

Economic Commission for Europe

Committee on Sustainable Energy

Expert Group on Resource Classification

Eighth session

Geneva, 25–28 April 2017

Item 7 of the provisional agenda

Governance of UNFC-2009

Technical Advisory Group Annual Report 2017

Prepared by Mr. John Etherington, Chair, Technical Advisory Group

1. As indicated in the Terms of Reference, an annual report will be issued by the Technical Advisory Group and produced by the Secretariat in consultation with the Chair and members. The report will review the operation and functioning of the Group and, where appropriate, make recommendations for improvements.
2. This is the annual report for the period April 2016 to April 2017.
3. Since being officially formed in February 2014 with 11 members, several changes in TAG membership have occurred. The past and current membership is as shown in Table 1. As of April 2017, there are two vacancies.
4. Since the seventh session of the Expert Group on Resource Classification (EGRC), the TAG held 10 teleconference calls and will meet “face-to-face” in Geneva on 25 April 2017. Meetings were supplemented by extensive email-based discussion.

Projects Completed:

5. During this past year, the TAG completed its review of, and issued a final recommendation to the Bureau on, the following projects:

Russian RF2013 to UNFC-2009 Bridging Document:

6. The Russia GKZ submitted an updated RF2013 and UNFC-2009 Bridging Document on 15 April 2016 for distribution (English and Russian version) to the EGRC seventh session. This draft was amended by the working group based on the results of a working session held on 25 April 2016. The revised document was recommended by the TAG on 1 June 2016, subsequently approved by the Bureau and submitted for a 60-day public review ending on 14 August 2016. A final document incorporating this public feedback was recommended by the TAG on 6 September and approved by the Bureau. The Bridging Document was approved by the Committee on Sustainable Energy on 30 September 2016.

Specifications for the Application of UNFC-2009 to Injection Projects for the Purpose of Geological Storage:

7. The TAG recommended, and the Bureau approved the draft document in March 2015. It was then posted on the UNFC website for public comment due 15 September 2015. Based on these comments and further study by the task force a revised document was developed in March 2016. The TAG recommended, and the Bureau approved this revised document on 15 March 2016. It was presented to and approved by the Committee on Sustainable Energy on 30 September 2016.

8. The document illustrates how UNFC-2009 categories, sub-categories and generic specifications can be modified to support injection projects while maintaining the underlying classification principles.

Renewable Generic Specifications Update:

9. The original specifications document was approved by the Bureau in 2014. Based on issues identified in early drafts of the Geothermal and Bioenergy Specification documents, revisions were made, reviewed by the TAG and approved by the Bureau. The updated document was approved by the Committee on Sustainable Energy on 30 September 2016.

Geothermal Specifications Document:

10. This is the first of a planned series of documents addressing commodity specific renewable projects (geothermal, bioenergy, wind, and solar). The Geothermal working group provided several interim discussion documents including a draft specification document as presented at the seventh EGRC session. Based on TAG recommendation and Bureau approval, the document was submitted for a 60 day public comment period 6 June to 4 August 2016. The TAG completed its review of the updated document and issued its recommendation to the Bureau on 9 September 2016. The Geothermal Specification document was approved by the Committee on Sustainable Energy on 30 September 2016.

11. The associated twelve case studies were not included in the final document but updated (now fourteen case studies) and issued separately in March 2017.

Uranium and Thorium Projects:

12. Three case studies (Paraguay, Egypt and Mongolia) were completed before the seventh session of EGRC; this brings the total uranium/thorium cases studies stored in the UNECE website to eleven. Since then two additional case studies (Jordan and Argentina) have been reviewed by the TAG, approved by the Bureau and will be available for the eighth EGRC session.

E-axis Working Group Report:

13. The E-axis Sub-group chaired by David Elliott shared draft versions with both the TAG and the Bureau throughout 2016. The TAG completed its review of two documents: (1) a recommendation on changes to E-axis categories and (2) a second “Concepts and Terminology”, both to be presented as official documents for the eighth EGRC session. While it is appropriate to present these papers for discussion at the eighth EGRC session, the final recommendations to be included in the next revision of UNFC-2009 guidance should

consider clarifications on both the E and F-axes categorization and their combination to definitively assign projects to sub-classes.

Project Definition Study:

14. On 5 July 2016, the TAG completed its review of the final draft of the Guidance Note to support the UNFC-2009 Definition of a Project” as amended following its presentation at the seventh session of the EGRC. The note is intended to supplement the definition of a Project as documented in UNFC-2009 *incorporating* Specifications for its Application, ECE Energy Series No. 42, Part II, Annex I.

