

ACTIVITY COMPLETION REPORT
**Regional Workshop in Tbilisi on Gas Infrastructure and
European standard EN 1594:2013 – “Gas infrastructure.
Pipelines for maximum operating pressure over 16 bar.
Functional Requirements”**

**INO GATE Technical Secretariat and Integrated Programme in support of the
Baku Initiative and the Eastern Partnership energy objectives**

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Table of Contents

1.	PART 1 – EUROPEAN COMMISSION	2
1.1.	Background	2
1.2.	Essence of the Activity	3
1.3.	Key Findings	3
1.4.	Ownership and Benefits of the Activity	4
1.5.	Recommendations	5
1.6.	Challenges Faced	5
1.7.	Impact Matrix.....	5
2.	PART 2 - BENEFICIARIES.....	7
2.1.	Executive Summary.....	7
2.2.	Background and objectives	7
2.3.	Overview of the seminar	9
2.4.	Main result achieved and Impact.....	9
2.5.	Recommendations from the ITS experts.....	10
2.6.	Challenges faced	11
2.7.	Annexes	12

Abbreviations and acronyms

AA	Association Agreement
BS	British Standard
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CWP	Country Work Plan
DCFTA	Deep and Comprehensive Free Trade Area
ECT	Energy Community Treaty
ECS	Energy Community Secretariat
EU	European Union
GE	Georgia
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
ITS	INO GATE Technical Secretariat
PCs	INO GATE Partner Countries
TCs	Technical Committees

1. PART 1 – EUROPEAN COMMISSION

1.1. Background

Assignment Title:	Regional workshop in Tbilisi on Gas Infrastructure and European standard EN 1594:2016 – “Gas infrastructure. Pipelines for maximum operating pressure over 16 bar. Functional requirements” (AHEF 118.GE)
Country and Dates:	Georgia, 20 – 22 October 2015
Beneficiary Organisation(s):	<p>Main beneficiary: Georgian National Agency for Standards and Metrology (GeoSTM), Georgian Oil and Gas Corporation (GGTC), Georgia Gas Transportation Company(GGTC);</p> <p>Other beneficiaries: Public Joint Stock Company (PJSC) Ukrtransgaz (TSO), NAK “Naftogaz” of Ukraine, Department Technical Regulation of Ministry of Economic Development and Trade of Ukraine, Ministry Energy and Coal Industry of Ukraine, Joint-Stock Company(JSC) MOLDOVAGAZ, Moldova's national gas company “Vestmoldtransgaz”, Agency on standardization, metrology, certification and trading inspection under the Government of Republic of Tajikistan (Tajikstandard), JSC "Tajiktransgas”</p>
Beneficiary Organisation’s key contact persons – name and e-mail address	<p>Mr. Teimuraz Gochitashvili, Advisor, Head of Strategic Planning Department of the Georgian Oil and Gas Corporation.</p> <p>Email: t.gochitashvili@gogc.ge</p>
Deliverables Produced	<ol style="list-style-type: none"> 1. Training delivered for 30 participants: 17 from Georgia, 7 from Ukraine, 2 from Tajikistan, 2 from Moldova and 2 from Azerbaijan; 2. Materials from the previous regional study tour to DVGW (Bonn, Germany, April 2014) have distributed among the participants; 3. Comprehensive answers to problems identified in the implementation of these standards have been provided by experts; 4. Training material prepared and disseminated to training participants, including practical examples and case studies on best practice where applicable; 5. Event report including key findings, qualitative and quantitative assessment of results and the issues raised during the training as

	well as next steps.
Expert Team Members	<ol style="list-style-type: none"> 1. Key expert 2, Nikos Tsakalidis 2. Senior Standardisation Expert / Covering Electricity and Gas, (Viktor Petrenko) 3. Senior Standardisation Expert, EN 1594 Specialist (Phil Winnard) 4. Junior Standardisation Expert (Ana Nuñez Lopez)

1.2. Essence of the Activity

The activity aimed to increase the safety and efficiency of the gas transportation network through the provision of specific training to organizations and individuals involved in the gas supply sector. The workshop was focused on providing participants with an in-depth understanding of the practical implication of implementing EN 1594:2013 standard, and provided recommendations on the procedure of adopting operation and maintenance practices.

The assignment built on a Study Visit on Gas Transmission Aspects organised in Bonn and Essen (Germany) from the 9th to the 11th of April 2014. The visit showcased EU best practice on the topic and in particular an alternative gas regulation model which is not currently used in any of the PCs. The model combined EN functional standards with codes prepared by DVGW. This Regional Workshop is a direct result of that visit, which raised the interest of a number of PCs in a more in-depth understanding of key gas functional standards, and has provided UK best practice.

1.3. Key Findings

The speakers' presentations covered the topic in depth, highlighting differences between the previous version of the standard and the 2013 version that superseded it, providing case studies and practical examples for a number of highly technical aspects of the standard. Participants of the workshop represented mainly government organizations and state owned companies in the gas sector.

The participants were active and engaged throughout the workshop and highlighted their interest in understanding further how the standard could be implemented in each particular country. It would be recommended that follow-up activities include on the job training and further advisory support in the implementation of the standard.

1.4. Ownership and Benefits of the Activity

The main benefits of the activity for the Beneficiary are:

1. A better overall understanding of the EN 1594 standard, with a particular focus on aspects such as security features or distance of the installation to population groups. The EN 1594:2013 version of the standard, which participants had not seen before, was presented at the workshop and copies were provided to participants to use for the exercises;
2. The opportunity to discuss between participants of different Partner Countries how they have tackled issues related to gas infrastructure or the implementation of EN 1594 within their gas industry;
3. Introduction to other supporting standards and norms which are necessary for the correct implementation of EN 1594 standard in each Partner Country.

