

Economic Commission for Europe

Committee on Sustainable Energy

Twenty-second session

Geneva, 21-22 November 2013

Item 7 of the provisional agenda

Review of the work of the Committee and its subsidiary bodies in light of Appendix II of the Outcome of the Review of the 2005 ECE Reform

Application of UNFC-2009 to Renewable Energy Resources – Deliverables and Timelines

Draft

I. Introduction

1. The Economic Commission for Europe's decision A(65) Outcome of the review of the 2005 reform of ECE, (65th session, Geneva, April 2013) called upon the Expert Group on Resource Classification to "develop ideas on how UNFC could apply to and integrate renewable energy by December 2013".

2. Separately, an industry-led working group (Renewable Reserves Working Group) took the initiative in 2012 to develop a transparent and consistent estimation and classification methodology for renewable energy resources.

3. Through a process of a workshop and subsequent meetings, this working group determined:

(a) A general classification system for renewable energy does not currently exist worldwide.

(b) Describing renewable energy in resource terms was a useful and valid concept, and there was interest in developing this concept further from a range of industry and governmental stakeholders.

(c) From the range of resource classification frameworks, the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009) framework was the best positioned for the inclusion of renewable energies.

(d) Initial fundamental principles informing the development of the necessary specifications/methodology.

4. The working group reported its findings to the fourth session of the Expert Group on Resource Classification, Geneva, April 2013. Following discussion the Expert Group concluded that UNFC-2009 can be applied to renewable energy resources. The Expert Group recommended that an ad hoc Task Force on Application of UNFC-2009 to Renewable Energy Resources be established together with a number of renewable technology-specific sub-Task

Forces, in order to define suitable terms of reference, and subsequently develop the necessary specifications for the inclusion of renewable energies under the UNFC-2009 Resource Classification Framework.

II. Discussion

(A) Feasibility of Applying Resource Classification to Renewable Projects

5. While renewable projects derive their primary energy from natural energy resources that are not subject to depletion, the expectations of future cumulative energy production potential from such resources are bounded by the same or similar techno-economic and social constraints as fossil energy resources. Therefore, the future production potential from a renewable energy project can usefully be quantified using similar approaches as conventional resources.

6. The other aspect of similarity is that renewable projects are commercially similar to fossil or mineral resource projects in that they:

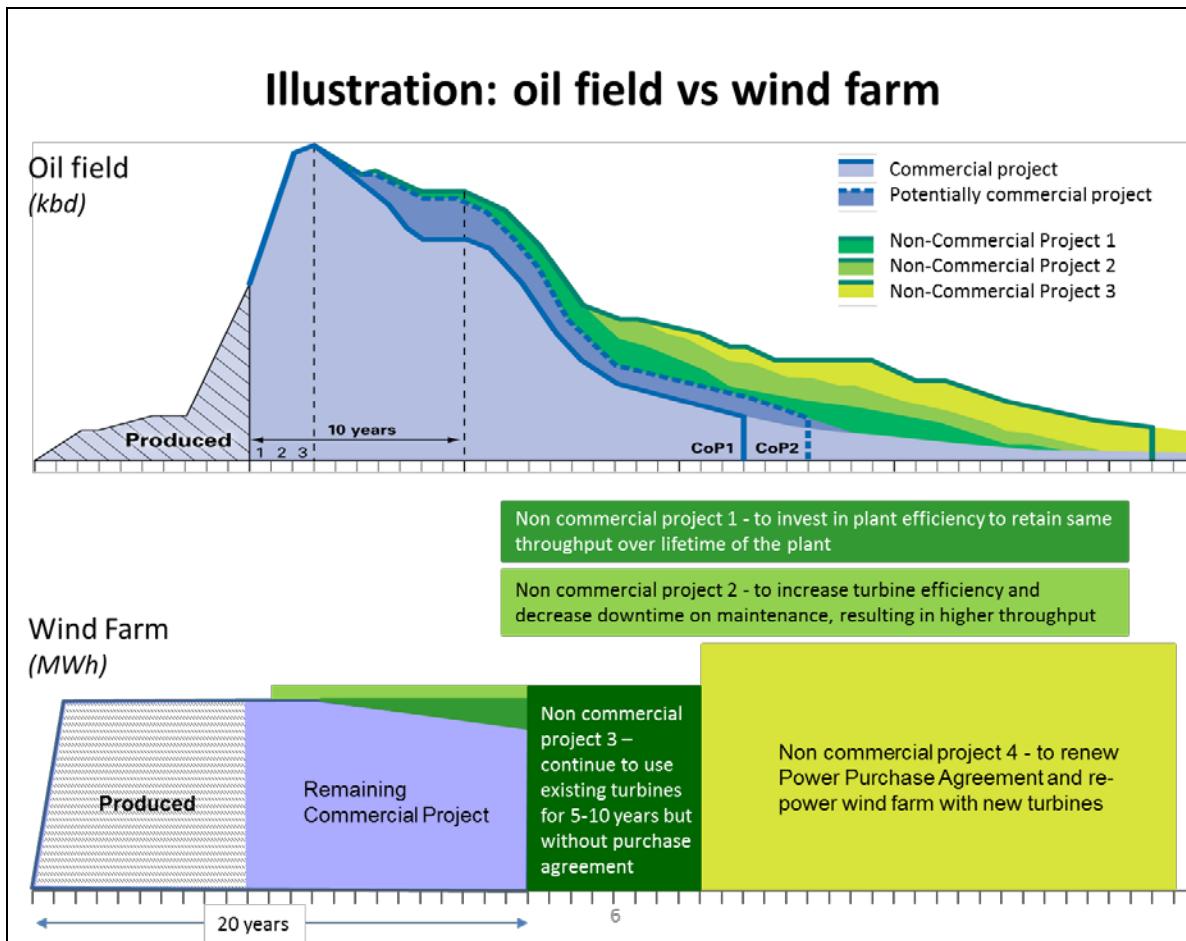
- (a) have a defined level of investment, with an expected production profile
- (b) they progress through stages
- (c) they have similar prerequisites such as gaining access to the resource and market, receiving authorisation, and validation of the economic case
- (d) as the project develops, risk declines and certainty of returns improves

7. This means they can be evaluated and classified into categories depending on their technical, commercial and socio-economic viability.

