



Economic and Social Council

Distr.: General
31 May 2017

Original: English

Economic Commission for Europe

Committee on Sustainable Energy

Expert Group on Resource Classification

Eighth session

Geneva, 25-28 April 2017

Report of the Expert Group on Resource Classification

I. Introduction

1. The eighth session of the Expert Group on Resource Classification was held on 25 to 28 April 2017.¹

2. This report summarizes the discussions on the work of the Expert Group at its eighth session. All the documents and presentations of the eighth session are available on the United Nations Economic Commission for Europe (ECE) website.

II. Attendance

3. The meeting was attended by experts from the following ECE member countries: Armenia, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Georgia, Germany, Hungary, Kazakhstan, Malta, Netherlands, Norway, Poland, Romania, Russian Federation, Serbia, Slovakia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland and United States of America.

4. Experts from Algeria, Argentina, Australia, Brazil, Cameroon, China, India, Indonesia, Jordan, Malawi, Mexico, Mongolia, Mozambique, Namibia, Nigeria, Saudi Arabia, South Africa, Sudan, Thailand and Uganda participated under Article 11 of the Commission's Terms of Reference.

5. From the United Nations system and Specialized Agencies, representatives of the United Nations Economic Commission for Africa (ECA), United Nations Environment

¹ Official documents of the session are available at <http://documents.un.org/>. Unofficial room documents and presentations delivered at the meeting are available on the ECE website at: <https://www.unece.org/index.php?id=44614#/>.



Programme (UNEP), International Atomic Energy Agency (IAEA) and International Labour Organization (ILO) attended. Representatives from the European Commission (EC), represented by the EC Directorate-General (D.G.) for Internal Market, Industry, Entrepreneurship and SMEs (D.G. GROWTH), D.G. for Research & Innovation, and D.G. Eurostat, participated.

6. The following international organizations were represented: International Energy Agency (IEA), International Energy Forum (IEF), International Sustainable Energy Organization (ISEO), Organisation for Economic Co-operation and Development (OECD) Nuclear Energy Agency (NEA), Organization of African Geological Surveys (OAGS) and Organization of Arab Petroleum Exporting Countries (OAPEC).

7. Representatives of the following non-governmental organizations participated: American Association of Petroleum Geologists (AAPG), Centre for Mineral Technology, Committee for Mineral Reserves International Reporting Standards (CRIRSCO), European Association of Geoscientists and Engineers (EAGE), European Federation of Geologists (EFG), EuroGeoSurveys, Entwicklungsfonds Seltene Metalle (ESM) Foundation, European Disability Forum, Federation of European Materials Societies (FEMS), Geological Society of Africa (GSAf), International Geothermal Association (IGA), International Union of Geological Sciences (IUGS), SEG Civil Society Support Center, Society of Petroleum Engineers (SPE), Society of Petroleum Evaluation Engineers (SPEE) and World Petroleum Council (WPC).

8. In addition, the private sector was represented by experts from over 45 companies. Academia was also represented by experts from 15 universities and institutes.

III. Adoption of the agenda (agenda item 1)

Documentation: ECE/ENERGY/GE.3/2017/1

9. The provisional agenda as contained in ECE/ENERGY/GE.3/2017/1 was adopted without amendment.

IV. Election of Officers (agenda item 2)

10. The Expert Group recalled it had elected a Bureau to take over from the end of the seventh session for a term of two years. It was noted that Ms. Adreinne Hanly had replaced Mr. Harikrishnan Tulsidas as the IAEA representative. Mr. Tulsidas stepped down as a member of the Bureau in September 2016 on completion of his assignment with IAEA.

11. The Bureau elected Mr. Ulrich Kral (Vienna University of Technology, Austria) to represent the anthropogenic resources sector and Mr. Dominique Salacz as the representative of the Society of Petroleum Evaluation Engineers (SPEE) to replace Mr. John Ritter, who indicated he would step down at the end of the eighth session.

12. The outgoing Bureau members, Mr. John Ritter and Mr. Harikrishnan Tulsidas, were thanked for their longstanding commitment and support of the work of the Expert Group.

13. The Bureau now comprises: Mr. David MacDonald (United States of America) as Chair, Mr. Igor Shpurov (Russian Federation) as First Vice Chair, and Ms. Karin Ask (Norway), Mr. Kjell Reidar Knudsen (Norway), Mr. Radoslav Vukas (Serbia), Ms. Mücella Ersoy (Turkey), Mr. Brad Van Gosen (United States of America), Mr. Narendra Verma (India), Mr. Tunde Arisekola (Nigeria), Ms. Anne Auffret (EC D.G. GROWTH), Ms. Adreinne Hanly (IAEA), Mr. Adichat Surinkum (Coordinating Committee

for Geoscience Programmes in East and Southeast Asia (CCOP)), Mr. Fatih Birol (IEA), Mr. Roger Dixon (CRIRSCO), Mr. Dominique Salacz (SPEE), Mr. Bernard Seiller (SPE), Professor Gioia Falcone (Cranfield University and International Geothermal Association), Mr. Ulrich Kral (Vienna University of Technology), Mr. David Elliott (Geosgil Consulting Ltd), Mr. Michael Lynch-Bell (KAZ Minerals), Mr. James (Jim) Ross (Ross Petroleum Ltd), and Mr. Daniel Trotman (EY) as Vice-Chairs.

V. Opening remarks (agenda item 3)

14. The Executive Secretary of ECE welcomed the participants to the meeting. He drew attention to the importance of the 2030 Agenda for Sustainable Development and the key challenges in attaining it. He noted the need to change the narrative on resources from one of unbalanced production, which leaves behind significant externalities, to one where more value will be created. Should the global population reach 9.6 billion by 2050, the equivalent of almost three planets could be required to provide the natural resources needed to sustain current lifestyles with current consumption patterns. He further noted with appreciation the work undertaken to broaden the application of the United Nations Framework Classification for Resources (UNFC) including to renewable energy as well as the development of bridging documents. In closing, he underlined the importance of the work being undertaken on resource classification and the value of UNFC as a public good.