The workshop included a round table to discuss the next steps the participants would take to support the implementation and application of EU functional standards. The main conclusions, which demonstrate the ownership of the beneficiaries, were the following:

1. Ukraine and Georgia are preparing EN 1593:2013 for adoption by reprinting method with a Russian translation as an Annex
2. Ukraine and Georgia are preparing the standards from the normative reference for adoption with EN 1594
3. Ukraine and Georgia will set up learning and working groups to build capacity in other European functional gas standards
4. Moldova's TC 44 included a new version of the functional standards in Romanian language in their Working Plan
5. Tajikistan plans to include some functional gas standards in the country's national standardization plan
6. Georgia has started to unbundle the Gas subcommittee from the Electrotechnical TC so it can be an independent TC

A more detailed description of the conclusion of this round table can be found in Annex 2.2.5.

1.5. Recommendations

The workshop was an essential first step to achieving European standardisation in the participating countries. However, there was a general lack of understanding by the participants of the design and safety concepts underpinning the standard, which is understandable.

In determining the next steps it will be necessary to fully understand current design context for each participating country, which can be done through a short mission and subsequent high level report on the current EU Standard compliance status for each discipline. The results of the mission should be presented at a workshop for each country and an action plan should be developed under the guidance of the expert leading the workshop. This should be carried out through involvement and participation of the attendees. Once this action plan is accepted, it would be necessary to monitor it closely to ensure its success. The ongoing assignments CWP03,04GE and CWP05UA will partially contribute to an understanding of the status of implementation of functional standards in Georgia and Ukraine.

1.6. Challenges Faced

The main challenges that have been faced include:

1. During the workshop there was a lengthy debate between the members of the National Institute of Standards, some members were against setting up the TC. ITS experts managed to convince them and in the end they changes their opinion;
2. Selection of the TC chairman (one for Electricity and one for Gas) has been quite challenging procedure;

1.7. Impact Matrix

Impact Area	Developments	2012 (%)	2015 / Apr 2016 (%)
Policy	<i>Fulfilment of obligations under the AA, DCFTA and ECT (adoption and implementation of a large number of gas and electricity European and international standards)</i>	Level of adoption of EN1594 in GE, UA, MD – 0%	Level of adoption - 100% (GE, UA, MD have fully adopted EN1594)
Regulation	<i>Gradual adoption and implementation of supporting gas standards</i>	0% in GE, MD, UA	<i>100% (UA and GE adopt all gas functional standards for pipelines MOP more 16 bar.) UA is including EN1594 in secondary</i>

			<i>legislation for main pipeline</i>
Technology	<i>Gradual upgrade and modernisation of some of the Gas infrastructure</i>	0%	10 %, EN1594 is used in the modernization programme in GE and UA(ongoing)
Economics	<i>Reduction in gas leakages/m3 saved</i>	N/A	N/A (subject to ongoing monitoring)
Social	<i>Safer gas installations, decrease in potential accidents.</i>	N/A	N/A (subject to ongoing monitoring)
Other			

2. PART 2 - BENEFICIARIES

2.1. Executive Summary

This activity was requested by the Georgian National Agency for Standards and Metrology (GeoSTM) and the Georgian Oil and Gas Corporation (GOGC) as part of the Ad-Hoc Expert Facility available to stakeholders of the INGOATE ITS project. The ITS project also received requests to participate in the activity from beneficiaries in Ukraine, Moldova and Tajikistan. The activity was also opened to participants from Azerbaijan.

The activity involved the delivery of a three day workshop dedicated to the understanding and use of the European standard EN 1594:2013 which took place in Tbilisi (Georgia) between the 20th and the 22nd of October 2015.

The main objective of the workshop was to help participants better understand how EN 1594:2013 can be implemented, as it does not provide detailed technical information on how it can be used, contrary to American standards or German Technical Regulations and Codes. This lack of information also makes it difficult for Standardisation Technical Committee (TC) members to understand the standard functions that further support the adoption of other functional standards in the gas sector.

The speakers' presentations covered the topic in depth, highlighting differences between the previous version of the standard and the 2013 version that superseded it, providing case studies and practical examples for a number of highly technical aspects of the standard. Participants of the workshop represented mainly government organizations and state owned companies in the gas sector.

The participants were active and engaged throughout the workshop and highlighted their interest in understanding further how the standard could be implemented in each particular country. It would be recommended that follow-up activities include on the job training and further advisory support in the implementation of the standard.

2.2. Background and objectives

The activity aimed to increase the safety and efficiency of the gas transportation network through the provision of specific training to organizations and individuals involved in the gas supply sector. The workshop was focused on providing participants with an in-depth understanding of the practical implication of implementing EN 1594:2013 standard, and provided recommendations on the procedure of adopting operation and maintenance practices.

The assignment built on a Study Visit on Gas Transmission Aspects organised in Bonn and Essen (Germany) from the 9th to the 11th of April 2014. The visit showcased EU best practice on the topic and in particular an alternative gas regulation model which is not currently used in any of the PCs. The model combined EN functional standards with codes prepared by DVGW. This Regional

Workshop is a direct result of that visit, which raised the interest of a number of PCs in a more in-depth understanding of key gas functional standards, and has provided UK best practice.

The three day workshop also provided participants with information and recommendations to follow international standards related to the implementation of international, regional, or national regulations such as:

- ISO/IEC Guide 21-1:2005 Regional or national adoption of International Standards and other International Deliverables - Part 1: Adoption of International Standards;
- ISO/IEC Guide 21-2:2005 Regional or national adoption of International Standards and other International Deliverables - Part 2: Adoption of International Deliverables other than International Standards;

Although this activity was requested specifically by Georgian beneficiaries, it was opened and available for Moldova and Ukraine which are experiencing the same problems in understanding and using the functional standard EN1594. These two countries also have advanced Road Maps and Action Plans, and their attendance to this seminar will further strengthen their capacity to fulfil the Action Plans for the harmonization of their standardization system.

Representatives from Tajikistan were also be invited to the seminar. Tajikistan, as well as Ukraine, has implemented standards of the EN 1918 series, and the adoption of the rest of European gas infrastructure standards is scheduled for 2015. Tajikistan is taking part in several international gas transit projects which involve adherence to and use of European and international standards. Representatives from Azerbaijan were also invited as they had expressed interest in a similar activity which did not go ahead.

