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Review of the work of the Committee and its subsidiary bodies after the 2005 ECE Reform

Progress report on studies under the Working Party on Gas

Note by the secretariat

1. The Working Party on Gas (WPG) is a principle body of the United Nations Economic Commission for Europe (UNECE) Committee on Sustainable Energy which studies a range of issues related to both gas industry operations and gas markets. It serves as a forum for assessing changes and trends in the European gas situation. It favours the exchange of information and experience between UNECE member-countries, considering policies, fostering international cooperation in problems of common interest and promotes the significant benefits to consumers from the use of the valuable natural resource.
2. One of the methods of work of the Working Party on Gas is conducting regional or interregional studies on topical issues which are identified and approved by delegations at annual sessions of the Working Party.
3. There are currently five major studies that are being implemented through dedicated expert groups and which are in different stages of their completion: Current Status and Prospects for Liquefied Natural Gas (LNG) in the UNECE Region; Underground Gas Storage in Europe and Central Asia; Use of Gas in Transport; Impact of the Liberalization of the Natural Gas Markets on Gas Demand and Prices in the UNECE Region; Gas Saving to Reduce Natural Gas Demand and Enhance Energy Security; and Development of Efficient Mechanisms for Natural Gas Regulation in the UNECE Region.
4. The goal of this paper is to provide an overview of a progress achieved in the implementation of the studies. The assessment of progress is based on reports made by leaders of expert groups on the five studies presented at the meeting of the Extended Bureau of the Working Party on Gas which was held in Geneva on June 17, 2011.

Overview of the studies

A. Current status and prospects for Liquefied Natural Gas (LNG) in the UNECE Region (LNG study).

5. The growing importance of LNG in the UNECE region has been confirmed by increasing import levels and the on-going construction of new re-gasification facilities across the region with new terminals being planned. Diversification of energy supplies, energy security concerns and competitiveness of LNG in certain market niches foster the increased use of this fuel.

6. The purpose of the LNG study is to provide additional insights on the future use of LNG in the UNECE region, possible evolution of its competitiveness, evaluation of financial requirements, cost and economics along the value chain, visibility of future capacity and investment needs, identification of barriers which might inhibit the sector's ability to continue providing the desired services in a timely and affordable manner, as well as main contractual and regulatory issues.

7. The study could provide guidance on the future LNG trends and valuable assistance to both UNECE member States and energy companies in making decisions regarding this dynamic segment of the gas industry in the region.

8. The expert group on the LNG study has defined the terms of reference and the structure of the study, as follows:

- I. Executive summary
- II. Methodology employed and sources used
- III. Chapter 1: Liquefied Natural Gas market:
 - (a) Reserves, supply, demand, international trade / LNG flows, analysis by areas/basins;
 - (b) Investments status and prospects in producing countries;
 - (c) Types of LNG contracts;
 - (d) Pricing mechanisms;
 - (e) Capacity of LNG facilities.
- IV. Chapter 2: Liquefied Natural Gas value chain and technology:
 - (a) History;
 - (b) Current status: liquefaction, regasification and storage, maritime transport technologies, GTL;
 - (c) Satellite plants, peak shaving;
 - (d) Prospects: technical innovations;
 - (e) Project economics, costs, risk analysis.
- V. Chapter 3: Competition between LNG and pipeline gas:
 - (a) Introduction;
 - (b) LNG development and market shares;
 - (c) LNG / pipeline economics;

- (d) Evolution of the LNG environment;
 - (e) Main drivers for LNG in Europe;
 - (f) Conclusion.
- VI. Chapter 4: LNG Regulation:
- (a) Regulatory evolution and trends;
 - (b) Strategic issues affecting regulation in importing countries;
 - (c) Authorizations and licenses;
 - (d) Unbundling requirements;
 - (e) Access to LNG regasification terminals in Europe;
 - (f) Access to LNG regasification terminals in America;
 - (g) Strength, Weakness, Opportunities and Threats (SWOT) analysis.
- VII. Chapter 5: Interoperability:
- (a) Gas Quality;
 - (b) Limitations in vessels size;
 - (c) Vessel certification;
 - (d) Publications – transparency.
- VIII. Conclusions and Recommendations
- IX. Annexes

9. According to the latest review by the WPG Extended Bureau meeting (Geneva, 17 June 2011) the study chapters are in different stages of completion. The best progress was noted in Chapters 1 and 2 – they are in a final stage of completion. Slower progress was reported for Chapter 3, but a full draft was expected soon. Most parts of Chapter 4 are completed but some update of the collected data and its analysis is still needed. Somewhat poor progress was noted for Chapter 5 where additional efforts by country experts, members of the expert group and the UNECE secretariat are needed.