15. The Director of the Sustainable Energy Division of ECE delivered a presentation on “The 2030 Sustainable Development Agenda - achieving clean, sustainable and affordable energy for all”.

16. Professor Michael Karmis, Stonie Barker Professor, Department of Mining and Minerals Engineering and Director, Virginia Center for Coal and Energy Research, Virginia Tech, delivered a keynote presentation on Energy and Mineral Resources: Drivers, Uncertainties and Challenges.

17. The Chair welcomed the participants, noting the increased participation of individual experts, governments, international organizations, professional associations, industry, and universities.

18. A minute's silence was observed in memory of two members of the Expert Group on Resource Classification who had sadly passed away since the seventh session: Professor Roberto Villas-Boas of the Centre for Mineral Technology, Brazil, and Ms. Mbuh Glory Menyen, Geologist with the Ministry of Mines, Industry and Technological Development of Cameroon. Both were passionate supporters of the Expert Group and its work. Professor Villas-Boas was instrumental in starting the Expert Group's work on accommodating social issues in UNFC.

19. The Chair drew attention to the draft set of conclusions and recommendations circulated prior to the meeting, noting that this was the method of working previously adopted by the Expert Group and that it is in line with the Guidelines on Procedures and Practices for ECE Bodies that were adopted by ECE at its sixty-fifth session in April 2013. He emphasized that the draft conclusions and recommendations were not intended in any way to prejudice the discussions but rather to provide a draft text to facilitate discussions. The Expert Group agreed to consider and approve conclusions as the agenda items were discussed rather than considering them en bloc at the end of the meeting.

20. The Chair noted that he and many of the Vice-Chairs, as well as other members of the Expert Group, had delivered presentations at a number of minerals, petroleum and renewable energy-related conferences and workshops around the world and that these all served to promote greater understanding of the benefits of UNFC.

21. Since the seventh session of the Expert Group, the Bureau conducted its work through seven meetings (audioconferences), one face-to-face meeting and regular e-mail correspondence. He noted that the minutes of the Bureau meetings are available on the ECE website.

22. The Chair thanked the Bureau members and their alternates for their work, time and commitment since the seventh session. He also thanked the Chairs and members of all the sub-groups of the Expert Group on Resource Classification: Technical Advisory Group, Communications Working Group, Nuclear Fuel Resources Working Group, Injection Projects Working Group, Renewable Energy Classification Working Group, Geothermal Sub-group, Bioenergy Sub-group, Solar Energy Sub-group, Anthropogenic Resources Working Group, Environmental and Social Considerations Task Force, G-axis Task Force, Resourcing Working Group and the Competent Person Task Force. He noted that the membership of the Bureau and all the sub-groups constitutes a body of over 150 experts who work on the promotion and further development of UNFC on a voluntary basis between annual sessions of the Expert Group.

23. The Chair provided a brief update on the status of the development of UNFC and the areas of progress in relation to the deliverables of the work plan for 2016-2017.

VI. Workshop on the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 4)

24. The Chair provided a summary of the workshop held on 25 April 2017 with presentations on UNFC and its application to solid minerals, petroleum, nuclear fuels, injection projects, renewable energy resources and anthropogenic resources. The event was attended by 125 participants, of which 25 were female.

25. There was broad representation from the solid minerals sector, including nuclear fuel resources, as well as the petroleum, renewable energy sectors, injection projects, and anthropogenic resources. The final programme and presentations delivered at the workshop are available on the ECE website.²

26. Interest was expressed by the participants in the event being repeated as part of the ninth session of the Expert Group. The Expert Group requested the secretariat to organize such a training event. It was requested that efforts be made to ensure the event is as interactive as possible.

VII. Activities and priorities of the Committee on Sustainable Energy and any matters for consideration by the Expert Group on Resource Classification (agenda item 5)

27. The Director of the Sustainable Energy Division of ECE provided an update on the relevant outcomes of the twenty-fifth session of the Committee on Sustainable Energy held in September 2016 and January 2017. The Committee noted with appreciation the progress the Expert Group has made since the twenty-fourth session of the Committee in 2015 on delivering on its mandated activities and work plan for 2016-2017, in particular, the significant work that has been undertaken to broaden the application of UNFC to

² <http://www.unece.org/index.php?id=41248>.

encompass renewable energy. The Committee requested the Expert Group to consider changing the name of UNFC to reflect that it is for energy and mineral resources and not just for fossil energy. The Committee also requested the Expert Group to submit a draft work plan for 2018-2019 to the twenty-sixth session of the Committee.

28. The following documents were endorsed by the Committee at its twenty-fifth session:

- (i) Bridging Document between the Russian Federation Oil & Gas Classification of 2013 and UNFC;
- (ii) Specifications for application of UNFC to renewable energy resources;
- (iii) Specifications for application of UNFC to geothermal energy resources; and
- (iv) Specifications for application of UNFC to injection projects for geological storage.

29. Attention was drawn to the Eighth International Forum on Energy for Sustainable Development and the Ministerial Meeting that will be held 11-14 June 2017 in Astana, Kazakhstan. It was noted that two sessions related to UNFC will be organized during the Forum. The Expert Group members were encouraged to participate.

30. The Director also drew attention to the cross-cutting nature of the work being carried out in the Sustainable Energy Division and encouraged the Expert Group to work with other Groups of Experts where synergies were evident. He also provided an overview of the work being carried out on methane management, the work to develop energy efficiency standards for buildings and the project on pathways to sustainable energy.

VIII. Resourcing Strategy (agenda item 6)

31. The Director of the Sustainable Energy Division provided an overview of the project proposal to secure extrabudgetary funding to support the work on UNFC going forwards, noting the challenges and opportunities. Strategies for raising extrabudgetary funding and identifying donors were discussed in a panel debate.