15. As for the E-axis study, this report will be presented to the eighth EGRC session as a discussion document and any amendments to UNFC-2009 will consider clarifications on both the E and F-axes categorization and their combination to definitively assign projects to sub-classes.

Competent Person Study:

16. On 26 January 2017, the TAG completed its review of the Draft Guidance Note regarding Evaluator Qualifications and the accompanying Draft Guidance on Competent Person Requirements.

17. As pointed out in the reports, while Competent Person requirements may be provided in regulatory reporting rules associated with commodity-specific financial reporting, it is equally important that similar basic qualifications should be considered for national inventory reporting where such data is then made publically available.

Petroleum Case Studies:

18. As a follow-up to the RF2013 and UNFC-2009 bridging document, the TAG formed an internal working group in October 2016 to produce case studies that apply UNFC-2009 to oil and gas fields that were originally reported using RF2013. A draft document of the first case study on a field in West Siberia was completed on 6 March 2017 and, after review by the full TAG was forwarded to the Bureau on 24 March 2017. A second case study was submitted on 2 April 2017 and is under review.

19. The discussion is ongoing whether to expand the study to include case studies where PRMS or the Chinese system was originally applied and then assess the degree of alignment when mapped to UNFC-2009.

G-axis Study:

20. A Bureau working group delivered a draft report on 16 March 2017 on the use of the G-axis to categorize projects based on uncertainty in the quantities associated with projects at various levels of technical and commercial maturity. This is in the form of a “white paper” for discussion in the EGRC eighth session. With the application of UNFC-2009 to an expanding suite of renewables, this is a timely study. The TAG forwarded its comments on 30 March 2017.

Other Projects/User Support:

21. As defined in its Terms of Reference, the TAG is available to answer queries regarding the application of UNFC-2009. The following submissions were reviewed and replies generated in the past year:

Ukraine:

22. On 12 October 2016, Professor G.I. Rudko, Chairman of State Commission of Ukraine on Mineral Resources, queried if UNFC-2009 reporting is accepted “commercially”. The Ukraine has implemented UNFC-2009 for internal government resources inventories. Our understanding of “commercially accepted” may relate to a) regulatory reporting for stock markets or, b) financial institutions. The TAG’s reply was that the agencies requesting resources reports can specify the classification system to be used. To date, UNFC-2009 has not been accepted by such agencies. However, the underlying aligned systems, the CRIRSCO Template and PRMS are generally accepted by the industry and the associated Bridging Documents can be used to map UNFC-2009 to these underlying systems where they are designated as the preferred classification for reporting.

Thailand:

23. On 13 July 2016, we received a series of questions from Ms. Siriporn Soogpankhao of the Thailand Department of Mineral Resources regarding its plans to apply UNFC-2009 for national reporting of solid mineral resources. The TAG provided its reply on 29 July 2016. Replies to questions 2 and 3 are provided below in full as they relate to the Competent Person and E-Axis studies that are subject to discussion in the EGRC eighth session.

1. *Regarding whether laboratory analysis is considered in resource assessments, this is specifically noted in the CRIRSCO template guidelines.*
2. *Several questions related to who has the authority to apply UNFC-2009 and what qualifications should be required. The TAG replied that “Generic specification “M” requires that evaluators must have an appropriate level of expertise and relevant experience in estimation of quantities associated with the type of deposit under evaluation. More detailed specifications can be found in the relevant commodity-specific systems that have been aligned with UNFC-2009. It is the responsibility of the body to which the resource estimates are being reported to specify its requirements for a competent person, if any. In any case, the full responsibility for the reported resource numbers and its classification lies with the evaluator(s).”*
3. *Where a mining project has been shut down in response to community protests, what is the proper classification under UNFC-2009? The TAG replied that “As discussed on page 9 of UNECE Energy Series 42, the term “Economically Viable” includes consideration of environmental, social and other non-technical factors. Since the issue appears to be primarily one of social licence, the classification may be E1:F1:G1 if it is a temporary short-term shutdown, but should be E2:F1:G1 if it is certain that it will be a long-term shut down based on official notification by the company and/or the government authorities. However, if as a result of addressing the community protests, the mining project (as currently defined) is no longer deemed feasible, it should be reclassified as F2 (likely sub-category F2.1 or F2.2, depending on the specific circumstances), otherwise it should remain as F1. Also, should a material change need to be made to the mining project for it to remain feasible, the confidence in recoverable*

quantities (G-axis) may then need to be re-evaluated in the context of the new project plan.”

