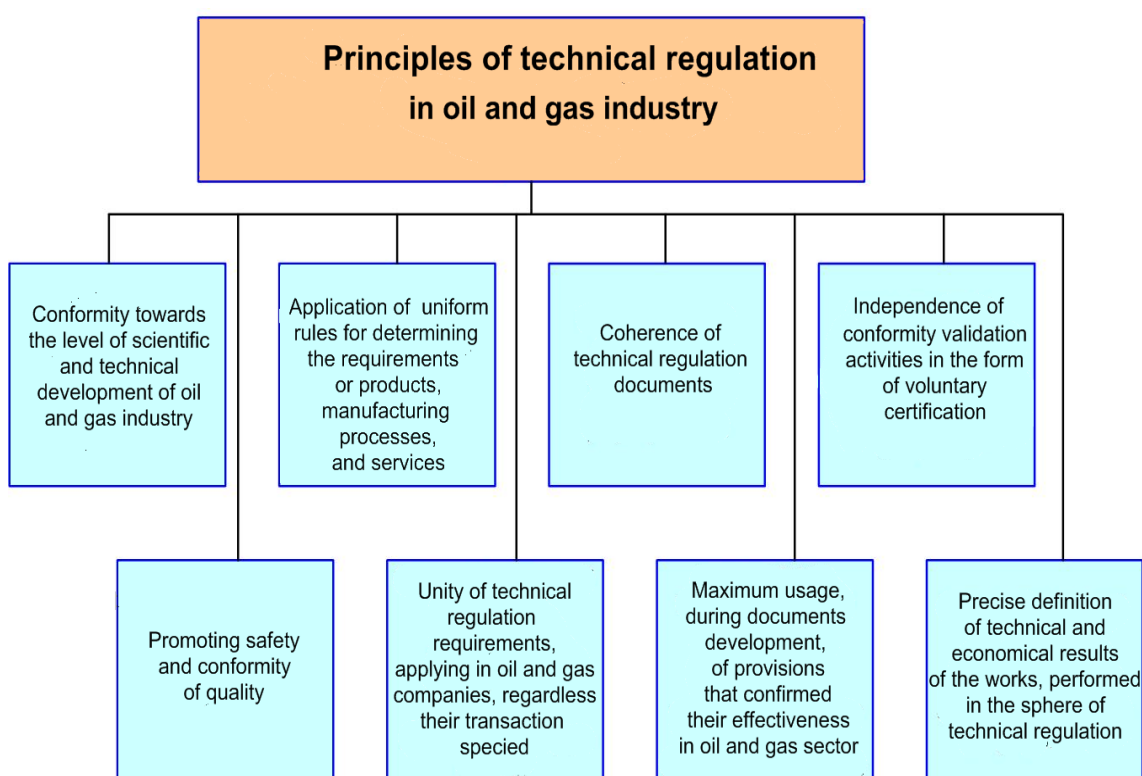


Fig. 2. Principles of technical regulation

### Objectives and main directions of technical regulation

Technical regulation in the oil industry should be directed to the following main objectives:

- providing the common technical policy;
- forming the common mechanism of technical regulation in the industry;

- ensuring the relationship of various segments of the interested enterprises activities, such as: production and transportation of gas, gas condensate and oil, refining, energy, etc.;

- security of the organizations activity;

- systematization and analysis of requirements towards products, design processes (including research), construction, manufacturing, installation, upgrading, maintenance, storage, transportation, marketing and recycling, contained in existing documents of the industry;

- creation of information resources (databases, classifiers, etc.), containing complete, accurate, current information, necessary for the operation of industries in the area of technical regulation;

- introduction of planning in the area of technical regulation, management efficiency increasing of specified planning realization;

- improvement of the existing industry regulatory framework in the field of technical regulation, the revision (if necessary) of existing and development of new documents on standardization, their integration and sharing through collaboration with independent producers (including – foreign);

- intellectual property protection of oil and gas industries parties in the area of technical regulations in accordance with applicable laws;

- creation of a single branch system of technical regulation effectiveness monitoring and control;

- development and implementation of training programs and skills development of specialists in the field of technical regulation, development of necessary educational infrastructure and methodological support.