32. The members of the Resourcing Working Group are: Director, Sustainable Energy Division, Mr. Sigurd Heiberg (Petronavit a.s.), Mr. Julian Hilton (Aleff Group), Mr. Michael Lynch-Bell (KAZ Minerals) and Mr. David MacDonald (BP and Expert Group Chair and Chair of the Working Group).

33. The Expert Group agreed to work with the Bureau to pursue fundraising as a priority.

IX. Governance of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 7)

(a) Update on the work of Technical Advisory Group

Documentation: EGRC-7/2017/INF.2 – Unofficial room document: Technical Advisory Group Annual Report dated 13 April 2016

34. An update was provided on the significant amount of work carried out by the Technical Advisory Group since the seventh session. This including detailed review of all the official and unofficial documents for the Expert Group's eighth session

35. The potential issues and challenges for the future work of the Technical Advisory Group were highlighted, including managing the anticipated need for increased user support as the bridging documents start to be applied. Testing alignment and ensuring consistency have proved to be a challenge. Case studies are required to test that the outputs are comparable.

36. Mr. John Etherington, Chair of the Technical Advisory Group, advised he will stand down from the Group at the end of the eighth session for health reasons. The Expert Group expressed its sincere appreciation to Mr. Etherington for his hard work and dedication in his exemplary role as the Chair of the Group.

37. Mr. Harikrishnan Tulsidas (IAEA) and Mr. Maksim Saakian (State Commission on Mineral Reserves of the Russian Federation) stepped down from the Group in September 2016. Mr. John Barry (Irus Consulting Ltd) stepped down in April 2017. Mr. Brad Van Gosen (US Geological Survey (USGS)) joined the Group in November 2016 to represent the nuclear fuels sector.

38. The members of the Technical Advisory Group, as approved by the Bureau of the Expert Group for the period April 2016 to April 2018, are: Mr. Andrew Barrett (Geoscience Australia), Ms. Vera Bratkova (State Commission on Mineral Reserves of the Russian Federation), Mr. Jan Bygdevoll (Norwegian Petroleum Directorate), Mr. Roger Dixon (CRIRSCO), Mr. Alistair Jones (BP), Mr. Dominique Salacz (Evolution Resources), Mr. Alexander Shpilman (Research and Analytical Centre for the Rational Use of the Subsoil, Russian Federation) and Mr. Brad Van Gosen (USGS), with the Chair and secretary of the Expert Group as observers. The Bureau will need to identify a new Chair of the Technical Advisory Group.

39. The Expert Group thanked the members of the Technical Advisory Group for their ongoing work and support and expressed its appreciation to the outgoing members.

40. The Expert Group took note of the work of Technical Advisory Group with appreciation and recommended that it continue to provide technical support and review on the development and revision of specifications, bridging documents and guidelines for all commodity sectors.

(b) Recommendations on the application and use of the G-axis name

Documentation: ECE/ENERGY/GE.3/2017/10

41. The work on application and use of the G-axis name, category definitions and supporting explanations in the light of its expanded use by the renewables sector were presented by Mr. James Primrose, Chair of the G-axis Task Force. At the seventh session of the Expert Group on Resource Classification, it was requested that recommendations for possible future changes to the G-axis name, category definitions and supporting explanations be submitted to the eighth session and be considered in any future update of UNFC.

42. The draft document presented incorporates the results of a survey of members of the Expert Group, which provided the input to a recommendation regarding a proposed change to the G-axis name. In addition, the G-axis Task Force has considered and developed recommended text changes to the G-axis category definitions and supporting explanations, with a view to rendering them more generic and hence applicable to the expanded scope of UNFC.

43. The G-axis Task Force membership comprises: Mr. James Primrose (Chair, BP), Mr. Paul Bankes (CRIRSCO), Mr. Vitor Correia (EFG), Professor Gioia Falcone (Cranfield University and International Geothermal Association), Ms. Isabel Fernandez (EFG), Mr. Michael Neumann (EFG) and Mr. Jim Ross (Ross Petroleum Ltd).

44. The Expert Group noted that significant clarifications have been added to the draft generic specifications for application of UNFC to renewable energy resources (ECE/ENERGY/GE.3/2016/5) in order to facilitate appropriate interpretation of the G axis for renewable energy.

(c) Guidance to support application of Specifications M ‘Evaluator Specifications’

Documentation: ECE/ENERGY/GE.3/2017/4

45. The draft guidance note to support application of Specifications M ‘Evaluator Specifications’ was discussed by the Expert Group.

46. The Expert Group on Resource Classification work plan for 2016-2017 calls for the Bureau of the Expert Group to review and prepare a guidance note on the need for, and responsibilities of, a Competent Person or Persons with regard to UNFC. The document developed provides additional information regarding the specification for Evaluator Qualifications (Specification M) as documented in UNFC incorporating Specifications for its Application, ECE Energy Series No. 42, Part II, Annex I.

47. The Competent Person Task Force has the following membership: Mr. David MacDonald, Chair of the Expert Group, Mr. Vitor Correia (EFG), Mr. Frank Denelle (independent expert), Mr. Roger Dixon (CRIRSCO), Ms. Isabel Fernandez (EFG), Mr. Michael Gusev (NAEN-Consult Ltd), Mr. Aleksander Pisarnitskiy (Eurasian Union of Experts on Subsoil), and Mr. Jim Ross (Ross Petroleum).

48. The representative of EFG introduced the EFG’s system for certifying experienced geologists as Competent Persons noting that this could be used as an example for other regions.

49. The Expert Group accepted the text of the Guidance Note on the UNFC Specification for Evaluator Qualifications without amendment and requested it to be posted on the ECE website.