Finland:

24. On 4 January 2017, Mr. Janne Hokka from the Geological Survey of Finland reported that they are in the process of implementing UNFC-2009 for their national inventory of solid mineral reserves and resources. He asked us why UNFC-2009 is not accepted internationally as a “Public Reporting Standard”. He further queried if UNFC-2009 plans to incorporate and monitor Competent Person requirements. The TAG provided input to a reply drafted by the UN Secretariat staff; the following is extracted from that reply.

UNFC is a classification system, however it has the potential to become the basis of a regulatory/public reporting system. For such a purpose, other requirements such as Guidance on Competent Persons need to be provided. Many stakeholders have an interest only in classification; others may require classification and reporting. Public reporting is usually needed for financing needs, though there is no reason to limit public reporting to this aspect only. Public reporting requirements such as Competent Persons are mandated by entities like stock exchanges and banking institutions.

To undertake a classification exercise and prepare a public report, the persons doing that should be “competent”. But, how this competency is measured and demonstrated is mandated by the concerned financial institutions or any other entity e.g. national government. Therefore, while the classification system as such is not about the qualifications or experiences of the people doing the job, guidelines for these aspects have to be provided separately.

UNFC has been aligned to the CRIRSCO Template through a bridging document. A bridging can be effective and useful only if quantities that are estimated under one system can be transferred to another system and vice versa. For this to be seamless, both the systems need to have similarities in their basic operations. Hence, Competent Person requirements are also key to establish a two-way bridging between UNFC and the CRIRSCO Template.

SPE-SRMS Draft on CO₂ Storage:

25. An SPE working group created a draft SRMS (Storage Resource Management System) document regarding CO₂ storage based on modifications to PRMS. Karin Ask, who led the UNFC Injection Project for the Purpose of Geologic Storage is a member of this group and submitted the document to the TAG and Bureau Members for their review. The TAG submitted their comments on 16 February 2017.

26. The TAG’s recommendations were to align terminology with the UNFC document, consider storage beyond simple displacement of pore volume, and note a requirement for continuing monitoring for CO₂ leakage.

Ongoing Projects:

27. The following projects are in progress as of April 2017:

Chinese Petroleum Classification Bridging Document:

28. The Chinese delegation approached the TAG at the 7th session of the EGRC to begin the process of building a bridging document to UNFC-2009 for petroleum. In early 2016, the Chinese Ministry of Land and Resources (MLR) awarded a contract to the Research Institute for Petroleum Exploration and Development (RIPED) in Beijing to manage this project.

29. On 2–3 February 2016, the TAG representative met with the RIPED working group in Beijing. A second work session between RIPED and the TAG was held in Geneva on 25 April 2016. An additional work session was held following the China Mining Congress and Exposition 22-25 September 2016 in Tianjin. Due to organizational changes in the MLR, the issuance of an updated Bridging Document was significantly delayed. The TAG received an unofficial draft on 11 February 2017 and reviews are ongoing. A work session has been scheduled with the TAG in Geneva on 25 April 2017.

30. The goal is to complete the China Petroleum and UNFC-2009 Bridging Document before the April 2018 EGRC meeting.

Chinese Solid Minerals Classification Bridging Document:

31. The Chinese delegation approached the TAG at the EGRC seventh session to begin the process of developing a bridging document to UNFC 2009 for solid minerals. An initial work session was held on 26 April 2016 in Geneva. As with the petroleum project, organizational changes in the MLR have significantly delayed this project. The TAG received an unofficial draft on 9 February 2017 and reviews are ongoing. A work session has been scheduled with the TAG in Geneva on 25 April 2017.

32. The goal is to complete the China solid minerals and UNFC-2009 Bridging Document before the 2018 EGRC meeting.

Bioenergy Specifications Document:

33. The Bioenergy Working Group continued its discussion with the TAG through a series of drafts on the appropriate Energy Product definition and Access and Entitlement issues. A final version of the Specifications Document was reviewed and on 21 February 2017, the TAG recommended to the Bureau that the Specifications are clear, detailed and comprehensive and should be issued for public comment. An English-only version will be distributed at the eighth EGRC session.