The participants to the event were distributed in the following way:

- 17 participants from Georgia, (personnel from the Georgia Gas Transportation Company, the Georgian National Agency for Standards, Technical Regulations and Metrology, and the Goergian Oil and Gas Corporation)
- 7 participants from Ukraine (4 participants from Ukrtransgaz, one from the Ministry of Economic Development and Trade of Ukraine, one representative from “Naftogaz” Ukraine and one representative from the Ministry Energy and Coal Industry of Ukraine)
- 2 participants from Tajikistan(one representative of Agency Tajikstandard and one from JSC "Tajiktransgas"),
- 2 participants from Moldova (one representative from from JSC MOLDOVAGAZ and one from “Vestmoldtransgaz)
- 2 participants from Azerbaijan (one representative from the Ministry of Energy and one from SOCAR)
- The workshop involved a number of practical group assignments which were then discussed. Participants actively participated during the whole workshop and were engaged with the presentations provided by the two senior experts.
- The key facts and conclusions and recommendations from the workshop are presented in the section 4.

2.3. Overview of the seminar

In this section, we provide the key results and conclusions from the various presentations given during the seminar. The complete set of presentations delivered during the Conference can be downloaded in English and Russian from the INOGATE website: <http://www.inogate.org/activities/612?lang=ra>

The sessions covered the review of EN 1594 as the main functional standard, an overview of functional standards specifying basic requirements to the main gas supply elements and the standards for the main technological processes, recommendations on the procedure of adopting operation and maintenance practices of these standards.

The workshop also included 9 presentations undertaken by every organization represented by the participants. Each organization delivered an overview of their function and the use of standards, and then covered a specific aspect of the gas sector. These presentations led to animated discussions between participants and provided a platform to sharing their experience in overcoming barriers which they could all relate to.

Furthermore, it is important to note that an exercise in which the EN 1594:2013 version of the standard was shared with participants and a number of questions posed for them to answer proved to be extremely useful. Participants were able to identify those clauses which were either new or had been modified from the previous version, and were then able to discuss them in detail with the ITS experts present.

In addition to this exercise, the UK case study presented by Mr Phil Winnard drew numerous technical questions from the participants. Mr Winnard covered all key aspects of the EN 1594 standard with UK examples and provided in-depth discussions on issues such as the distance at which pipes can be laid from population nucleus, or different components of the distribution system and how they need to be kept safe.

Overall, the workshop was well appreciated by all participants and there was an active discussion throughout the three days.

2.4. Main result achieved and Impact

The workshop has achieved its objective of providing support to the participants in their understanding of the EN 1594 standard.

Key Conclusions from the workshop

1. From the point of view of participating countries, the main part of harmonising standards **is to arrange active studying of standards** for the staff at gas companies, design organisations, administrative bodies and other organisations that will apply them in their activities. One way to achieve this is to create working / learning groups for each priority area, for instance, functional standards. The work of these groups will focus on achieving a national standard harmonised with the international or at least translation of the standard into the national or regional language recognised by all participants in the gas sector. Using a regional language is preferable for a standard of a common business interest for the participating countries, such as cross-border trade. In this case, working groups should be on a regional level, in order to achieve a common understanding of standards and ensure a coordinated implementation and uniform application. A training coordinator plays a key role in this process, who should, in addition to the experience in organising such training

process, also enjoy the trust of the professionals trained and be aware of the specifics of the gas transportation sector, as well as legislative and regulatory requirements of the countries participating in the project

2. **Achieving a deep understanding of the main provisions of the standard.** At this stage the primary task is to provide answers to arising questions or disagreement among the trained professionals. The main tools at this phase are consultations and topical working meetings and trainings based on the identified issues and contradictions. It is important to form, under the guidance of an INOGATE expert, the core consisting of qualified experts of gas transmission companies with understanding and experience of implementation of standards in their countries, who will be able to apply constant effort on harmonisation and implementation of standards in their countries.

3. **Preparation of agreed national or regional standards.** At this stage, the professionals trained, together with TC members, identify conflicting standards and other regulatory documents. Normative references and other related standards are analysed. Standards are identified that should be translated additionally for implementation of major standards, at least in a reference version.

4. **Implementation in the gas company.** Identifying the range of the company's standards that need to be modified in order to implement the new standard. Determining the list of related standards to be implemented simultaneously. Preparing an action plan for the implementation of European standards, taking into account the peculiarities of each gas company, adaptation of internal standards in view of implementation of the European standards and the cancellation of the old GOST standards

5. **Monitoring of the implementation of the standard.** Transfer of the European experience in resolving issues arising as a result of introduction and application of a standard (e.g. German companies). This can be done as part of workshops or study tours. When organising these events the key thing is for the trainees, with the moderator's assistance, to formulate the specific list of the event's objectives * (a joint preparation of terms of reference). Studying the experience of international technical committees on standardisation.

6. Technical support of the gas companies in standard application:

1. Help in the creation of standardization department (service) in gas companies
2. Staff training and retraining of gas companies
3. Assistance in an establishment of communications with professional European associations

7. Increase of efficiency profile gas TCs

1. TC members training and retraining
2. Transfer of experience of European TC

2.5. Recommendations from the ITS experts

The workshop was an essential first step to achieving European standardisation in the participating countries. However, there was a general lack of understanding by the participants of the design and safety concepts underpinning the standard, which is understandable.

In determining the next steps it will be necessary to fully understand current design context for each participating country, which can be done through a short mission and subsequent high level report on the current EU Standard compliance status for each discipline. The results of the mission should be presented at a workshop for each country and an action plan should be developed under the

guidance of the expert leading the workshop. This should be carried out through involvement and participation of the attendees. Once this action plan is accepted, it would be necessary to monitor it closely to ensure its success.

