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Ad Hoc Group of Experts on Coal Mine Methane

Third session
Geneva, 7-9 March 2007

**REPORT OF THE AD HOC GROUP OF EXPERTS ON COAL MINE METHANE
ON ITS THIRD SESSION**

I. INTRODUCTION

1. The third session of the Ad Hoc Group of Experts on Coal Mine Methane was held from 2 to 4 April 2007. Additional background and detail on the items summarized in the report are available on the UNECE website at: <http://www.unece.org/ie/se/coal/cmm.html>.

II. ATTENDANCE

2. The session was attended by representatives from the following UNECE member countries: Czech Republic, Germany, Italy, Kazakhstan, Poland, Russian Federation, Sweden, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, and United States of America. Representatives of the European Community also participated.

3. Representatives of Australia, China, India, Japan, Mexico, and Nigeria participated under Article 11 of the Commission's Terms of Reference.

4. The following intergovernmental and non-governmental organizations were in attendance: Methane to Markets Partnership, Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group, and World Coal Institute.

III. ADOPTION OF THE AGENDA (Agenda item 1)

Documentation: ECE/ENERGY/GE.4/2007/1: Provisional agenda.

5. The provisional agenda was adopted without amendment.

IV. IMPLEMENTATION OF THE UNECE REFORM AND MATTERS ARISING FROM THE SIXTY-FIRST SESSION OF THE COMMISSION RELATED TO ENERGY ACTIVITIES AND FROM THE FIFTEENTH SESSION OF THE COMMITTEE ON SUSTAINABLE ENERGY (Agenda item 2)

Documentation: ECE/ENERGY/2006/1: Report of the sixty-first session of the Commission
ECE/ENERGY/68: Report of the fifteenth session of the Committee on Sustainable Energy.

6. The Deputy Director of the Sustainable Energy Division, Mr. F. Romig opened the meeting and welcomed participants. He informed the Group of Experts that the Committee on Sustainable Energy had renewed the mandate of the Group of Experts for another two years thus demonstrating the endorsement of member States for the work of the Group. In addition, the Committee encouraged the merger of the Task Force on the Economic Benefits of Improving Mine Safety through Extraction and Use of Coal Mine Methane into the Ad Hoc Group of Experts resulting in a stronger, more cohesive and, ultimately, more responsive effort – one that builds on the interrelation between the two groups and their members and is capable of delivering greater value to member States and the coal industry.

7. The Deputy Director also welcomed the Methane to Markets (M2M) Partnership Coal Mine Methane Subcommittee and the opportunity to host the meeting of the Subcommittee in conjunction with the meeting of the Group of Experts.

8. The secretariat delivered a brief summary of the types of intergovernmental bodies that exist within the United Nations system, including ad hoc groups of experts and working parties, to provide clarity on the role of the regional commissions and the expert bodies that serve them.

V. ELECTION OF OFFICERS (Agenda Item 3)

9. The meeting recognized the service of the first Bureau of the Ad Hoc Group of Experts and expressed appreciation for their efforts. The Group of Experts elected a new Bureau to serve through 2008 with the following members: Mr. Roland Mader (Germany/United Kingdom), Chairman; Vice-Chairmen Mr. Yuriy Bobrov (Ukraine), Mr. Raymond Pilcher (United States), Mr. Grigoriy Present (Kazakhstan), Mr. Sergei Shumkov (Russian Federation), and Mr. Jacek Skiba (Poland). One Vice-Chairman position remains open.

**VI. REVIEW OF THE PROGRAMME OF WORK FOR 2006
AND ACCOMPLISHMENTS OF THE AD HOC
GROUP OF EXPERTS ON COAL MINE METHANE**
(Agenda item 4)

Documentation: ECE/ENERGY/GE.4/2006/2: Report of the second session of the Ad Hoc Group of Experts on Coal Mine Methane

10. Mr. Roland Mader, Chairman, reviewed progress on the programme of work for 2006 adopted at the second session of the Ad Hoc Group of Experts.