34. On 23 March 2017, the working group forwarded five case studies to the TAG for its review. The TAG provided comments on 29 March 2017.

Solar Specifications Document:

35. A Solar Working Group was established in mid-2016. TAG participated in their work session on 6 October 2016. An early draft of a Solar Specifications document is under development, and a project update will be reviewed by the TAG before its presentation at the EGRC 8th session.

Anthropogenic Resources:

36. A working group under the Mining the European Anthroposphere (MINEA) project provided a draft of a specification document for TAG review on 15 March 2017 before presentation to the EGRC eighth session. The TAG review was completed on 31 March 2017. The plan is to finalize the document and distribute it for public comments in late 2017 and be prepared to submit it to the Committee on Sustainable Energy in 2018.

Other Renewables:

37. Both Wind and Hydro projects are in the planning phase. Working groups are being assembled, and a TAG coordinator has been assigned. The Renewable Energy working group provided Phase 3 Terms of Reference for TAG review on 15 March 2017 to clarify project objectives and timetables through 2018. The TAG review was completed on 31 March 2017.

Uranium/Thorium Best Practices:

38. As a follow-up to the Guidelines document, the working group is compiling a discussion of industry “best practices”. Case studies from Nigeria, Mexico and Indonesia are under review by the working group.

Nordic Project:

39. The Nordic UNFC project was presented by Sigurd Heiberg at the EGRC seventh session. The focus is to develop more detailed guidelines to collate national mining inventories for the Nordic region (Finland, Norway and Sweden) under a single reporting system based on UNFC-2009. A draft document was received by the TAG on 9 March 2017. Extensions to UNFC-2009 include an expanded E-axis and additional guidance on economic evaluations. While this is not an “official” UNFC document”, the TAG provided feedback on the proposed system on 29 March 2017.

UNFC Update:

40. In March 2017, the TAG collated a list of key issues identified in their reviews of diverse projects over the past 3 years that may impact the planned update of UNFC-2009. Rather than issuing a separate report, these issues are discussed in the following section under “Issues and Recommendations to Improve UNFC-2009”. The TAG stands ready to work with the recently established Bureau level working group charged with proposing amendments to UNFC-2009.

TAG Terms of Reference (TOR) Review and Operational Issues:

41. The TAG TOR requires an annual internal review of the scope of their mandate, operational issues encountered and, where appropriate, make recommendations for improvements.

42. Operationally, the TAG has designated project leads that work with the working groups on major project details and isolate key issues for discussion leading to a TAG consensus recommendation.

43. Attachment 2 provides an overview of the TAG review process divided into two sections. In Cycle 1 the TAG contacts work with the project teams to develop the initial bridging or specification document through to Bureau approval. Cycle 2 focuses on public feedback and resulting amendments to the documents before final Bureau approval and submittal to the Committee on Sustainable Energy.

44. Since the Bureau Chair and the UN Secretariat sit as observers on the TAG and are copied on all correspondence, the Bureau is kept fully informed. The UN Secretariat (now expanded with the addition of Harikrishnan Tulsidas) continues to provide logistical support (booking conference calls, populating the TAG website, etc.) as well as providing advice on procedures and facilitating external interfaces. The TAG Chair has assumed primary responsibility for issuing draft agendas and meeting minutes and the UN Secretariat reviews the draft texts.

45. The TAG project recommendations are drafted by the TAG contact person but circulated for comments and edits by the full TAG before final submission by the TAG chair. In more recent projects the documents (e.g. Geothermal Specifications) are submitted for joint TAG and Bureau review. While designed to accelerate the process this combined review process may complicate the designation of responsibility for aggregating comments and coordinate with the project teams.

46. Note that in 2015, the TAG chair was designated as an Observer on the Bureau and through participation in monthly conference calls is able to provide details on project status to the Bureau and gain a better understanding of Bureau forward plans that may impact TAG's work schedules.

47. Regarding the original TOR, the production of case studies and designation as primary UNFC presenters at conferences and work sessions may be a problem given our workload and the additional travel costs. TAG members, along with Bureau members and other EGRC members should share these assignments on an "as available basis". TAG production and review of case studies are further discussed in the following section.

48. The scheduling of many TAG and Bureau reviews in the two-month period leading up to the EGRC sessions in April is a logistical problem. In discussions with the UN Secretariat, there may be the options to better disseminate reviews throughout the year. This may include gaining full EGRC approval by email rather waiting for the April EGRC session.