2.6. Challenges faced

The main challenges that have been faced include:

1. During the workshop there was a lengthy debate between the members of the National Institute of Standards, some members were against setting up the TC. ITS experts managed to convince them and in the end they changed their opinion;
2. Selection of the TC chairman (one for Electricity and one for Gas) has been quite challenging procedure;

2.7. Annexes

2.2.1 Seminar agenda

INOGATE Event: Workshop
Date TBC
Tbilisi, Georgia

Gas infrastructure and European Standard EN 1594

DRAFT AGENDA

Day 1, 20 October

Venue: Hotel Astoria, 12, Chitadze street, Tbilisi, Georgia

MORNING SESSION: Chair: Dr Viktor Petrenko	
9:00 – 9:30	Registration
9:30 - 9:45	Opening of the session and presentation of the INOGATE project, Welcome address from host organization Nikos Tsakalidis, Key Expert 2, Deputy Team Leader, INOGATE Secretariat
9:45 - 10:45	Features of the harmonization process for gas infrastructure standards Dr. Petrenko, Senior Task Coordinator - Standardization Expert, ITS
10:45- 11:05	<i>Coffee Break</i>
11:05– 11:45	Georgian Oil and Gas Corporation (GOGC): The standards and relevant normative documents used in the pipeline construction supervision process and the problems encountered
11:45-12:15	Results and plans of harmonization the priority gas standards in Georgia Mr. Giorgi Chitadze, Head of Standards Department, Georgian National Agency for Standards and Metrology (GeoSTM)
12:15– 13:15	Experience PAO «Ukrtransgaz» on the introduction of international and European standards relevant to gas safety in Ukraine Roman Shimko, Head of Underground Gas Storage Department of Ukrtransgaz
13:15- 14.00	Questions and answers on all presentations. Moderator: Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS
14:00-15.00	<i>Lunch</i>
AFTERNOON SESSION: Chair: Dr Viktor Petrenko	
15:00-1600	Significant technical changes between this European Standard EN1594:2013 and the previous edition EN1594:2009 Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS

16:00-16:20 -	<i>Coffee Break</i>
16:20 -16:45	The Electricity Technical Committee's Natural Gas group share their work on the standardization process and promotion of international experience and recommendations. Challenges in upgrading Technical Committee's qualifications to work with the implementation of European functional gas standards The Electricity Technical Committee's Natural Gas group of Georgia.
16:45 – 17.15	Presentation of Azerbaijan
17.15– 17.45	Questions and answers on all presentations. Summary of day. Moderator: Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS

Day 2, 21 October

Venue:: Hotel Astoria. 12, Chitadze street.Tbilisi.Georgia

MORNING SESSION: Chair: Dr Viktor Petrenko	
9:00 - 10:00	Overview of the event in Germany (study visit to DVGW) in April 2014, main results achieved and recommendations Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS
10:00-11:00	System of European gas functional standards with a maximum operating pressure (MOP) over 16 bar: <ul style="list-style-type: none"> • Functional requirements of standards and the basic requirements to the main gas supply elements (EN 12583:2000, EN 1776, EN 1918, EN 12186:2000+A1, etc.) • Operation of standards for the main technological processes (EN 12327:2000, EN 12732:2000, etc.); • Overview of UK Codes and regulations, and their relations with EN 1594 and other related gas standards Senior Gas Standardization Expert – Mr.Phil Winnard
11:00-11:30	<i>Coffee Break</i>
11:30-12:30	<i>Normative reference analysis for European gas functional standards with a maximum operating pressure (MOP) over 16 bar</i> Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS
12.30-13:00	Results and plans of harmonization the priority gas standards in Tajikistan
13:00- 14:00	Questions and answers on all presentations. Moderator: Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS

14:00-15:00	Lunch
AFTERNOON SESSION: Chair: Dr Viktor Petrenko	
15:00-16:00	The best practice (UK) of implementation of EN1594 and EN 12186 gas standards and provide recommendations on the procedure of adopting operation and maintenance practices (UK experience). Senior Gas Standardization Expert-Mr.Phil Winnard
16:00-16:30	Experience of the Ukrainian Gas technical committees on acceptance of priority gas standards Mr.Klu,Ukrtransgaz, member of TC133 and TC 146
16:30- 16:50	Coffee Break
16:50-18:00	Questions and answers on all presentations. Summary of afternoon session. Moderator: Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS

Day 3, 22 October

Venue : Hotel Astoria. 12, Chitadze street.Tbilisi.Georgia

MORNING SESSION: Chair: Dr Viktor Petrenko	
9:00- 10:45	Case study for mplementation of EN 1594. Presentation of a typical conceptual design study UK Senior Gas Standardization Expert –Mr.Phil Winnard
10:45- 11:05	Coffee Break
11:05- 11:30	Results and plans of harmonization of the priority gas standards in Ukraine Natalia STARIKOVA,Ministry of Economic Development and Trade of Ukraine Mr. Andriy Klun. Member of TC 133 and TC 146
11:30-12:00	Georgian Gas transportation company shares their provisions in the normative documents used during the operation and maintenance of high-pressure pipelines and the existing problems
12:00- 13:00	Questions and answers on all presentations.
13:00-14:00	Lunch
AFTERNOON SESSION: Chair: Dr Viktor Petrenko	
14:00-15: 00	Overview and practical use of ISO/IEC Guide 21-1:2005 Regional or national adoption of International Standards and other International Deliverables - Part 1: Adoption of International Standards and ISO/IEC Guide 21-2:2005 Regional or national adoption of International Standards and other International Deliverables - Part 2: Adoption of International Deliverables other than International Standards

	Dr Viktor Petrenko Senior Gas Standardization Expert / Task Leader - Standardisation Expert, ITS
15:00-15:30	Normative documents of Moldovatransgaz.
15:30-16:00	Use of the European gas functional standards in "Vestmoldtranzgaz",
16:00- 16:20	<i>Coffee Break</i>
16:20 - 17:20	Summary of previous days Development of a future action plan to support better implementation and use of European functional standards.