- (a) Coordinate with M2M Partnership: The Ad Hoc Group of Experts continued its cooperation with the M2M Partnership through: (i) its leadership on development of uniform terminology and standards for the CMM industry; (ii) hosting the Spring 2007 meeting of the Coal Mine Methane Technical Subcommittee of the Partnership; and (iii) continued informal cooperation on matters of common interest.
- (b) Continue work on the extrabudgetary project on Financing CMM Projects in the CIS/CEE region: The secretariat began work in earnest on this project in 2006 and completed the following activities: (i) conducted two missions to the Russian Federation (February and June 2006); (ii) completed one mission to Kazakhstan in February 2007; (iii) participated in a finance workshop in Donetsk, Ukraine in June 2006 sponsored by the Partnership for Energy & Environmental Reform (PEER) and the United States Environmental Protection Agency; (iv) prepared information fact sheets, a business plan template and guidance document, and spreadsheet model in English and Russian, and (v) received a first project identification form from a Russian mining company.
- (c) Seek additional responses to the questionnaire for the Ad Hoc Group of Experts and prepare a report on the responses: At the second session, the secretariat reported receiving approximately 30 responses. The Chairman sought additional responses for a more representative survey and extended the closing date for comments to 7 April. The secretariat received 83 responses, and prepared a presentation and summary report (ECE/ENERGY/GE.4/2007/3).
- (d) Task Force on Mine Safety: The Task Force accomplished its objectives to (i) complete the template for methane drainage case studies in all three ECE languages (ECE/ENERGY/GE.4/2007/4); (ii) complete US and Russian/CIS methane drainage case studies (ECE/ENERGY/GE.4/2007/5-9), and (iii) participate as an observer to the International Labour Organization (ILO) tripartite meeting in May 2006 on the revised Code of Practice on Health and Safety in Underground Coal Mines.
- (e) Assess practical applications for use of low-concentration methane: The Group of Experts made limited progress on this issue during 2006, but expects to restart efforts in this area with a discussion at its third session.

- (f) Workshops, conferences and symposia: The UNECE cosponsored the workshop “Geomechanical and Geodynamic Aspects of High-Efficiency Extraction of Coalmine and Coalbed Methane,” held from 20-22 September 2006 in St. Petersburg, Russian Federation and organized by the Research Institute of Mining Geomechanics and Mine Surveying (OAO “VNIMI”). Other principal supporters included the Government of the Russian Federation, Gazprom, and the coal companies Severstal Resources and SUEK.

VII. SUMMARY OF THE RESPONSES TO THE QUESTIONNAIRE DELIVERED TO THE AD HOC GROUP OF EXPERTS IN 2006

(Agenda item 5)

Documentation: ECE/ENERGY/GE.4/2006/3: Questionnaire: Ad Hoc Group of Experts on Coal Mine Methane
ECE/ENERGY/GE.4/2007/3: Summary Report of Responses to the Questionnaire on Coal Mine Methane.

11. The Bureau prepared and distributed a questionnaire for the members of the Ad Hoc Group of Experts on Coal Mine Methane (ECE/ENERGY/GE.4/2006/3) during the first quarter of 2006. The closing date for responses was April 2006. The Chairman delivered a summary report (ECE/ENERGY/GE.4/2007/3) at the third session. The results provide an excellent guide to channel the future focus of the Group of Experts. In short, mine safety and emission reduction issues remain the most important priorities for the delegates to the Group. Both the report and the accompanying presentation are available on the UNECE website, and reference should be made to those documents for additional information.

12. The Chairman noted that the results of the questionnaire would also be included in an article being prepared for the June edition of the industry periodical, World Coal.

VIII. UPDATE ON THE STATUS AND ACTIVITIES OF THE TASK FORCE ON THE ECONOMIC BENEFITS OF IMPROVING MINE SAFETY THROUGH THE EXTRACTION AND USE OF COAL MINE METHANE

(Agenda item 6)

Documentation: ECE/ENERGY/GE.4/2007/4: Draft Template for Case Studies on Methane Degasification Systems
ECE/ENERGY/GE.4/2007/5: Description of a Project for the Extraction and Use of Methane from the Former Kapitalnaya Mine and the Operating Osinnikovskaya Mine in the Kuzbass.
ECE/ENERGY/GE.4/2007/6: Project for the Extraction and Use of Methane from Mines in the Karaganda Coal Basin (Kazakhstan)
ECE/ENERGY/GE.4/2007/7: Conceptual Approaches to the Development and Working of Very Gassy Coal Deposits