Issues and Recommendations to Improve UNFC-2009:

49. Given its involvement in the full range of projects and the details reviewed, the TAG is well positioned to offer opinions on some potential issues. Many of the issues discussed below were previously identified in the 2016 TAG Annual Report but are repeated herein where additional comments are warranted.

50. The application of UNFC-2009 is being expanded beyond its original focus on classifying minerals and petroleum extraction projects to the full range of energy projects including renewables. Moreover, bridging/mapping of additional mineral and petroleum classification systems is progressing. At each stage in this process, interpretations of the basic definitions are often modified from the original intent. While we have yet to formulate specific mitigation recommendations, the following is a list of general "areas of concern".

i. How to Maintain Internal Consistency while Expanding Integrated Systems

51. UNECE Energy Series 42 p.17: “Other classification systems may be mapped to the UNFC-2009 through CRIRSCO Template/PRMS or directly to UNFC-2009. In either case, the mapping must comply with all UNFC-2009 definitions and generic specifications. In particular, the relationship between mapped systems must be documented in a Bridging Document that shall be subject to evaluation by the Technical Advisory Group which will then recommend endorsement by the Expert Group on Resource Classification *only where the resultant estimates reported under UNFC-2009 are considered to be comparable with no significant difference to those that would result from the application of classification systems for which Bridging Documents have already been endorsed by the Expert Group on Resource Classification (i.e. Aligned Systems).*”

52. TAG interpretation of the above requirement in italics was varied. One group interpreted that a direct mapping to UNFC-2009 that complied with both generic and commodity-specific specifications was sufficient. Another group said that even where a direct mapping to UNFC-2009 was used, there must be an auxiliary mapping to CRIRSCO or PRMS to ensure that estimates reported were comparable. The TAG used a pragmatic approach to the issue. Where the commodities being classified are the same or similar to those addressed in CRIRSCO or PRMS, a dual mapping may be required to assess consistency. In the case of the NEA/IAEA Bridging Document, a companion mapping to the CRIRSCO Template was provided and proved valuable in validating the Bridging Document. While a companion mapping of the GKZ RF2013 petroleum classification to PRMS has not been specifically required as part of their Bridging Document preparation, comparability can be assessed using a common bridging document format modelled on that used in the UNECE Energy Series 42 CRIRSCO and PRMS bridging documents.

53. For Renewables, the focus will be aligning with the category definitions and generic specifications as contained in UNECE Energy Series 42.

ii. Additional sub-categories?

54. A promoted feature of UNFC-2009 is its increased granularity and the ability to further increase that granularity through the addition of more sub-categories to identify key features of a project. This problem arose when PRMS wanted to include reserves funding/operational status (developed/undeveloped) in the system. In the final Bridging Document, they opted for a text annotation (DP, DNP, U) (see page 45 of UNECE Energy Series 42). But should we encourage this or is it counter to UNFC principles to use only numeric codes? This issue may arise more often as we add aligned systems where each has a unique feature that they wish to track using sub-categories.

iii. E-Axis Issues

55. How to distinguish Resources “economic now” from “uneconomic now but potentially economic in the future”. The problem is that E1 and E2 both allow “realistic assumptions of future market conditions”. Generic Specification “L” requires that the basis for the assumptions shall be disclosed. However, this latitude and lack of more specific economic guidance in the Bridging Documents makes it difficult to achieve consistency in quantities reported under different classification systems. The NEA/IAEA classification using the standardized cost of production classes does achieve a level of comparability.

56. As discussed in the E-axis working group report, the term “economic” should be replaced by the more comprehensive term “commercial” and supported by a chance of adequacy on the components (social license, regulatory approvals, legal issues, etc.) There is some concern that the term “commercial” is too broad and includes conditions regarding chance of adequacy that is better accommodated in the F-axis.

57. Another issue that arose in the RF2013 bridging was regarding E1.2 where projects are made economic through government subsidies. Should this be restricted to subsidies confirmed as of the effective date or can it include cases where there is a reasonable expectation of future confirmation?

iv. Uncertainty Assessment and Reporting / Use of G-axis for Quantity Uncertainty

58. Under CRIRSCO the G-axis is related purely to the level of geological knowledge and confidence associated with a specific part of deposit. However, in some cases, PRMS (and more recently Renewables) uses the G-axis as a general indicator of the range of uncertainty in the quantities being reported. It is accepted that solid minerals reporting using the CRIRSCO Template should use the more restrictive interpretation of geological knowledge and confidence.