2.2.2 List of participants

Energy Co-operation between the EU, the Littoral States of the Black and Caspian Seas and their Neighbouring Countries							
INO GATE workshop on Gas Infrastructure and European standard EN 1594:2013 - "Gas infrastructure. Pipelines for maximum operating pressure over 16 bar. Functional requirements".							
20-22 October, Tbilisi ,Georgia							
List of Participants							
A/ A	Mr./ Mrs.	Last name	First name	Position	Ministry/Company	Country	
INO GATE Technical Secretariat							
1	Mr.	Tsakalidis	Nikolaos	ITS Deputy Team Leader, Key Expert	INO GATE Secretariat	Technical	Greece
2	Mr.	Petrenko	Viktor	Standardisation Expert Electricity & Gas	INO GATE Secretariat	Technical	Ukraine
3	Mr.	Lopez	Ana Nunez	Intenational projects director	BSI		UK
4	Ms.	Nonikashvili	Rusudan	Communication, Promotion and Event Expert	INO GATE Secretariat	Technical	Georgia
Republic of Azerbaijan							
1	Mr.	Tahirov	Jamal	Senior Advisor at the Law and Metrology Department	Ministry of Energy		Azerbaijan
2	Mr.	Aghayev	Gudrat	Chief Engineer of Metrology Department	Socar		Azerbaijan
Georgia							
3	Mr.	Shalamberidze	Michael	Head of Comercial Department	Georgian Gas Transportation Company		Georgia

4	Mr.	Burduli	Iuri	Director of Line Maintenance	Georgian Gas Transportation Company	Georgia
5	Mr.	Losaberidze	mamuka	Director of line Maintenance Branch of Terjola	Georgian Gas Transportation Company	Georgia
6	Mr.	Tsertsvadze	Rostom	Saguramo branch director	Georgian Gas Transportation Company	Georgia
7	Mr.	Qoqashvili	Boris	Head of Testing Instruments and Metrology division	Georgian Gas Transportation Company	Georgia
8	Mr.	Chitadze	Giorgi	Standards Department, GeoSTM	Georgian National Agency for Standards, Technical Regulations and Metrology	Georgia
9	Mr.	Khizanishvili	Gia	Socar Georgia Gas, TC 1 member	Georgian National Agency for Standards, Technical Regulations and Metrology	Georgia
10	Mr.	Rogava	Soso	Institute of Metrology, GeoSTM	Georgian National Agency for Standards, Technical Regulations and Metrology	Georgia
11	Ms.	Tatunashvili	Maia	Standards Department, GeoSTM	Georgian National Agency for Standards, Technical Regulations and Metrology	Georgia
12	Mr.	Uflisashvili	Nugzar	Chairmen of TC 1 "Electrotechnical committee"	Georgian National Agency for Standards, Technical Regulations and Metrology	Georgia
13	Mr.	Javakhishvili	Teimuraz	Head of design unit	Georgian Oil and Gas Corporation	Georgia
14	Mr.	Gochitashvili	Teimuraz	Advisor, Head of Strategic Planning Department	Georgian Oil and Gas Corporation	Georgia
15	Mr.	Goguadze	Anton	deputy head of technical department	Georgian Oil and Gas Corporation	Georgia
16	Mr.	Dekanosidze	Archil	head of the Engineering & technical provision dept	Georgian Oil and Gas Corporation	Georgia

17	Mr.	Khetaguri	Vladimer	Head of department for construction quality	Georgian Oil and Gas Corporation	Georgia
18		Mrevlishvili	Teimuraz	Chief of Contructions planning department	Georgian Oil and Gas Corporation	Georgia
19	Mr.	Beruchashvili	Nikoloz	Head of Geoinformatic technologies department	Georgian Oil and Gas Corporation	Georgia
Republic of Moldova						
20	Ms.	Chirilov	Ana	Expert in Standardization, Technical Regulation and Conformity Assesment Division, Ministry of Economy	Vestmoldgaz	Moldova
21	Mr.	Galatan	Nolae	Head of tecnical Division	Moldova Gaz	Moldova
Republic of Tajikistan						
22	Mr.	Damonov	Muradali	Head of verification and calibration of measuring instruments	Agency for Standardisation, Metrology Certification and Trade Inspection	Tajikistan
23	Mr.	Rakhimzoda	Jurakhon	Chief specialist of the state supervision of measuring instruments.	Tajiktransgas	Tajikistan
Ukraine						
24	Ms.	Starikova	Nataliia	Deputy Head of Division for Standardization and Conformity Assessment - Head of Unit for Standardization, Department of Technical Regulation	Ministry of Economic Development and Trade of Ukraine, Head of Standardization Department, Technical Regulation Department	Ukraine
25	Ms.	Poplavskaya	Oksana	Head of Unit, Department on Oil, Gas, Peat, Oil-refining Industries and Alternative Fuels	Ministry of Oil and Coal Industry	Ukraine
26	Mr.	Shymko	Roman	Head of underground gas storage department	Ukrtransgas	Ukraine
27	Mr.	Kliyn	Andrei	Deputy Head of the Scientific and Technical Department	Ukrtransgas	Ukraine
28	Mr.	Bolkhovitin	Nikolai	Head of gas measurement and metrology dept	Ukrtransgas	Ukraine

29	Mr.	Tereshchenko	Ruslan	Head of operation and reconstruction of compressor stations	Ukrtransgas	Ukraine
30	Mr.	Khomik	Pavlo	Head of Scientific - Technical Department	Naftogas	Ukraine

2.2.3 Preparation and logistics of the Event

Participants to the event were identified at an early stage to ensure their profiles were adequate for what was being covered at the Workshop. A preliminary agenda was circulated and each represented organization was requested to prepare a presentation on a relevant topic.

An ex-ante questionnaire was circulated to participants prior to the event in order to benchmark the group of participant's overall knowledge on the topics covered. An ex-post questionnaire was circulated at the end of the workshop to analyse the immediate impact of the activity.