(d) Guidance on draft guidance on Competent Person requirements and options for resources reporting

Documentation: ECE/ENERGY/GE.3/2017/4

50. The draft guidance note on Competent Person requirements and options for resources reporting as prepared by the Competent Person Task Force was discussed. This document provides non-mandatory guidance for organizations or entities such as national governments, financial institutions and companies, who wish to establish appropriate quality assurance mechanisms, qualification criteria and/or disclosure obligations that can be adopted in circumstances where competency requirements are considered desirable. This document sets out the purpose, scope, definition of a Competent Person, as well as the requirements for and governance of a Competent Person. The guidelines contained in the document reflect options that could be selected, refined and imposed by an organization when UNFC or an officially aligned system may be adopted as the classification system and/or mandatory reporting system.

51. The Expert Group recommended to accept the text of the Guidance Note on Competent Person Requirements and Options for Resources Reporting without amendment and requested it to be posted on the ECE website.

X. Generic specifications for the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 8)

Documentation: EGRC-8/2017/INF.5 – Unofficial room document: Draft bridging document between the China Mineral Reserves and Resources Classification System (CMRRCS) and UNFC

EGRC-8/2017/INF.6 – Unofficial room document: Draft bridging document between the Chinese petroleum classification system and UNFC

52. Ms. Yang Hua, Research Institute of Petroleum Exploration & Development (RIPED) of China National Petroleum Corporation (CNPC), provided an overview of the process undertaken to develop the draft bridging documents.

53. Mr. Li Jian, Ministry of Land and Resources, P.R. China, presented the draft bridging document between the China Mineral Reserves and Resources Classification System (CMRRCS) and UNFC.

54. Following review, the Expert Group recommended that the draft bridging document between the China Mineral Reserves and Resources Classification System (CMRRCS) and UNFC be updated to reflect the comments received (including those to be received from the Technical Advisory Group) and submitted for public comment. Following the public comment period, the document approval procedure agreed at the fifth session of the Expert Group should be followed (ECE/ENERGY/GE.3/2014/2, para 97).

55. Mr. Wang Yongxiang, Ministry of Land and Resources, P.R. China, presented the draft bridging document between the Chinese petroleum classification and UNFC.

56. Following review, the Expert Group recommended that the draft bridging document between the Chinese petroleum classification system and UNFC be updated to reflect the comments received (including those to be received from the Technical Advisory Group) and submitted for public comment. Following the public comment period, the document approval procedure agreed at the fifth session of the Expert Group should be followed (ECE/ENERGY/GE.3/2014/2, para 97).

57. Mr. Igor Shpurov, General Director, State Committee of the Russian Federation on Mineral Reserves and First Vice Chair of the Expert Group, provided an update on the new solid minerals classification system in the Russian Federation and on the potential bridging to UNFC.

XI. Revision of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 9)

Documentation: EGRC-8/2017/INF.6 – Informal Room Document: UNFC Revision Task Force - Terms of Reference

58. The Expert Group discussed the need to revise UNFC, in particular, due to the broadening of its application to encompass renewable energy, injection projects and anthropogenic resources. Moreover, the guidance on social and environmental issues; G-axis recommendations and evaluator guidance also need to be incorporated in the UNFC principles and generic specifications.

59. The UNFC Revision Task Force comprises: Mr. David MacDonald (Chair of the Expert Group), Chair, Mr. Kjell Reidar Knudsen (Norwegian Petroleum Directorate) and the Secretary of the Expert Group. The group will be expanded to ensure all UNFC stakeholders and end users are represented.

60. The Expert Group requested that the work to revise UNFC should accelerate and that a draft revised version of UNFC should be prepared for presentation to the ninth session.

61. Following discussion and consideration of a range of alternatives, the Expert Group concluded that the name of UNFC-2009 should be changed with immediate effect to the United Nations Framework Classification for Resources (UNFC) and that this change be reflected on the ECE website and in all relevant documents henceforth.

XII. Accommodating environmental and social considerations in the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 10)

Documentation: ECE/ENERGY/GE.3/2017/6
ECE/ENERGY/GE.3/2017/7

62. Mr. David Elliott (Geosgil Consulting Ltd), Chair, Environmental and Social Considerations Task Force presented the draft guidance notes on (i) accommodating environmental and social considerations in UNFC-2009 and (ii) Concepts and Terminology developed by the Working Group. The Environmental and Social Considerations Task Force was established to examine the social and environmental aspects of classification of the E axis of UNFC.

63. The representative of ILO drew attention to a number of relevant ILO standards, including: ILO Declaration on Fundamental Principles and Rights at Work and its Follow-up - adopted by the International Labour Conference at its eighty-sixth session, Geneva, 18 June 1998 (annex revised 15 June 2010); and Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (adopted by the Governing Body of the International Labour Office at its 204th Session (Geneva, November 1977) and amended at its 279th (November 2000), 295th (March 2006) and 329th (March 2017) sessions.

64. The representative of ISEO drew attention to the ISO standards that in his view should be considered by the Expert Group in its work.

65. The recommendations in this report fall into three main areas: (a) high-level guidance on accommodating social and environmental considerations in UNFC-2009; (b) the process for the development of detailed guidelines; and (c) clarification of terms related to socio-environmental factors. The latter is presented in a separate report entitled Draft guidance on accommodating environmental and social considerations in UNFC: Concepts and Terminology (ECE/ENERGY/GE.3/2017/7) that recommends the Bureau of the Expert Group to consider the clarification of some terms in UNFC that were considered necessary to the work of the Working Group.

66. The members of the Task Force are: Mr. David Elliott (Geosgil Consulting (Chair)), Mr. John Atherton (International Council on Mining and Metals (ICMM)), Mr. Julio Claudeville (Barrick Argentina), Ms. Kathryn Campbell (Sullivan & Cromwell), Mr. Sigurd Heiberg (Petronavit a.s.) Mr. Julian Hilton (Aleff Group),

Mr. Michael Lynch-Bell (KAZ Minerals), Mr. Luis Martins (Colt Resources), Mr. Thomas Schneider (Ryerson University, Canada), and Ms. Yang Hua (RIPED, CNPC).