10. Overall, the Extended Bureau noted significant progress achieved in the implementation of the LNG Study and, in particular the leading role of the Stream-Repsol and Gas Natural (Spain). At the same time it requested the expert group and the secretariat to speed up work on other chapters, particularly chapters 5 and 4 so that a full draft of the study be ready by mid-January 2012 for the presentation at the 22nd session of the Working Party on Gas.

B. Underground gas storage in Europe and Central Asia (UGS study)

11. With the deregulation and liberalization of the natural gas industry in the UNECE region, the natural gas industry has to rely more on the increasing role of underground natural gas storage facilities. In addition, new services have been developed and new roles designed, such as underground gas storage swaps and transforming the storage facilities into the heart of hub operations. In turn, they have contributed considerably to the integration of the gas markets in the UNECE region with the development of facilities which serve regional needs and convert a set of national markets into a truly regional or even, as in the case of the European Union, into a European industry. In addition, considerable decline in transport tariffs in Europe also reinforced trend of an increasing reach of underground gas storage facilities.

12. To ensure the continuing efficient functioning of underground gas storage facilities in the UNECE region, a good understanding of the current and expected industry trends is essential. Also, the consequences of the regulation of the natural gas industry and gas storage must be anticipated and their financial consequences estimated in a timely manner. It is therefore of vital importance both for governments and corporations to undertake a continuous assessment of the key trends in the underground gas storage sector and accordingly adjust their strategic, operational and investment decisions.

13. In 1999 the United Nations Economic Commission for Europe, through its Working Party on Gas produced a comprehensive Study on the Underground Gas Storage (UGS) in Europe and Central Asia. Some ten years later in January 2008 delegations to the annual session of the UNECE Working Party on Gas decided to undertake an update of that highly regarded study.

14. The study is being carried out in close cooperation with International Gas Union. To lead the study a team of gas storage experts (Expert Group), representing leading gas companies, governmental and relevant international institutions was set up. They developed Terms of Reference for the study and a detailed on-line project facility.

15. Although the original (1999) UGS study was taken as a basis of the update, it is obvious that over the last decade, the natural gas market in the UNECE region has changed considerably, which also affected the underground natural gas storage sector. New legislation has been introduced, including at the European Union (EU) level, which opened the sector to competition together with third-party access provisions. Hence, in addition to the topics studied in the original (1999) UGS study, the current project also addresses new issues, related to the recent gas market structure and regulation such as legal frameworks (permitting), cost effective technologies, gas storage market players etc. All this information and data is collected through a dedicated on-line Questionnaire which has been developed for the study.

16. The purpose of the UNECE study on underground gas storage is to review the main trends in the sector with a view to increasing the visibility of future capacity and investment needs as well as the regulatory, cost and operational challenges. It should also identify potential problem areas which might inhibit the sector's ability to continue providing the desired services in a timely and affordable manner. Finally, it should assist gas companies in making informed investment decisions in underground gas storage facilities with obvious benefits for natural gas end-users.

17. The structure of the study embraces a number of topical UGS issues such as new and emerging technologies, current status of UGS and new projects, legal framework, market organization and tariffs etc., and is as follows :

- I. Introduction;
- II. Executive Summary
- III: Chapter One: New and Emerging Technologies and Technological Improvements in Underground Gas Storage;
- IV. Chapter Two: Current UGS Status in Europe and Central Asia
- V. Chapter Three: Market Structure and Organization Analysis
- VI. Chapter Four: UGS Projects and Criteria for the Selection of Potential UGS Facilities
- VII. Chapter Five: Legal Framework for Development and Operation of Storage (including Permitting Process)

VIII. Chapter Six: Cost of Storage

IX. Chapter Seven: Outlook and Major Expected Trends of Gas Markets and UGS Developments (by country and regions)

X. Conclusions and Recommendations

18. Following the review of the study at the WPG Extended Bureau meeting, it was noted that although certain progress in chapters completion was made, the overall pace of the implementation of the study was not sufficient and little progress was made in 2010. Particular attention was brought to the need of increasing both the number of experts working for the chapters and the overall number of gas companies and institutions participating in the UGS study. The secretariat was also requested to work closely with other major gas producing companies which are not yet members of the study expert group to ensure their active involvement in the UGS study.