ECE/ENERGY/GE.4/2007/8: Case Study of the Economic Impact of Methane-Related Events at Coal Mines in the United States of America: Case Study Mine A

ECE/ENERGY/GE.4/2007/9: Case Study of the Economic Impact of Methane-Related Events at Coal Mines in the United States of America: Case Study Mine B

13. Mr. Raymond Pilcher, Chairman of the Task Force, delivered the report. The Task Force has been very active in the previous 12 months finalizing the template for case studies and drafting three case studies for mines in the countries of the Commonwealth of Independent States (CIS) and two studies of mines in the United States. The delegates who prepared the CIS case studies were not able to participate; therefore, only the US case studies were presented and discussed in the meeting. According to Mr. Pilcher, the US studies show that increased investment in CMM use and drainage will increase mine safety. Under the right conditions, CMM recovery and use projects can be profitable, and accrued savings from avoided mine accidents could support additional capital expenditures for improved methane drainage and use. It is notable that the US case studies relied exclusively on publicly available data, thus the studies also highlight the lack of transparency and availability of data necessary to conduct such analyses.

14. The Group of Experts discussed a number of possible activities for the future work of the Task Force.

- (a) Conflicts over gas ownership, and access to natural gas pipelines and power transmission facilities should be addressed to remove barriers to recovering and using CMM.
- (b) Government safety authorities should collect more economic data and information related to mining accidents and make them available to public.
- (c) Large insurance companies should consider the economic consequences of mining accidents, and offer incentives to increase drainage and use of CMM.
- (d) Government-supported revolving funds supplying low-cost capital should be created to encourage additional investment in CMM drainage and use.
- (e) Additional case studies are necessary, especially for countries and regions other than the CIS and the United States of America.

15. In the discussion that followed, the Group of Experts agreed to:

- (a) Pursue additional case studies. The secretariat will investigate the resource commitment necessary to prepare a quality analysis and report to the Group of Experts to address any concerns with cost and time. In support of this effort, the delegate of the Russian Federation from VNIMI also agreed to provide their database on mine accidents and their causes.

- (b) Evaluate existing mine safety regulations and legislation in various countries to determine whether the legal frameworks in place are actually inhibiting rather than encouraging investment in methane drainage and use.
- (c) Approach the insurance/re-insurance industry to assess their involvement and interest in these issues, and report to the Group of Experts. The secretariat will lead this effort initially.

16. The secretariat closed this agenda item by reporting on its participation as an observer to the International Labour Organization (ILO) tripartite meeting in May 2006 on the revised Code of Practice on Health and Safety in Underground Coal Mines. The Code of Practice (<http://www.ilo.org/public/english/dialogue/sector/techmeet/meshcm06/code.pdf>) is not a regulatory document, but rather a guidance document on best practices covering the full range of mining activities including methane drainage. The opportunity for the UNECE to participate as an observer demonstrated the continuing commitment by both the ILO and the UNECE to working together in cooperation to encourage CMM capture and use. The secretariat will meet with the ILO following the third session to explore further cooperation.

IX. FACILITATING THE IDENTIFICATION AND IMPLEMENTATION OF COAL MINE METHANE (CMM) PROJECTS THROUGH DIALOGUE AND TECHNICAL COOPERATION

(Agenda item 7)

17. The meeting received a presentation on options for using low-quality methane from methane degasification systems. This issue was raised during the second session of the Group of Experts and widely acknowledged among the Group as an issue of great importance. Improving recovery and use of the low-concentration volumes (i.e., concentrations below 25%) could deliver significant progress in reducing methane emissions and result in further improvements to mine safety, especially in many developing countries and economies in transition where this is more common. The meeting agreed that:

- (a) It is possible to safely utilize or flare methane at lower concentrations, and it was reported, for example, that a gas engine has been developed and is in use in China that is capable operating at lower concentrations;
- (b) Typically, combustion systems with the ability to use low concentration gas employ many flame arrestors, and there is a continuing need to develop systems with fewer arrestors to reduce operational complexity and cost;
- (c) The question remains; however, whether the production of low-concentration volumes from operating coal mines imposes a safety hazard and resolution of the technical limitations will only be of theoretical value. However a different view might be taken on producing abandoned mine methane (AMM) with low oxygen concentrations and were a safety hazard appears to be manageable;

- (d) If the safety hazard is manageable, it may be necessary to amend regulatory requirements in some countries where regulatory regimes limit the combustion of coal mine methane to concentrations of 25% or greater;
- (e) Beyond the technical and regulatory issues, there is also a clear need to determine the global supply and demand of these low-concentration volumes to encourage investment in technological development and deployment.