67. Noting the conclusions and recommendations contained in the Draft guidance on accommodating environmental and social considerations in UNFC (ECE/ENERGY/GE.3/2017/6) and the Draft guidance on accommodating environmental and social considerations in UNFC: Concepts and Terminology (ECE/ENERGY/GE.3/2017/7), requested that the Environmental and Social Considerations Task Force develop:

(a) detailed guidelines for the E axis that apply to all resource types recognized by UNFC for presentation to the ninth session of the Expert Group; and (b) in cooperation with the owners of resource specific guidelines.

68. The concepts and terminology contained in ECE/ENERGY/GE.3/2017/7 should be considered by the UNFC Revision Task Force.

XIII. Update on the application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 11)

(a) Renewable energy resources

Documentation: ECE/ENERGY/GE.3/2017/11
EGRC-8/2017/INF.3 – UNFC Solar Energy Sub-group Progress Report

69. Mr. Frank Denelle, Chair of the Renewable Energy Classification Working Group, provided an update on the activities of the Working Group. The renewable energy classification based on UNFC under development should assist with internal planning, investment decisions and external reporting. The generic renewable energy specifications, as well as specifications for geothermal energy are operational, and draft bioenergy specifications have been developed. The goal is that by the end of 2020, a UNFC-based global renewable energy classification will be available to all energy stakeholders for adoption and use.

70. The members of the Working Group are: Mr. Frank Denelle (Chair, independent expert), Mr. Benoit Charpentier (Total), Ms. Raffaella Cristianetti (DuPont), Professor. Gioia Falcone (Cranfield University of Technology and IGA), Mr. Tom Lefeber (Shell), Mr. James Primrose (BP Alternative Energy), Mr. Bernard Seiller (Total), Mr. Jeremy Webb (Challenge Institute) and Ms. Charlotte Griffiths (Secretary of the Expert Group).

71. Professor Gioia Falcone, Cranfield University, IGA and Chair of the Geothermal Sub-group, presented an update on the application of UNFC to geothermal energy resources. Professor Falcone noted that the geothermal specifications were endorsed on 30 September 2016 by the Committee on Sustainable Energy. Fourteen case studies have been prepared and will be published in 2017 by ECE. More complex case studies will be provided in the future.

72. The Expert Group noted with appreciation the direct and in-kind support provided by the Energy Sector Management Assistance Program (ESMAP) of the World Bank, the United State Department of Energy and the International Renewable Energy Agency (IRENA) to the work on geothermal energy.

73. Mr. Graeme Beardsmore (IGA) outlined the support provided by IGA in the development of the specifications for application of UNFC to geothermal energy. He noted that detailed guidance is lacking for estimation. IGA will continue to support the work of

the Expert Group through two IGA sub-groups: the first sub-group will focus on maintaining the specifications and the second will look at the need for further classification guidelines together with identification and possible interface with estimation guidelines.

74. The members of the Geothermal Sub-group are: Professor. Gioia Falcone (Cranfield University/IGA), Mr. Miklos Antics (GPC IP/Geofluid), Mr. Roy Baria (Mil-Tech UK Ltd), Mr. Larry Bayrante (Private Consultant), Mr. Paolo Conti (University of Pisa), Mr. Malcolm Grant (MAGAK), Mr. Robert Hogarth (Hogarth Energy Resources), Mr. Egill Juliussen (Landvirkjun), Mr. Harmen Mijnlieff (TNO), Ms. Annamaria Nador (Geological & Geophysical Institute, Hungary), Mr. Greg Ussher (Jacobs), and Ms. Kate Young (United States National Renewable Energy Laboratory (NREL)). Mr. Graeme Beardsmore, Chair, IGA Reserves and Resources Committee and Mr. Horst Rüter, Director, IGA Service Company, are observers.

75. Mr. James Primrose, BP Alternative Energy and Chair of the Bioenergy Sub-group, presented the draft specifications for the application of UNFC to bioenergy.

76. The members of the Bioenergy Sub-group are: Mr. James Primrose (BP Alternative Energy (Chair)), Mr. Doug Berven (POET), Mr. Benoit Charpentier (Total) Ms. Raffaella Cristianetti (DuPont), Mr. Richard Hamilton (CERES), Mr. James Leitheiser (Nike), and Mr. F. Michael McCurdy (Leidos Engineering).

77. Mr. Jeremy Webb, Challenge Institute and Chair of the Solar Energy Sub-group, provided an update by video link-up on the status of the development of the specifications for application of UNFC to solar energy. A first draft of the solar specifications has been developed, and work is progressing well.

78. The members of the Solar Energy Sub-group are: Mr. Jeremy Webb (Challenge Institute and Chair), Mr. Adrian Whiteman (IRENA), Mr. Axel Gunaltun (Independent Energy Classification Specialist, France), Mr. Boris Lopicich (National Congress of Chile), Ms. Carina Paten (CDH Energy Corporation), Mr. Chris Freear (Sustainability Technology Specialist), Mr. David Donnelly (Mazars LLP), Mr. David Renné (International Solar Energy Society (ISES)), Mr. Fred Morse (Abengoa Solar), Ms. Jenny Chase (Bloomberg New Energy Finance), Mr. Kamel Ben Naceur (International Energy Agency (IEA)), Mr. Lado Kurdgelashvili (University of Delaware), Ms. Lauren Weir (independent development classification specialist), Mr. Linus Mofor (ECA), Mr. Manajit Sengupta (NREL), Ms. Monica Oliphant (Monica Oliphant Research), Mr. Vivek Mital (Millennium Resource Strategies Limited) and Mr. Yacob Mulugetta (University College London).