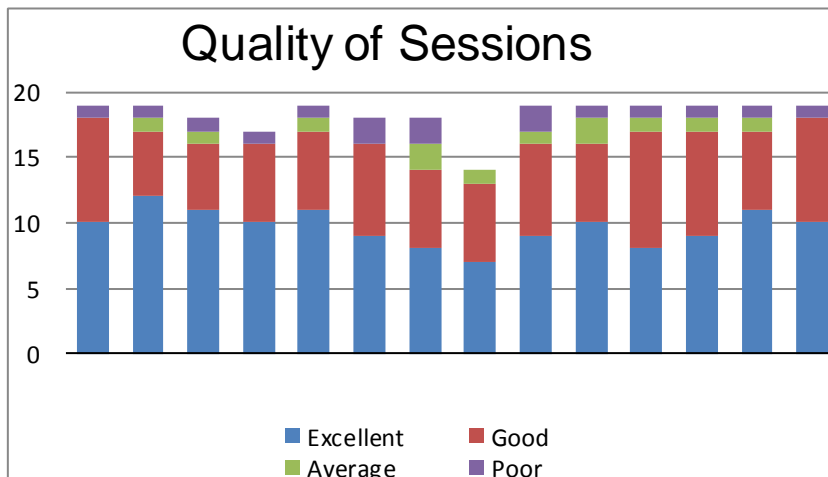
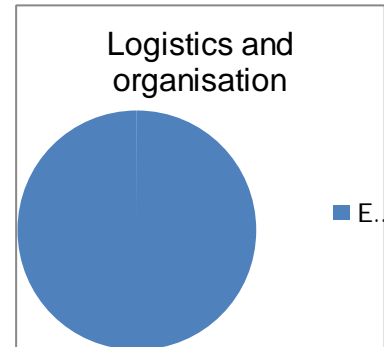
The event took place at the Astoria Tblisi Hotel, where the participants from Ukraine, Moldova, Azerbaijan and Tajikistan were guests.

Simultaneous translation in English and Russian was provided. Delivery of presentations by speakers and the succeeding group discussions went on smoothly.

2.2.4 Evaluation of participants' satisfaction

Participants to the workshop were asked to complete two evaluations: one before the workshop and the other immediately after.

The results of the evaluation show that overall the participants were very satisfied with the organisation of the workshop, rating it either excellent or good.



On average 88% of participants found that the topics covered by the workshop were either excellent or good.

The questionnaires also contained a number of

specific questions to target the immediate impact of the workshop. Overall there was a significant improvement in the participant's knowledge of the topics covered in the workshop.

General knowledge questions

- How would you rate your overall knowledge of EN 1594:2013?
- How would you rate your knowledge of the codes and regulations that can be used in combination with EN 1594:2013?
- How would you rate your knowledge of best practice in the implementation of gas standards, including EN 1594?
- How would you rate your knowledge of the use of ISO/IEC Guide 21?
- How would you rate your knowledge of other PCs challenges when implementing European or international gas standards?

Before event

After the event

Fully	Good	Some	Weak	Fully	Good	Some	Weak
7%	13%	32%	48%	9%	43%	40%	8%

Questions in gas sector

- How would you rate your knowledge of the System of the European functional gas standards?
- How would you rate your knowledge of the role of EN 1594 in the System of the European functional gas standards?
- How would you rate your knowledge of European gas functional standards for a maximum operating pressure over 16 bar?
- How would you rate your understanding of the implementation of EN 1594:2013?
- How would you rate your knowledge of the differences between EN 1594 versions 2009 and 2013?
- How would you rate your knowledge of problems of Normative References?

Before event				After the event			
Fully	Some	Average	Weak	Fully	Some	Average	Weak
3%	17%	28%	52%	13%	46%	33%	8%

2.2.5 Round Table Conclusions

Round table:

Development of future action plans to support the implementation and application of the EU functional standards in the gas sector of the participating countries.

Moderator: Dr. Viktor Petrenko, Senior Expert on gas standardisation /Event manager, ITS

Representatives of the countries united in target groups and, during 20 minutes of internal discussions, prepared the following answers.

UKRAINE

Opinion of Ukrtransgas / NAK Naftogas of Ukraine:

1. Obtain original English versions of standards as amended
2. Obtain quality translations (clarify the translation of standards subject to uncertainty) into the Ukrainian or at least the Russian language)
3. Conduct training seminars for technical staff aimed at the practical aspects of using the standards
4. Taking into account the companies' plans for construction and reconstruction of existing gas metering stations, reconstruction and technical re-equipment of compressor stations, to hold separate workshops on EN1776, EN12583 and EN16348: 2013;
5. Assistance in obtaining and translation of standards (codes, technical regulations) of German DVGW and Austrian OEVGW Gas Associations on the operation of the gas transportation system
6. Organisation of trainings for the company's senior management

N.L. Starikova, Ministry of Economic Development and Trade of Ukraine

Further cooperation within the INOGATE programme:

1. Facilitation of translation of gas standards into Russian (the regional language of the INOGATE programme)
2. Involvement of Ukraine's national standardisation body to cooperate within the INOGATE programme
3. Conducting seminars to educate employees of gas companies and members of the relevant technical committees on standardisation about the provisions of gas standards

4. Introduction of the experience of the leading gas companies in applying standards
5. Conducting workshops for the relevant staff

MOLDOVA

For the future we ask the INOGATE project to provide assistance as follows:

1. Assist in the staff training of members of the Technical Committee of the Republic of Moldova.
2. Organise trainings on the implementation of European gas standards
3. Assist in the development of terminology document on the basis of the (EU functional) standards in Russian.
4. Continued participation of experts of Moldovan gas companies in the active study of the priority gas standards in the Republic of Moldova.
5. Participation in facilitated workshops to discuss the application of the priority gas standards in the Republic of Moldova (national and regional workshops)
6. Conducting a workshop on EN 1594: 2013.