19. It was decided that a first draft of the study should be ready for consideration by the annual session of the Working Party on Gas in January 2012, and the final version be ready by the time of the World Gas Conference of the International Gas Union in June 2012 in Kuala Lumpur.

20. Next meeting of the UGS study expert group will be held in September – October 2011 in Geneva.

C. Use of gas in transport (NGV study)

21. The delegations to the twentieth session of the Working Party on Gas, which was held Geneva in January 2010, decided to undertake a study on the Use of Gas in Transport in the UNECE Region. The first preparatory Meeting of the expert group was held in Moscow in March 2010. Twenty four experts from ten European countries and representatives from Egypt, as well as representatives from the Organization for Security and Cooperation in Europe (OSCE), the European Business Congress (EBC) and the UNECE secretariat have attended the meeting.

22. The Moscow meeting participants considered the content and the structure of the study. To facilitate the discussion, the meeting Chairman presented the ‘Blue Corridor’ project and its achievements. It was noted that the preparation of the ‘Blue Corridor’ pre-feasibility study by the UNECE in 2002 established a solid basis for carrying out a new study on “Use of Gas in Transport in the ECE Region”.

23. A proposal for the structure of the study included introduction, executive summary, current market trends, technological background, competitiveness, regulation and policy issues, analysis of the current NGV market and scenarios for its future development.

24. While in general terms beneficiaries of the study would be all UNECE countries and the industries concerned, participants were looking to define the key beneficiaries more closely as well as to identify the barriers and obstacles for the use of gas in transport. Noting the considerable progress in use of gas in various modes of transport, which is a positive driver for a wider use of gas in transport in the ECE region, the participants decided to focus in the study on the use of gas by road vehicles. It was also defined to consider by Natural Gas Vehicles (NGVs) all methane-powered vehicles - natural gas and/or bio-methane, hydrogen and blends thereof.

25. The Russian gas company “Gazprom” was nominated a leader of the expert group on the NGV Study. At the WPG Extended Bureau meeting Mr. E. Pronin – Chairman of the study made a presentation of the World and European NGV markets. There are currently over 13 million natural gas vehicles and more than 19 thousand filling stations in the world

with Pakistan (2.8 mln. NGVs), Iran ((2 mln) and Argentina (1.9 mln.) leading. In Europe Italy (754 thousand NGVs), Ukraine (200 thousand) and Armenia (101 thousand) are the three top countries on the list.

26. Taking into account the long-standing successful cooperation of the UNECE Working Party on Gas in the field of NGV with other specialized in this area international organizations such as International Gas Union (IGU), International and European Associations of Natural Gas Vehicles (IANGV and EANGV), their high expertise in this field, and also the fact that the IGU is currently working on the 2009-2012 Triennium NGV Report, it was decided to join the efforts with IGU and produce a joint study called Use of Gas in Transport. This proposal was discussed and approved by the IGU Working Group 5.3 - Natural Gas Vehicles, at their meeting in Opatija (Croatia) in June 2010.

27. After this merger the expert group has expanded and it currently consists of some 120 experts all over the world. The following structure and table of content of the study was approved:

- I. Acknowledgements, Executive Summary, Introduction;
- II. Chapter One: Use of Gas in Transport in the UNECE Region
- III. Chapter Two: Overview Of Local Rules And [Best] Practices
- IV. Chapter Three: Best Practices on NGV Refueling Stations
- V. Chapter Four: Synergy of Bio-Methane and Natural Gas
- VI. Chapter Five: Synergy Of Hydrogen And Natural Gas
- VII. Chapter Six: Promising NGV Technologies to Enhance Efficiency and Safety
- VIII. Chapter Seven: NGV for Large Fleets: Economics, Ecology, Incentives
- IX. Chapter Eight: Synergy of OEM And Retrofit
- X. Conclusions and Recommendations
- XI. Appendix I: Country Data Base
- XII. Appendix II: Global and Regional NGV Markets
- XIII. Tables, Figures, Abbreviations, Reference List