59. It is noted that the G-axis whitepaper recommends revisions to the G-axis category definitions wherein all references to geological knowledge are removed. This may be problematic for application in solid mineral projects.

60. UNFC-2009, subject to commodity specific specifications, allows discrete estimates (G1, G2, G3) (incremental method) or scenario uncertainty for the total accumulation (G1, G1+G2, G1+G2+G3). Generic specification “Q” allows equivalent labels in addition to these unwieldy numeric codes (low estimate, best estimate, high estimate). While assumed, it has not been demonstrated that a scenario derived best estimate would be the same quantity as the sum of deterministic increments G1 and G2 for the same project.

61. In many cases, specifically in petroleum but also in many renewables, the scenario method is based on probabilistic methods where the best estimate is P50 from a cumulative probability distribution. There is no requirement to present evidence that a probabilistic best estimate of quantities is equivalent to a deterministic best estimate or the sum of incremental G1+G2. Often documents label G-axis outcomes as P90/P50/P10 when no probabilistic assessment is applied, and the deterministic scenario outcomes should be termed low/best/high estimates.

v. Aggregation of Classes, Categories and Projects

62. Generic Specification “K” requires that projects *“that are classified in different categories on the Economic or Feasibility axis shall not be aggregated with each other without proper justification and disclosure of the methodology adopted. In all cases, the specific Classes that have been aggregated shall be disclosed in conjunction with the reported quantity (e.g. 111+112+221+222) and a footnote added to highlight that there is a risk that projects that are not classified as E1F1 (Commercial Projects) may not eventually achieve commercial operation.”*

63. There should be additional requirements that in addition of G1 and G2 (and G3) quantities there may be significant differences in levels of confidence of each category and not all of G2 (and G3) quantities will transfer to G1. There are few guidelines in the commodity systems to quantify risk and uncertainty to support aggregation.

64. Because of the above differences in confidence levels and the impact of the central limit theorem, the confidence in the sum of G1 quantities in multiple projects will be greater than for a single project. Conversely, the sum of G1+G2+G3 across multiple projects will result in a confidence level less than this sum for an individual project. Again neither UNFC-2009 nor the commodity systems provide guidance on aggregating projects with varying risk and uncertainty into portfolios for internal and external comparisons.

vi. In-place vs. Sales Quantities

65. A typical resource assessment process includes 3 or 4 steps:
- i. Assess the total raw commodity available referred to as the “in-place” resource without any consideration of recovery process or economics.
 - ii. Assess the quantity (and quality) of the raw commodity that is technically feasible to recover using a specified recovery program.
 - iii. Assess the quantity and quality of raw commodity that can be commercially recoverable under defined social and economic conditions.
 - iv. Assess the refined commercial sales quantities that can be delivered to the market using defined processing and facilities.
66. At each stage in this process, there is a series of parameters cut-offs (e.g. minimum grade or hydrocarbon saturation, minimum zone thickness, minimum porosity, the minimum rate of return). Without quantification and disclosure of the cut-offs, it is difficult to achieve consistency in assessed quantities at each reference point in the process.
67. While the above issues relate to petroleum and minerals extraction, applying the same logic to injection and renewables projects is more complex. For example, in geological storage projects, the equivalent in-place parameter is the total pore space available, but only a portion of that pore space can be effectively utilized depending on the physical properties of the reservoir and the injected materials.
68. For renewables such as wind and solar, the equivalent in-place must be assessed within a defined accessible project area and consider replenishment rates.

vii. Integrating Systems with Different Mandates

69. UNFC-2009 is a generic classification system that applies to all energy sources (petroleum, solid minerals, renewables) and should be applicable to the full range of stakeholders. However, the aligned systems have variable internal scope and focus. For example, the CRIRSCO Template was designed to accommodate regulatory reporting focused on Mineral Reserves and Mineral Resources. Since few agencies support reporting non-commercial deposits and pre-discovery estimates, the template originally had few guidelines in this area (note the 2013 revision for Exploration Target).
70. PRMS attempted to provide guidance for internal management of petroleum resources in all maturity stages from basin analysis through to producing projects. As more regulatory agencies have adopted PRMS, the latitude for updates to continually improve the system for internal project and portfolio management have been restricted.
71. The NEA/IAEA Red book is oriented towards international inventories and lacks the granularity to support regulatory disclosures. As more national inventory systems are integrated the consistency issue becomes more important. What is the relationship between

a USGS country assessment of technically recoverable volumes of oil and the summation of all projects reported by companies to that country's security regulators?

viii. Using UNFC for National Reporting and Disclosures

72. UNFC is a classification system and does not currently provide detailed guidelines for all commodities to assess in-place quantities or estimate production schedules and associated cash flows based on the development projects applied. Such guidance is required for both national reporting and, if accepted by stock exchanges, for regulatory disclosures. By creating bridging documents, UNFC deferred to some of the aligned commodity specific systems for this type of detail.