Prospective areas of cooperation with the INOGATE programme for Georgia

1. Further using and implementation of international standards
2. Maintaining and deepening INOGATE's assistance to national authorities and companies in this process (of application and implementation of international gas standards)
3. Support GeoSTM TC1 member organizations in process of identification and implementation relevant International or European standards.
4. Assistance in training and retraining of staff at corporations, companies, etc.
5. Consulting on the procedures of implementation of international standards in design, construction, operation and rehabilitation
6. Providing the GOGC, GGTC and other GeoSTM TC1 member companies with technical regulations (documents of DVGW, TC, etc.) complementing the main European functional standards
7. Assistance in establishing and strengthening of services to promote the implementation of international standards in the basic structure of Georgia's gas industry
8. Introduction to the work of the international ISO, CEN TCs in the gas sector

TAJIKISTAN

I. Main directions and work stages to ensure the effect; processes of Tajikistan's adopting International and European standards in the electricity and gas sector;

1. Compliance of the national technical regulation system with the principle of the European new approach
2. National standardisation system's correspondence with the generally accepted international and European principles
3. The country's involvement in international, European and interstate standardisation

II. Adoption and implementation of priority gas and electricity standards

- 1 Adoption of electricity standards of high regional priority
- 2 Adoption of electricity standards of national priority
- 3 Adoption of gas standards of national priority

AZERBAIJAN

Jamal Tahirov (Ministry of Energy) Gudrat Agayev (SOCAR)

We ask the INOGATE programme to provide assistance regarding the issues below:

1. Assist in the adoption of standards
2. Carry out trainings for specialists of technical committees
3. Conduct workshops to study EU best practice in standardisation in the gas sector
4. Provide advisory assistance in studying the procedure for obtaining technical assistance (technical assistance funding for work on standardisation)

The moderator organised a general discussion, with participating countries formulating the overall concept of how, with the help of foreign donors (e.g. the INOGATE programme), arrange the harmonisation of standards with the purpose of their implementation and application of European and international standards in the gas sector of the participating countries.

Key theses :

1. From the point of view of participating countries, the main part of harmonising standards **is to arrange active studying of standards** for the staff at gas companies, design organisations, administrative bodies and other organisations that will apply them in their activities. One way to achieve this is to create working / learning groups for each priority area, for instance, functional standards. The work of these groups will focus on achieving a national standard harmonised with the international or at least translation of the standard into the national or regional language recognised by all participants in the gas sector. Using a regional language is preferable for a standard of a common business interest for the participating countries, such as cross-border trade. In this case, working groups should be on a regional level, in order to achieve a common understanding of standards and ensure a coordinated implementation and uniform application. A training coordinator plays a key role in this process, who should, in addition to the experience in organising such training process, also enjoy the trust of the professionals trained and be aware of the specifics of the gas transportation sector, as

well as legislative and regulatory requirements of the countries participating in the project

2. **Achieving a deep understanding of the main provisions of the standard.** At this stage the primary task is to provide answers to arising questions or disagreement among the trained professionals. The main tools at this phase are consultations and topical working meetings and trainings based on the identified issues and contradictions. It is important to form, under the guidance of an INOGATE expert, the core consisting of qualified experts of gas transmission companies with understanding and experience of implementation of standards in their countries, who will be able to apply constant effort on harmonisation and implementation of standards in their countries.
3. **Preparation of agreed national or regional standards.** At this stage, the professionals trained, together with TC members, identify conflicting standards and other regulatory documents. Normative references and other related standards are analysed. Standards are identified that should be translated additionally for implementation of major standards, at least in a reference version.
4. **Implementation in the gas company.** Identifying the range of the company's standards that need to be modified in order to implement the new standard. Determining the list of related standards to be implemented simultaneously. Preparing an action plan for the implementation of European standards, taking into account the peculiarities of each gas company, adaptation of internal standards in view of implementation of the European standards and the cancellation of the old GOST standards
5. **Monitoring of the implementation of the standard.** Transfer of the European experience in resolving issues arising as a result of introduction and application of a standard (e.g. German companies). This can be done as part of workshops or study tours. When organising these events the key thing is for the trainees, with the moderator's assistance, to formulate the specific list of the event's objectives * (a joint preparation of terms of reference). Studying the experience of international technical committees on standardisation.
6. **Technical support of the gas companies in standard application:**
 - a. The help in creation of standardization department (service) in gas companies
 - b. staff training and retraining of gas company
 - c. Assistance in an establishment of communications with professional European associations
7. **Increase of efficiency profile gas TCs**
 - a. TC members training and retraining
 - b. Transfer of experience of European TC

COMMENTS of the GOGC on Items 6 and 7

As we see it, without such an assistance and support the things have been going quite badly. The employees meeting the relevant training on standardisation are missing, institutes do not train such specialists, there is no such an agency (for example, in Georgia) engaged in development standards and required normative documentation.

As a result there are serious difficulties in establishing (strengthening) respective services in companies. The specialists, having certain training in this area, are

preoccupied with routine issues and can't promote general standardisation questions.

Adequate training (retraining) will help to establish (strengthen) the standardisation bodies. We are talking about extensive training of the employees (internship level) and not limiting to short seminars which, unfortunately do not give desired results.

The Technical Committees also require support, since their functional load totally differs from that of the European TCs. The TCs require consultations of seasoned Western experts on the issues of functional load, structure, availability of methodologies, strengthening of professional training, etc.

We think that these issues should be elaborated in detail (bilateral consultations with the countries really on course to introduce European Norms and ISO standards) within the frameworks of the ongoing INOGATE project (if time allows) or a follow-up project.

2.2.6 Results of the practical exercise

PRACTICUM

Task1. Describe what steps need to be taken for the effective implementation of European gas functional standards.