28. A series of working meetings were held in 2010 (Geneva in January, Moscow in March, Opatija in June, Moscow in October and Geneva in November) and 2011 (Livorno in March, Geneva in June). A working meeting of the IGU Working Group 5.3 with participation of the UNECE experts to discuss a first draft Report is scheduled to be held in Porto (Portugal) in September 2011.

29. It is expected that the draft final Report will be presented at the annual session of the Working Party on Gas in Geneva in January 2012 and in February at the meeting of the IGU Working Group 5.3 in Prague.

30. Delivery of a Final Report is planned for June 2012 at the World Gas Conference in Kuala Lumpur.

D. Impact of the liberalization of the natural gas markets on gas demand and prices in the UNECE Region: gas saving to reduce natural gas demand and enhance energy security (Gas Markets Liberalization study)

31. The goal of the study was to examine links between the gas market liberalization, efficient gas pricing as a consequence of liberalization and effective gas use and their possible relevance to enhancing energy security, in particular through increasing gas supplies from the Russian Federation and countries of the Commonwealth of Independent States (CIS).

32. The study is aimed at providing guidance on the future natural gas policy-making and related corporate strategies and as such would be a valuable assistance to both UNECE member-states and energy corporations in making decisions regarding this dynamic segment of the energy sector in the region.

33. The study was completed in 2010 and a draft final report was presented to the 21-st session of the Working Party on Gas held in Geneva in January 2011. After consideration and discussions by the delegations it was decided to request the UNECE secretariat to incorporate comments made and to undertake a complete editing of the study to achieve consistency in style and language.

34. The Gas Markets Liberalization Study has the following structure:

- I. Introduction
- II. Chapter 1: Structure of Gas Market and Pricing Policy in the UNECE Region (Overview)
 - 1.1 Gas market in the UNECE region before the liberalization
 - 1.2 Liberalization of gas market in the UNECE region
- III. Chapter 2: Impact of Liberalization of Natural Gas Markets on Prices
 - 2.1 Introduction
 - 2.2 Effect of liberalization on wholesale prices
 - 2.2.1 Regulated wholesale prices and liberalization
 - 2.2.2 Wholesale gas prices based on other fuels
 - 2.2.3 Wholesale gas prices based on gas-to-gas competition
 - 2.3 Effect of liberalization on retail gas prices and consumers
 - 2.3.1 Progress of liberalization on the retail markets
 - 2.3.2 Competition on retail prices
 - 2.4 Conclusions
 - 2.4.1 General conclusions
 - 2.4.2 Conclusions on the wholesale market
 - 2.4.3 Conclusions on the retail market
 - 2.4.4 Conclusions on the CIS area
- IV. Chapter 3: Liberalization and Security of Natural Gas Supply
 - 3.1. Gas markets and security of supplies before liberalization

- 3.2. Gas markets in the Russian Federation and non-EU UNECE countries
- 3.3. Gas markets in Balkan countries
- 3.4. Gas market in the European Union
- 3.5. Security of supply on the liberalized gas markets
- 3.6. Conclusion

V. Chapter 4 : Liberalization of Gas Market and Natural Gas Saving to Reduce Gas Demand Enhancing Energy Security

VI. Chapter 5: The Role of LNG in the Process Of Gas Markets Liberalization in the UNECE Region

VII. Conclusions

35. The study is currently under review and editing by the UNECE secretariat. The revised draft will be ready by the end of October 2011 and will be further sent for comments by the Heads of Chapters. A final report will be presented to the 22nd session of the Working Party on Gas in January 2012 and an Executive summary will be published.

E. Development of efficient mechanisms for natural gas regulation in the UNECE Region

36. The concept of the study was presented at the 20-th session of the Working Party on Gas in January 2010 and it was included in its programme of work. However, it was later decided to suspend work on this project until the time when a decision on the UNECE activities related to energy security and energy regulation within the Committee on Sustainable Energy is taken.