18. In addition, the meeting received two presentations providing country and regional updates and one update on technology development. All presentations are available on the UNECE website:

- (a) Status of CMM Recovery & Utilization in the Kuzbass Basin, delegate of the Russian Federation;
- (b) Update on Poland CMM, delegate of Poland;
- (c) Update of MEGTEC VAM Projects, delegate of Sweden.

X. ISSUES RELATING TO FINANCING OF CMM PROJECTS

(Agenda item 8)

19. A continuing priority of the Ad Hoc Group of Experts is to catalyze development of CMM projects through identification of project opportunities and facilitation of project investment. In past sessions the Group of Experts has addressed the options for investment and the tools for securing debt and equity finance. In this session, the Bureau sought to expand the discussion to consider why CMM projects are lagging even though they still remain very attractive for carbon market investors. Also for the first time, the Group of Experts learned about insurance options for greenhouse projects that may grow in importance as delivery becomes more important.

20. Continued Barriers to Investment in CMM Projects: The meeting received a report from one of the more well-know firms in the carbon-related markets to frame the issues followed by a panel discussion moderated by a leading expert on CMM utilization projects worldwide and four panellists: (i) a large, multinational carbon buyer and investor of greenhouse gas mitigation projects; (ii) a project developer that targets only CMM projects; (iii) a private equity investor with experience packaging greenhouse gas and energy efficiency projects, and (iv) a coal mine operator. Generally, all agreed that finding possible CMM projects is not a problem given the many sources of information worldwide. The challenge lies in project implementation, and many traditional barriers remain:

- (a) Confusion and disagreement over ownership of the methane, produced energy, and carbon offsets in CMM transactions;
- (b) Difficulty in applying a single, consistent business model in different countries due to varying business practices;

- (c) Continued inability to understand and apply financial engineering principles and a general lack of sophistication of capital markets among project sponsors;
- (d) Technical challenges resulting from fluctuations in the quality and quantity of methane drainage;
- (e) Investment and infrastructure conditions for power production remain poor in many countries;
- (f) Disagreement over who will fund upstream improvements in the mine degasification system; should it be the mine operator or the CMM project developer and should the upstream costs be attributed to a CMM utilization project?
- (g) Slow pace of regulatory/legal approvals at the local, regional and federal levels;
- (h) Too many levels of decision-making within the implementing organizations, among project participants, and among regulatory bodies; and
- (i) Indecision caused by the lack of an agreement on post-2012 carbon limits under the Kyoto Protocol or other mechanism.

21. In addition, the meeting identified new problems associated with the evolution of the carbon markets and massive inflows of equity capital into the markets:

- (a) The coal industry is late in pursuing projects within the carbon markets;
- (b) Too much focus on implementation without a strategic focus on post-implementation;
- (c) Difficulty in finding reliable and knowledgeable country partners who can serve as effective “middlemen”;
- (d) Problems with approved methodology ACM008 under the Clean Development Mechanism (CDM) process;
- (e) Limited understanding of the coal industry among carbon-based investors and project developers new to the industry, especially the economic drivers behind coal mining and the high priority placed on safety above all else; and
- (f) The need to make a better effort linking the safety benefits to CMM projects under the CDM and Joint Implementation (JI) process
- (g) A gold-rush mentality among project sponsors and investors resulting in unrealistic price expectations and indecision among project sponsors, and impatience on the part of investors who are quick to leave the market when the price of carbon declines.

22. Many participants, however, believe the future will be bright for the CMM industry, and many of these issues are likely to be resolved in the next three years as pressure grows to implement projects during the first commitment period of the Kyoto Protocol.