#	STEPS	GOGC GGTC	GE SOCAR	MTG MD	VMTG MD	NAK	UTG MET	UTG KS	UTG M&S	AZ	TG
1	Harmonisation of national and interstate standards with European standards. Availability of standards				V		V	V	V		V
2	Create standardization services in all companies	V	V								
3	Quality translations of standards (with expert terminology analysis)			V	V	V		V	V	V	V
4	Professional development of specialists. Active training based on translations and focused on practical use	V	V	V	V		V	V	V	V	V
5	Make analysis of normative reference and evaluate the possibility of their adoption		V			V					
6	Evaluate the influence of European standards being adopted on business performance and economic indexes				V						
7	Professional development of specialists. Trainings and seminars on general questions and on adoption and		V		V		V	V	V	V	V

	implementation of different standards										
8	Повышение квалификации. Рабочие встречи по обмену опытом / Professional development. Working meetings for sharing experience				V			V	V	V	V
9	Implementation in the enterprise. Practical implementation	V			V			V		V	
10	Participation in Technical Committees			V	V		V	V	V		
11	Participation in drafting technical regulations			V							

RESPONSE ANALYSIS

1. The most exhaustive answer was prepared by the representative of NJSC Naftogaz and it was used as a basis.
2. Key questions in solution to a problem of application of European standards:
 - a. approaching understanding of the essence of a standard;
 - b. change of the philosophy of work of specialists and a company in general (adoption of new principles, approaches, technologies, etc.)
 - c. evaluation of the impact of standards implementation for a company.

The main tool of reaching the stated objective is personnel development. The necessity of personnel development (in different options) is specified by all participants.

3. According to the participants, translation of standards is an important preparatory step. The next step is the analysis and study of the standard by company's specialists and preparing of the correct text of a standard. The very important constituent is assistance of the Project in this process. In case of many questions it seems reasonable to hold a seminar or training on the problematic standard. Participants considered it to be practicable to arrange discussion if a standard in parallel in all interested countries.

Task 2. Determine what main stages of the implementation of European gas functional standards have passed in your company.

#	STEPS	GOGC	GE SOCAR	MTG	VMTG	NAK	UTG	UTG	UTG	AZ	TG

		GGTC		MD	MD		MET	KS	M&S		
1	Analysis of the need for a standard. Identification of the requirements to a standard (sets of standards)	V	V	V	V		V	V	V		
2	Familiarization and selection of standards (set of standards)	V	V	V	V		V	V	V		V
3	Obtaining originals and translations of standards				V		V	V	V	V	V
4	Active training on the basis of translations or the original aimed at the practical use of a standard	V	V				V	V	V	V	V
5	Analysis of referenced codes and determination of the complete list of standards necessary for effective use of a set of standards in a company						V	V	V		
6	Evaluate the influence of European standards being adopted on business performance and economic indexes								V		
7	Activation of the TC on adopting of a chosen standard			V	V		V	V	V		V
8	Preparing of the set of documents and sending to the NSB for adopting standards							V	V		
9	Adoption of a standard by the NSB	V					V	V	V	V	V
10	Approval from specialists of implementation in the company of the adopted version of a							V	V		

	standard										
11	Transfer of a standard to relevant services (to the internal fund of regulatory documents), assistance to personnel in implementation and practical use	V	V	V	V	V	V	V	V		
12	During development of a standard of an enterprise EN and ISO standards are being analyzed, references to these standards are necessary					V					

ANALYSIS OF RESPONSES

1. The most useful answers were prepared by the representatives of Ukrtransgaz and they were taken as a basis for drawing up a table.
2. On the basis of integration of participants' answers there was drawn up a plan of implementation of European standards in gas companies of the countries-participants of the seminar.

Task 3. Specify what needs to be done for the effective application of European gas functional standards.

#	STEPS	GOGC GGTC	GE SOCAR	MTG MD	VMTG MD	NAK	UTG MET	UTG KS	UTG M&S	AZ	TG
1	Creation of standardization gas technical committees in the field of natural gas			V	V						
2	Creation of the term base in English, Russian and national languages			V	V						
3	Ensuring state-level surveillance over the process of implementation of European				V						

	standards										
4	Professional development of TC members	V								V	
5	Professional development of specialists from standardization services and company operating departments	V					V			V	V
6	Translation of the most important standards	V	V				V				
7	Identify focus area of standards implementation according to the core business of an enterprise			V							
8	Transfer of best practices in application of lead standards							V	V		V

ANALYSIS OF ANSWERS

1. According to the participants, first of all it's necessary to upgrade skills of companies' employees as well as TC members
2. The second most important necessity is preparing translations of European standards

Task 4. How do you see the use of European gas standards in your work? Specify what standards do you use, plan, or can use in your work.

SUMMARY

Representatives of Transgaz from Ukraine, Moldova and Georgia enumerated European standards they use and provided interesting examples of their application.

For example, Moldovatrangaz uses the following standards:

- SM SR ISO 15971:2014
- SM SR ISO 10715:2013
- GOST EN 437:2012
- GOST ISO 10405:2012
- GOST ISO 10423:2012

- GOST ISO 15970:2012
- GOST CEN/TS 15173:2010

The last five interstate standards were adopted with active input from the current and previous projects of the INOGATE Programme.

Task 5 In your opinion, what are the main obstacles to the use of European gas functional standards in your company?

- Lack of understanding the importance of this work by companies management
- Low percentage of construction “from scratch”
- Lack of effective state policy. The system of monitoring over implementation and application of European standards is not developed yet.
- Low qualification of specialists
- Lack of financial resources necessary, in particular, for transfer to new technologies

Task 6. What kind of benefits can bring the use of European gas functional standards to your company and to you as an expert?

- Strengthening credibility of the company
- Simplification of the work with foreign partners, in particular rendering services to them
- Повышение качества проектирования, строительства, эксплуатации и обслуживания газовой инфраструктуры.
- Simplification of procurement procedure and the procedure of obtaining services from foreign partners
- Reliability and uninterrupted operations. Exclusion of accidents
- Повышение квалификации специалистов компании / Company specialists development
- Fulfilment of international commitments of the country. Ensuring energy security of the country
- Liberalization of the energy gas market and restructuring of energy complex in the context of integration into European energy system
- Possibility of implementation of joint infrastructure projects together with European gas companies
- Optimize the management system of an enterprise. Ensure common approach in the activity of business units of the company for achievement of a shared objective
- Implementation of progressive technological processes, machines and mechanical equipment
- Application of the latest materials and equipment