Meeting the challenges, facing the technical regulation in the oil and gas industry, based on the above mentioned principles and objectives, is focused on the following key areas of technical regulation:

1. establishment, application and enforcement of mandatory requirements for products or related processes – technical regulations;

2. voluntary establishment and application of requirements towards products, process design (including research), manufacturing, construction, installation, upgrading, operation, storage, transportation, marketing and recycling, executing of works or providing of services – standardization;

3. regulation of relations in conformity assessment – conformity validation.

The post-Soviet system of standardization is not inferior to the breadth of standardization systems in economically developed countries. In this case, the entire array of existing standardization documents is huge, but not structured branch of law, including about 400 - 500 thousand documents, so business entities may not be aware of their existence.

In addition, at present, even at the level of legislative acts, standardization documents are identified in very different ways – regulations, standards, specifications, requirements, guidelines, rules, etc.

Low degree of national standards harmonization with international ones (within 30-60 %), including petroleum and chemical industry (40 %), under which oil and gas companies, their customers and suppliers conduct their principal operations, is not acceptable in today's conditions, as one of the basic principles of standardization is the principle "of international standards as the basis for developing a national standard."

Level of documents harmonization, developed and operated in most oil and gas companies of the region, with international ones, in general, according to preliminary estimates, is lower than in countries national systems of petroleum and chemical industry.

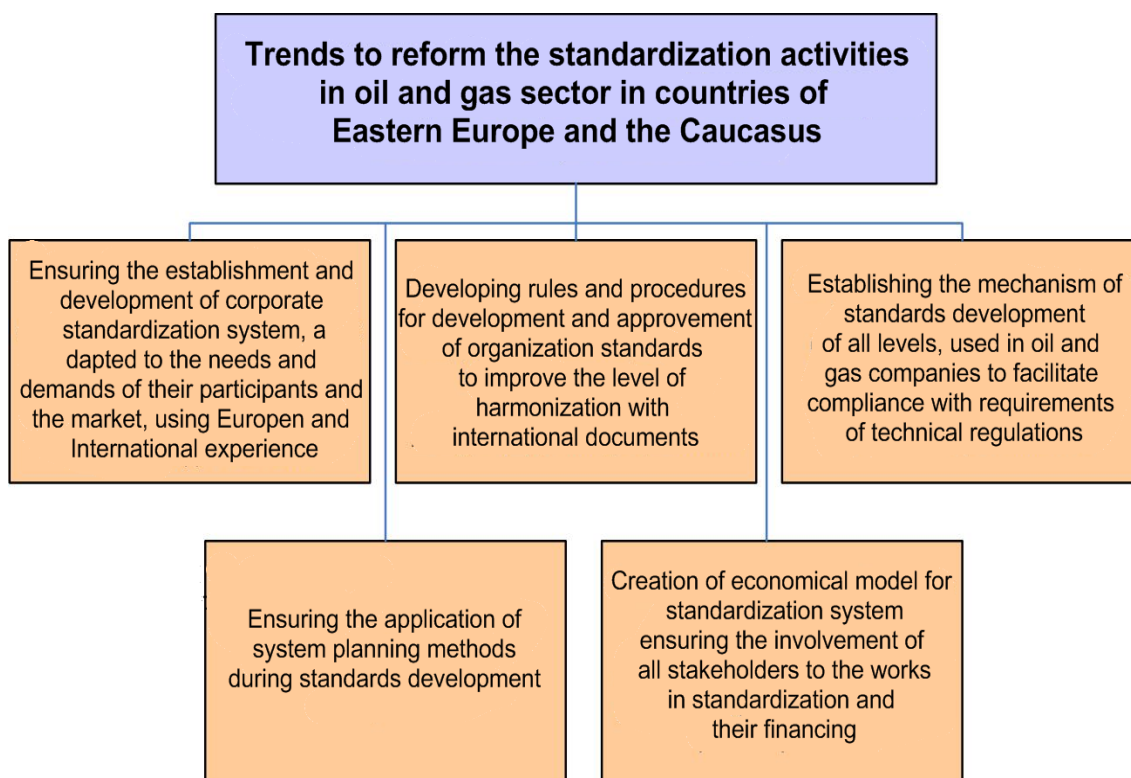


Fig. 3. Objectives to reform the standardization systems in Eastern Europe and the Caucasus oil and gas industries

For effective reform of the standardization activities in the oil and gas sectors in Eastern Europe and the Caucasus the following problem must be solved (Fig. 3):

1. Ensure establishment and development of corporate standardization systems, adapted to the needs and demands of their participants and the market. Develop a unified structure of the standardization system and functions of its members in accordance with European and international experience.