73. These currently aligned systems such as those used in solid minerals were developed by National Reporting Organizations (NROs) which were made up of professional organizations whose members had the relevant qualifications to develop and administer standards for the solid minerals industry. In many countries engineering and scientific standards are also enshrined in legislation, and Competent Person registration is mandatory to practice in a given field; this is done in the interests of public safety.

74. The recent arrival of renewable energy sources has exposed the lack of existing standards applicable to that sector and uncertainty as to the qualifications required by the professionals undertaking the evaluations. The CRIRSCO experience has been that the codes and standards have to be drawn up by the relevant professionals in the country, they have to take ownership; the Template is given as guidance only. The professionals are drawn from both private and public sector.

75. A possible way forward for all commodities, including renewables, is for EGRC to coordinate where possible with professional bodies and NRO's.

ix. Integrating Initiatives for a UNFC Update

76. Over the last year, individual working groups have examined potential updates to the E-axis, F-axis (project definition) and the G-axis (applied to renewables). As discussed above, the TAG has encountered specific issues in ongoing bridging documents requiring clarifications. Further, many of the underlying commodity specific systems are undergoing updates that may require amending the bridging documents.

77. The challenge is to integrate these multiple initiatives in the planned 2018 UNFC Update project.

Annex 1:

TAG Membership as of April 2017

Members	Affiliations	Country	Representing	Joined	Withdrew	Term Ends
	Santosh Adhikari	India Bureau of Mines	India	Solid Minerals & UNFC 1997	Apr-14	Apr-16
	John Barry	Irus Consulting Ltd	Ireland	Solid Minerals	Apr-14	Apr-17
1	Andrew Barrett	Geoscience Australia	Australia	Minerals & National Reporting	Jul-15	Apr-17
	Per Blystad	Norwegian Petroleum Directorate	Norway	Petroleum & National Reporting	Apr-14	Jul-15
2	Vera Bratkova	State Commission (GKZ)	Russia	Petroleum, Government Reporting	Apr-16	Apr-18
3	Jan Bygdevoll	Norwegian Petroleum Directorate	Norway	Petroleum & National Reporting	Jul-15	Apr-19
	Leesa Carson	Geoscience Australia	Australia	Minerals & National Reporting	Apr-14	Mar-15
4	Roger Dixon	SRK Consulting	South Africa	CRIRSCO	Apr-14	Apr-18
	John Etherington	PRA International Ltd	Canada	SPE PRMS	Apr-14	Apr-17
5	Steve Griffiths	Deloitte UK	UK	Petroleum Industry	Jun-16	Apr-18
6	Alistair Jones	BP Exploration	UK	Industry, Petroleum, Renewables	Apr-14	Apr-19
	Michael Lynch-Bell	Kazakhymus PLC	UK	Financial Reporting (Alternate)	Apr-14	Oct-15
	Maksim Saakian	State Commission (GKZ)	Russia	Petroleum, Government Reporting	Apr-14	Apr-16
7	Dominique Salacz	Evolution Resources SA	Switzerland	Petroleum Industry	Apr-15	Apr-19
8	Alex Shpilman	State Commission (GKZ)	Russia	Petroleum, Government Reporting	Apr-16	Apr-18
	Danny Trotman	Ernst & Young LLP	UK	Financial Reporting	Apr-14	Apr-16
9	Brad Van Gosen	USGS	USA	Nuclear Fuel Resources	Sep-16	Apr-18
	Harikrishnan Tulsidas	Int'l Atomic Energy Agency (IAEA)	Austria	Nuclear Fuel Resources	Apr-14	Sep-16
10						
11						
Observers						
	David Macdonald	BP Exploration	UK			
	Charlotte Griffiths	Sustainable Energy Division	Switzerland			
	Harikrishnan Tulsidas	Sustainable Energy Division	Switzerland			

Annex 2

TAG Review Process