23. Project to Encourage Development of CMM Projects in the CEE/CIS Region: The secretariat briefed the meeting on the activities and progress of the extrabudgetary project “Development of Coal Mine Methane Projects in Central and Eastern Europe and the Commonwealth of Independent States.” The secretariat cautioned that the project is not proceeding as had been expected. There is substantial liquidity in the capital markets for CMM projects. In addition, successful restructuring and consolidation in the coal industry have yielded very successful and profitable coal enterprises in a number of CEE/CIS countries that have the resources and sophistication to pursue the projects themselves. This has created a very different investment climate than that existing in November 2003 when this project was originally envisaged. Although the project will continue to seek the full range of CMM projects, the secretariat reported that it realistically expects the future activities of the project will focus on: (i) support of ventilation air methane (VAM) projects because they are not as attractive to investors in the near-term compared with methane drainage projects; (ii) working with small, independent or state-owned mines that may be in greater need of these services; (iii) working with larger mining operators that wish to manage such projects in-house; and (iv) continuing to deliver workshops on CMM project finance for which high-quality materials have been developed. The UNECE will continue working with the Russian Federation and Kazakhstan, and will seek to have one or two projects ready to present at the 2007 Methane to Markets Expo in Beijing, China in late October 2007. In addition, it will look to expand the project to the entire CEE/CIS region in late 2007.

24. Insurance Instruments for Greenhouse Gas Mitigation Projects: The meeting received reports from the Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group on political risk insurance and Marsh Ltd on the range of risk mitigation options offered by private sector insurers. The presentations, including details of coverage, are available on the UNECE website. In 2006, MIGA issued its first policy for a greenhouse gas mitigation project providing coverage to a landfill gas project in Central America, and is interested in pursuing similar projects including CMM projects. While MIGA limits its coverage to political risk and the many different subcategories of political risk, Marsh outlined additional coverages for Kyoto risk, credit risk, technological problems, and property/business interruption. Marsh also alerted the meeting to the upcoming release of a study on insurance issues for carbon projects prepared for the United Nations Environment Programme (UNEP).

25. In concluding the discussion on financial issues for CMM projects, the Ad Hoc Group of Experts acknowledged the continuing importance of promoting investment in coal mine methane projects, and committed to continue identification of options for facilitating cooperation between governments, the mining industry, and investors/project developers.

XI. UNIFORMITY OF TERMINOLOGY AND TECHNICAL STANDARDS (Agenda item 9)

26. The Group of Experts agreed that future work under this topic would not address “uniformity of technical standards” as this is an unrealistic objective given the limited resources

and time to pursue this activity and the difficulty in convincing regulatory authorities to amend regulations designed to meet local conditions.

27. In discussing “uniformity of terminology,” the Group of Experts referenced the responses to the Questionnaire (ECE/ENERGY/GE.4/2007/3) where most respondents agreed on the need for uniform terms and definitions, but 25% disagreed with the proposed terms and definitions. The relatively high number of those disagreeing suggests that a realistic first step would be the development of a glossary of terms providing single definitions mapped against terms in use around the world. The starting point for the exercise would be the definitions found in ACM008, the approved methodology for CMM projects under the CDM process. The secretariat agreed to lead a small working group consisting of representatives of the mining industry, governments, vendors and investors/project developers that will report to the entire Group of Experts at or before the next annual session.

**XII. CONFERENCES, WORKSHOPS AND OTHER EVENTS FOR CONSIDERATION
BY THE AD HOC GROUP OF EXPERTS ON COAL MINE METHANE
(Agenda item 10)**

28. The meeting received a report on the workshop in St. Petersburg, Russian Federation organized and hosted by VNIMI, Workshop on Geomechanical and Geodynamic Aspects of High-Efficiency Extraction of Coalmine and Coalbed Methane. The workshop report is available on the UNECE website.

29. Future workshops and conferences for which the UNECE received a proposal to sponsor or substantively participate in:

- (a) Poland, September 2007: The meeting agreed to support an international workshop associated with the Polish Mining Congress in Krakow, Poland on 20 September 2007, “New Trends in Coal Mine Methane (CMM) Recovery and Utilization.” The Congress will run from 19-21 September, and workshop participants are welcome to attend the full Congress.
- (b) Methane to Markets (M2M) Expo, October 2007: The M2M Expo will be held from 30 October to 1 November 2007. The M2M Partnership has requested the UNECE to participate in a session on financing CMM projects, to which the meeting agreed.
- (c) Russian Federation, 2008: Promgaz and VNIMI proposed the possibility of holding a workshop in the Kemerovo Oblast in 2008 to build on the discussions and conclusions at the St. Petersburg workshop.