2. Develop policies and procedures for developing and approving of organizations standards to improve the harmonization level of developed and applied documents on standardization with international ones.

3. Establish a mechanism of standards development (participation in development) of all levels, used in oil and gas companies to facilitate compliance with technical regulations, aimed to improve safety at hazardous industrial facilities, taking into account the risk of emergency situations of natural and man-made character, preventing possible terrorist acts, and also ensuring the protection of labor, environment, information and technical compatibility.

4. Ensure the application of system planning methods while standards development.

5. Create an economic model of standardization system, adequate to the new economic conditions, ensuring the involvement of all stakeholders to works on the standardization and their financing.

Solving tasks will contribute to:

**a) at the level of international standardization:**

active participation of oil companies in the relevant areas of their activities of technical committees of the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), as well as use the experience of foreign countries [Germany national standards (DIN), British (BS), Canada (CSA) ], organizations and societies [ASME, NACE, ASTM, API (USA), DNV (Norway), etc.], implemented in the regulations developed by them;

**b) at the level of national standardization:**

active and permanent participation of oil companies in the technical standardization committees work, created by national standardization bodies in such priority areas for the region as pipeline transportation, construction, ecology and environmental protection, use of mineral resources, raw materials, supplies, equipment for oil and gas industry, refining petroleum products;

**c) at the level of corporate standardization:**

reforming of the standardization activities in the oil and gas companies while developing of corporate systems to meet their specialized purposes.

The task of information management in the sphere of technical regulation is solved through the creation of information resources (databases, classifications, etc.), containing complete, accurate, timely information necessary for the industries operation in this area. One of such sources of useful thematic information is OGSP.INFO website, which shows the results of the TACIS project «Harmonization of oil and gas standards and practices in Eastern Europe and the Caucasus." The purpose of the site is compilation of information concerning legislation in the sphere of technical regulation, standardization, certification, accreditation, metrology and technical committees in the countries of Eastern Europe and the Caucasus (Ukraine, Belarus, Moldova, Azerbaijan,

Georgia, Armenia). Information is presented in relevant sections in the form of links to national resources. In addition, the site contains sections on regional and international cooperation, as well as available for viewing materials, presented at seminars and workshops under the project. In the future, this resource will provide part of the report and recommendations, made by the project.

Another information resource relating to standards in oil and gas industry, is PNGIS.NET. The site presents results of international committee of experts, united to facilitate development and use of international standards. The site has unique databases that contain information on approximately 15 000 standards in oil and gas industry (international, regional, industrial and national, including the CIS regulations). Glossary of standard terms and definitions, used in petroleum industry, contains about 40 000 units, while the Anglo-Russian-Italian-French dictionary contains 100 000 units (which are constantly updated). The database of meetings and experts in oil and gas industry includes about 2 700 articles.

International Association of Oil and Gas Producers (OGP.ORG.UK) supports the development of standards for the petroleum industry. OGP contributes to changing the current approach to standards and supports the internationalization of the key standards, used in the petroleum industry. OGP position on standards is to support development and use of ISO and IEC standards; development of standards where necessary; use of international standards, where possible, without modification, necessity to minimize the number of companies' internal standards and submit them, if possible, in the form of functional requirements. Such an approach helps to reduce trade barriers, create more effective collaboration and a higher compatibility degree of equipment, materials, technologies and offshore structures for oil and gas industry. OGP publishes an annual bulletin of standards, which provides current information on international standardization in oil and gas industry. Thus, Association managed to achieve the development of a large database of ISO standards for oil and gas industry, developed by consensus, which are well known in the global industry, approved and adopted in many countries.

Currently in post-Soviet space the Interstate Council for Standardization, Metrology and Certification of the Commonwealth of Independent States, which is an inter-governmental body, operates for the formation and conducting of a coordinated policy in technical regulation. ICS is recognized by the International Organization for Standardization - the Regional Organization for Standardization as Euro-Asian Council for Standardization, Metrology and Certification (EASC). Oil and gas industry is presented in the EASC by the Interstate Technical Committee 523, "Technique and technologies of oil and gas producing and refining".

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