79. Mr. Tom Lefeber (Shell and Chair of the Wind Energy Sub-group) provided an update on the Sub-group, which is currently being initiated. The plans for the development of the wind energy specifications were outlined.

80. Mr. Frank Denelle provided an update on the sub-group for application of UNFC to hydropower. The sub-group is currently being established. Contact has been made with the International Hydropower Association (IHA) with a view to IHA providing technical assistance in the development of the hydropower specifications.

81. When specifications are developed in collaboration with stakeholders, the question of ownership of the specifications was raised. It was noted that the availability of guidelines for resources estimation is important and should be addressed as part of the work mandated by the Expert Group to the Renewable Energy Classification Working Group.

82. A panel session comprising Mr. Frank Denelle, Professor Gioia Falcone and Mr. James Primrose discussed the challenges and opportunities in developing specifications in renewable energy. A key challenge is to convince the renewable energy community of the need for and benefits of using a classification system in the same way that classification is used by other commodities such as petroleum and solid minerals.

83. The Expert Group requested that the draft specifications for the application of UNFC to bioenergy (ECE/ENERGY/GE.3/2017/11) be issued for public comment. Following the public comment, the document approval procedure agreed at the fifth session of the Expert Group should be followed (ECE/ENERGY/GE.3/2014/2, para 97).

84. The Expert Group requested the Renewable Energy Classification Working Group to prepare draft commodity specific-specifications for solar energy for review at the ninth session. The Expert Group further requested the Working Group to start work on the development of draft commodity-specific specifications for hydropower and wind energy.

85. The Expert Group requested the Working Group to strengthen cooperation with IRENA, IEA, Renewable Energy Policy Network for the 21st Century (REN21), ISEO and other organizations and associations working on renewable energy, including the ECE Group of Experts on Renewable Energy.

86. The Expert Group requested the Bureau to clarify the status of the ownership of the geothermal specifications and the need for the Expert Group to be involved in the preparation of quantification guidelines for geothermal energy.

87. The Expert Group expressed its appreciation and thanks to the International Geothermal Association for the cooperation and support in the development of the geothermal specifications and case studies.

88. The Expert Group requested the geothermal case studies to be published as soon as possible.

(b) Minerals

89. Mr. Roger Dixon, CRIRSCO, provided an overview of the update of the CRIRSCO Template that is currently underway. The updated version will include a reference to CRIRSCO's relationship with UNFC.

90. The Expert Group recommended the establishment of a Minerals Working Group to look into the development of additional specifications, guidelines and case studies for application of UNFC-2009 to solid minerals and report its findings to the ninth session. The Expert Group further requested the Working Group to study all the proposed changes to UNFC and prepare a recommendation on the possible need to revise all the aligned Bridging Documents and submit it to the ninth session.

(c) Petroleum

91. Mr. Bernard Seiller, Chair, SPE Oil and Gas Reserves Committee, provided a status report on the update of the Petroleum Resources Management System (PRMS). The update of PRMS is in progress and is expected to be completed in 2018.

92. The Expert Group recommended to the Bureau to establish a Petroleum Working Group to look into the development of additional specifications, guidelines and case studies for application of UNFC-2009 to petroleum and report its findings to the ninth session. The Expert Group further requested the Working Group to review the proposed changes to UNFC-2009 definitions and generic principles and prepare a recommendation on the possible need to revise all the aligned Bridging Documents and submit it to the ninth session.

(d) Nuclear fuel resources

Documentation: ECE/ENERGY/GE.3/2017/8
ECE/ENERGY/GE.3/2017/9

93. The Chair of the Nuclear Fuel Resources Working Group provided an update on the work of the Working Group, including on the status of the development of a report on the application of UNFC for uranium and thorium resource management. An update on the IAEA and ECE Consultation Workshop, 24-25 April 2017, was provided including on the status of the new document on the application of UNFC for commissioning and implementing uranium projects. Special emphasis was given to capacity-building including on UNFC, in particular to as many as 22 countries in Africa.

94. The current members of the Working Group are: Mr. Hussein Allaboun (Jordan Uranium Mining Company (JUMCO)), Mr. Hassan Al Marzouki (Saudi Geological Survey),

Mr. Tunde Arisekola (Nigerian Geological Survey Agency), Mr. Andrew Barrett (Geoscience Australia), Mr. Cassius Chiwambo (Malawi), Mr. Roger Dixon (CRIRSCO), Ms. Adrienne Hanly (IAEA (Chair)). Mr. Michael Haschke (DMT GmbH & Co. KG), Mr. Sigurd Heiberg (Petronavit a.s.), Mr. Julian Hilton (Aleff Group), Mr. Luis Lopez (National Atomic Energy Commission (CNEA) of Argentina), Mr. Jim Ross (Ross Petroleum Ltd), and Mr. Brad Van Gosen (USGS). The Expert Group Chair and secretary are also members.

95. The results of the case study on the application of UNFC for monitoring the project maturity of the Central Jordan Uranium Project (ECE/ENERGY/GE.3/2017/8) were presented by Mr. Hussein Allaboun, Jordan Uranium Mining Company (JUMCO).

96. The results of the case study Application of UNFC to Rare Earth Elements and Thorium Comprehensive Extraction Projects in Argentina (ECE/ENERGY/GE.3/2017/9) were presented by Mr. Luis Lopez, CNEA.

97. The Working Group provided an update on joint IAEA and ECE capacity-building projects and events on uranium resources management in 2015 and 2016.

98. The Expert Group recommended that the Nuclear Fuel Resources Working Group present the draft report the application of UNFC for commissioning and implementing uranium projects to the ninth session. The Expert Group further requested the Working Group to review possible changes to UNFC definitions and generic principles and prepare a recommendation on the need to revise the Bridging Document and submit it to the ninth session of the Expert Group.

(e) Injection projects

99. The Chair of the Injection Projects Working Group provided an update on the work of the Task Force since the seventh session.