30. Other upcoming events brought to the attention of the Group of Experts include:

- (a) Third International Conference on Clean Coal Technologies, Italy, May 2007
(http://www.cct2007.it/inc/CCT2007_second_ann.pdf);
- (b) US Coal Mine Methane Conference, United States, September 2007;

- (c) The World Mining Congress, Poland, September, 2008; and
- (d) A possible workshop on applications for low-quality methane.

**XIII. ACTIVITIES OF AND COOPERATION WITH VARIOUS
INTERGOVERNMENTAL BODIES AND NON-GOVERNMENTAL
ORGANIZATIONS AND OTHER RELATED BODIES**

(Agenda item 11)

31. The secretariat informed the meeting on the request by member States to develop a briefing paper, referred to as a Category II paper, for the “Environment for Europe” ministerial-level meeting in October 2007. The paper will be delivered to the Environment for Europe secretariat in July 2007, and will provide an excellent opportunity to highlight the importance of CMM recovery and utilization and also the work of the Ad Hoc Group of Experts.

32. The Coal Mine Methane Subcommittee of the Methane to Markets (M2M) Partnership convened as part of the meeting of the Ad Hoc Group of Experts. Presentations and minutes of that meeting are available at <http://www.methanetomarkets.org>.

XIV. PROGRAMME OF WORK FOR 2007

(Agenda Item 12)

33. After discussion, the Ad Hoc Group of Experts:

- (a) Expressed appreciation to the Committee on Sustainable Energy and the UNECE Executive Committee for the extension of the mandate of the Group of Experts to December 2008;
- (b) Elected a new Bureau to serve through 2008 with one seat remaining open for a Vice Chair position;
- (c) Supported the development of additional case studies on the economic impact of mine safety improvements beyond the Russian Federation/CIS and the United States;
- (d) Agreed to undertake a review of existing mine safety legislation and regulations pertaining to methane drainage with the goal of assessing whether regulatory requirements are inhibiting innovation and implementation of effective methane capture and utilization programmes;
- (e) Directed the secretariat to liaise with the insurance industry to gauge interest in assessing the economic benefits of investments in methane drainage and the benefits that will accrue to mine safety and productivity;
- (f) Established a small informal task force led by the secretariat to prepare a glossary of terms with the objective being greater unanimity of terminology in the CMM industry;

- (g) Agreed to further investigate the technical and policy issues related to the capture and use of low-quality coal mine methane and to assess the global potential of this resource;
- (h) Expressed appreciation for the opportunity to cosponsor the Workshop on Geomechanical and Geodynamic Aspects of High-Efficiency Extraction of CMM and CBM hosted by VNIMI in St. Petersburg, Russian Federation from 20-22 September 2006;
- (i) Welcomed the invitation to cosponsor a coal mine methane workshop in Krakow, Poland in September 2007 in cooperation with the Central Mining Institute of Katowice and AGH University of Science and Technology of Krakow, and a possible workshop in the Kuzbass Region in 2008 organized by VNIMI and Promgaz;
- (j) Accepted the invitation to participate in a discussion on project finance at the Methane to Markets Expo in Beijing, China in the fourth quarter of 2007;
- (k) Noted with appreciation the opportunity for the secretariat and Bureau to prepare a category II paper for the Environment for Europe ministerial meeting in Belgrade, Serbia in October 2007;
- (l) Agreed to continue promoting financing and development of CMM projects; and
- (m) Welcomed continued cooperation with other international and intergovernmental organizations.

XV. OTHER BUSINESS

(Agenda item 13)

34. A clear concern amongst the participants of the third session was the lower-than-expected representation of the coal industry, which had been very strong in previous sessions. For the future success of the Group of Experts, it is absolutely essential that the meetings take place with substantial and contributing participation from the coal sector. The Group of Experts requested that the Bureau and the secretariat consider and pursue options for increasing participation.