100. The members of the Working Group are: Ms. Karin Ask (Statoil (Chair)), Ms. Michelle Bentham (British Geological Survey (BGS)), Mr. Simplicio Caluyong (CCOP), Ms. Eva Halland (NPD), Mr. Scott Frailey (Illinois State Geological Survey, United States), Mr. Wolf Heidug (King Abdullah Petroleum Studies and Research Centre), Mr. Martin Hubbig (OMV) and Ms. Lesley Seldon (Shell).

101. The Expert Group recommended that case studies should be prepared by the Injection Projects Working Group to test the application of the UNFC injection projects specifications.

(f) Anthropogenic Resources

Documentation: EGRC-8/2017/INF.7 – Unofficial room document: Initial Draft Specifications for the application of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 to Anthropogenic Resources

102. Ms. Soraya Heuss-Aßbichler, Chair, Anthropogenic Resources Working Group provided an update on the development of the draft specifications for application of UNFC to anthropogenic resources.

103. The members of the Anthropogenic Resources Working Group are: Ms. Soraya Heuss-Aßbichler (Ludwig-Maximilians-Universität, Chair), Mr. Sigurd Heiberg (Petronavit a.s.), Mr. Julian Hilton (Aleff Group), Mr. Mark Howson (PERC), Mr. Zoltán Horváth (Geological and Geophysical Institute of Hungary (MFGI)), Mr. Ulrich Kral (Vienna University of Technology), Mr. Daniel Müller (Norwegian University of Science and Technology), Mr. Felix Müller (Germany), Ms. Sandra Müller (Swiss Federal Laboratories for Materials Science and Technology (Empa)), Mr. Mark Simoni (Norwegian Geological Survey), Professor Julia Stegemann (University College London), Ms. Katalin Szabó (MFGI), Mr. Patrick Wäger (Empa), Ms. Andrea Wintersteller (Flemish Institute for Technological Research) and Mr. Dominik Wittmer (EC Joint Research Centre).

104. The Expert Group requested the Anthropogenic Resources Working Group to prepare draft specifications for the application of UNFC to anthropogenic resources for review at the ninth session.

105. Noting the increasingly important role of methanol in meeting the rising global demand for energy, the representative of ISEO proposed the establishment of a working group on methanol. The Expert Group requested the Bureau to consider this proposal and make a recommendation.

XIV. Other potential applications of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 12)

106. The Expert Group noted the continued interest in applying UNFC-2009 to groundwater and requested the Bureau to consider placing this on the agenda for discussion at the ninth session.

107. The Expert Group recommended that subject to volunteers and extrabudgetary funds being identified, a small group be established to explore the applicability of UNFC to groundwater and to report its findings to the ninth session.

XV. The role of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 in implementing the Sustainable Development Goals and combatting climate change (agenda item 13)

108. The panel discussion on “Sustainable resources management in a knowledge infused era: Facing the challenges”, looked in the aspects of information technology and other new technologies contributing to resource development in future. Against this background, the

use of UNFC as a management tool for alignment with the Sustainable Development Goals and progressing the resource projects was discussed.

109. The Expert Group recommended that subject to volunteers being identified, a Sustainable Development Goals Working Group should be established to develop documentation that will support the further development and effective use of UNFC to help attain the relevant Sustainable Development Goals and the commitments of the Paris Agreement. The Expert Group requested the Working Group to prepare a leaflet and an area on the ECE website highlighting the role of UNFC in attaining the Sustainable Development Goals and providing a mapping of UNFC to all the Goals.

XVI. Case studies and testing of the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (agenda item 14)

Documentation: EGRC-8/2017/INF.8 – Unofficial room document: A guidance for the application of UNFC-2009 for mineral resources in Finland, Norway and Sweden

110. A series of presentations were delivered relating to the testing of and mapping to UNFC:

(a) Ms. Erika Ingvald, Geological Survey of Sweden, provided an update on the draft guidance for application of UNFC for mineral resources in Nordic Countries (Finland, Norway and Sweden) which was available as an unofficial document for the meeting.

(b) Mr. Jong Moon Jay Choi, Cheong Ju Limestone Incorporated, Republic of Korea, presented on promoting good governance in the management of natural resources of the Democratic People's Republic of Korea and the Republic of Korea, and the value of UNFC as a tool to assist with this.

(c) Mr. Radoslav Vukas, Ministry of Energy and Mining of Serbia, provided an update on the main elements of the Serbian classification for solid mineral resources/reserves;

(d) Mr. Zoltán Horváth, MFGI, and EuroGeoSurveys presented an update on the project to harmonize the MFGI Hungarian classification and development of a EuroGeoSurveys - Mineral Resources Expert Group (MREG) position.

(e) Mr. Georgii Rudko, State Commission of Ukraine on Mineral Resources (DKZ of Ukraine), delivered an update on the national classification of Ukraine as a tool for commercial evaluation of mineral deposits according to international standards;

(f) Mr. Sathaporn Kavinate, Department of Mineral Resources, Thailand, provided an update on the application of UNFC to mineral resources in Thailand.

111. The Expert Group requested that subject to the identification of extrabudgetary resources, case studies on the application of UNFC-2009 to all extractive activities and renewable energy be prepared and presented to the Expert Group at its ninth session.

112. The representative of the Nordic project proposed that the Expert Group post the draft UNFC guidance developed for solid minerals in Nordic Countries (Finland, Norway and Sweden) on the ECE website for public comments. Comments will be reviewed by the Nordic Project members following which a revised guidance, if any, will be presented to the Expert Group for consideration. The Expert Group agreed to the proposal.

XVII. Education and outreach (agenda item 15)

Documentation: EGRC-8/2017/INF.4 – Unofficial room document: Education and Outreach and activities of the Communications Working Group *dated 25 April 2017*

EGRC-8/2016/INF.10 – Unofficial room document: Report from CCOP on its UNFC Education and Outreach Activities 2016-2017 *dated 21 April 2017*

113. An update on the work and activities of the Communications Working Group since the seventh session of the Expert Group was provided. The update covered the membership, communications and education strategy, current activities, events attended in 2016 and 2017, and future events and work plans.

114. The membership of the Communications Working Group is: Mr. John Brooks (American Association of Petroleum Geologists (AAPG) Europe (Co-Chair)), Ms. Carolina Coll (London South Bank University (Co-Chair)), Mr. Benoit Charpentier (Total), Ms. Tana Garcia Lastra (Corporación de Reservas Estratégicas de Productos Petrolíferos (CORES)), Mr. Sigurd Heiberg (Petronavit a.s.), Mr. Danny Trotman (EY), Ms. Yang Hua (RIPED, CNPC), Mr. David MacDonald (Chair, Expert Group on Resource Classification), and the secretary of the Expert Group.

115. Members of the Expert Group were encouraged to identify events at which a presentation on UNFC could usefully be delivered and also to volunteer to deliver such presentations.

116. CCOP education and outreach activities related to UNFC in 2016-2017 (as contained in EGRC-8/2016/INF.10) were noted with appreciation.

117. Events held in 2016 and 2017 to promote and/or test UNFC were discussed, including:

- (a) EFG and ECE Conference, Brussels, Belgium, 9-10 February 2017; and
- (b) IAEA and ECE Interregional training course on uranium, coal and oil and gas classification: Towards a better understanding of energetic basins and application of UNFC, Ulaanbaatar, Mongolia, 16-19 August 2016.

118. The Expert Group recommended that an educational and training session on UNFC be organized on the first day of the ninth session. The Expert Group requested the UNFC Communications Working Group to develop a revised promotion and outreach strategy, including to identify new stakeholders, and noted that implementation of the strategy would be subject to extrabudgetary resources being identified.

XVIII. Financial reporting (agenda item 16)

119. Ms. Kathryn Campbell, Sullivan and Cromwell LLP, provided an update on financial reporting related to extractive activities.

120. The Expert Group requested the Bureau to prepare a set of generic guidelines for reporting and disclosure of commodity projects.

121. The Expert Group recommended the Bureau to continue to monitor developments related to global financial reporting standards and to update the ninth session accordingly.

XIX. Cooperation with other organizations (agenda item 17)

122. Mr. Kaiser de Souza, African Minerals Development Centre (AMDC), provided an update on the Africa Mining Vision and the initiative to adopt UNFC as the unified resource management system for Africa. The challenges of artisanal mining were highlighted, and cooperation with other countries and the United Nations Industrial Development Organization (UNIDO) was encouraged.

123. Mr. Edmund Nickless, Chair, Resourcing Future Generations, International Union of Geological Sciences (IUGS), provided an update on Resourcing Future Generations. He extended an invitation to the Expert Group to participate in The Resources for Future Generations Conference (RFG2018) that will be held in Vancouver, Canada, in 2018.

124. The ECE secretariat (on behalf of Ms. Mercè Ferrés Hernández, International Organisation for Standardization (ISO)) provided an update on cooperation with ISO Technical Committee 82 (ISO/TC 82).

125. Ms. Yvonne Schavemaker, TNO and GeoERA Project Manager, presented on the establishment of the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA Project).

126. Mr. Fuad Al-Zayer, IEF, provided an update on the Joint Organisations Data Initiative (JODI) and the importance of energy data transparency.

127. Mr. Gustav Grob reiterated his request for strengthened cooperation with IESO.

128. The Expert Group requested that subject to the identification of extrabudgetary resources, technical and capacity-building support be provided on UNFC to African countries in line with the Memorandum of Understanding under preparation between ECE and ECA.

XX. Work plan for 2016-2017 and for 2018-2019 (agenda item 18)

129. The Expert Group noted that progress has been made on all items included in the work plan for 2016-2017 with most already completed and others continuing on an ongoing basis. The activities have included extensive work, including on UNFC specifications, testing and review of UNFC via the Technical Advisory Group, education and outreach, and progress in applications on injection projects, nuclear fuel resources, renewables, and other applications including anthropogenic resources, competent persons, social environmental issues, collaboration with other bodies and electronic communications.

130. Following a detailed review, the Expert Group noted that it had delivered on its work plan for 2016-2017.

131. The Expert Group recommended that subject to the comments received at the meeting being incorporated, the revised draft Work Plan for 2018-2019 (ECE/ENERGY/GE.3/2017/2/Add.1) be submitted to the twenty-sixth session of the Committee on Sustainable Energy for endorsement and to the Executive Committee for subsequent approval.

XXI. Other business (agenda item 19)

132. Following discussion and careful review and in the light of the expanded scope of application of UNFC, the Expert Group agreed that its ninth session needs to be held over four days, including an educational and training session on UNFC, but with an option to reduce the total number of days commensurate with the required agenda items.

133. The Expert Group requested to the Committee on Sustainable Energy that its annual sessions be supported by parliamentary documents and reports as needed in relation to the implementation of the 2018-2019 work plan. The Expert Group recommended to the Committee on Sustainable Energy that the secretariat be invited to continue supporting its work by, *inter alia*, the following: organizing planned work plan activities, preparing formal documentation required for the development, approval, implementation and reporting of work plan activities, including the translation of official documents in the three official ECE languages (English, French, Russian) to service the Expert Group's meetings.

134. No other issues were raised.

XXII. Adoption of conclusions and recommendations (agenda item 20)

Documentation: EGRC-7/2017/INF.1 – Unofficial room document: Draft Conclusions and Recommendations for the Expert Group on Resource Classification Eighth Session *dated 11 April 2017*

135. The conclusions and recommendations were adopted and are included under the relevant agenda items.

XXIII. Adoption of the report and close of the meeting (agenda item 21)

136. The report of the meeting was adopted subject to any necessary editing and formatting.