8. The analogy of an oil field and a wind farm presented in Graphic 1 helps demonstrate the argument.

9. The graphic in Figure 1 describes the production profile of an oil asset with the produced volumes to date and the different layers of production, including the P50 profile and the additional volumes related to potential additional investments.

10. To demonstrate the resource classification analogy for renewable projects, a wind farm's production profile (in MWh) is shown on a similar basis, with again the produced output, and the remaining volume for the lifetime of the farm. Similarly to an oil field, there could be additional investments to increase for example the productivity of a farm, or to maintain efficiency that tends to degrade over the years as turbines get older. There could be initiatives to extend the lifetime of the wind farm by a few years. And the farm could be retrofitted fully, with new turbines, adding another lifetime to the farm. All these volumes can be classified into different categories of reserves and resources, in a similar manner to a conventional fossil energy resource such as an oil field.



Graphic 1: Illustration of an oil field versus a wind farm

Source: Renewable Reserves Initiative Workshop October 2012, London

(B) Drivers for the inclusion of renewable energies with a reserves/resources classification framework

11. Based on input from participants in the Renewable Reserves Working Group a range of drivers/interests behind the development of a methodology to quantify renewable energies in reserves/resource terms were identified across a broad stakeholder set. These are shown in Table 1.

Stakeholder	Driver / Interests
Governments	Better understand total resource base Energy Security Facilitate achievement of integrated energy strategy and policies
Global Organisations	Assess and contrast global energy systems and different energy sources
Renewable Energy Sector Participants	Enhanced overview of asset values Provide a measure of comparability with traditional energy systems Offer a basis to estimate the scale of each renewable resource Provide reliable estimates based on best practices and common standards
Investment community	Better assess and contrast investment opportunities Enhance portfolio valuation

Table 1: Drivers for inclusion of renewable energies with a reserves/resources classification framework.

(C) Potential for renewable energies in reserve terms

12. To provide an estimate of the potential materiality of renewables in reserve terms, Bloomberg New Energy Finance (who have an extensive database of global renewable installed capacity) were commissioned by BP to provide an assessment of US and Brazil current Bioenergy and Wind sectors in reserve terms using a simplified methodology.¹

13. The high-level results are shown in Graphic 2. US bioenergy and wind sectors are equivalent to ~1/7 of current US proven oil and gas reserves, with Brazil bioenergy and wind sectors equivalent to 2/5 of the country's current proven oil and gas reserves. While it needs to be emphasized that this analysis uses a simplified methodology, by necessity compares Proved Reserves data (fossil) with Resources and is obviously incomplete in terms of renewable sectors in the countries covered, it does demonstrate the materiality compared against conventional fossil energy resources.

¹ Renewable Reserves: Testing the Concept for the US and Brazil, Bloomberg New Energy Finance, March 2013.

Figure 1: US energy reserves

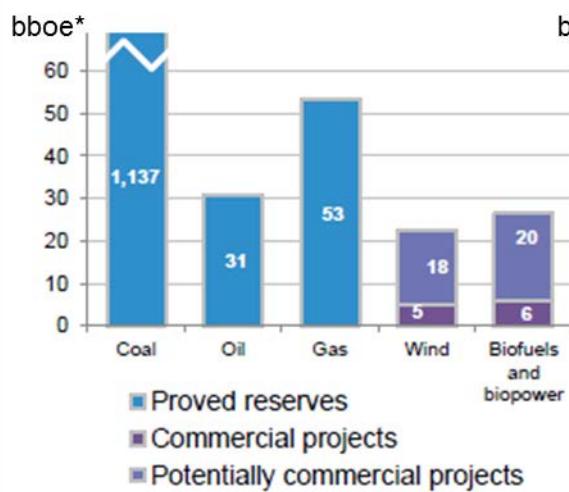
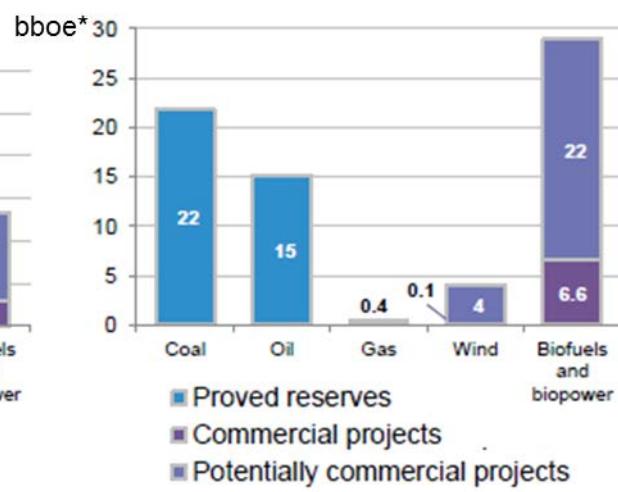


Figure 2: Brazil energy reserves



Source: Bloomberg New Energy Finance, BP Statistical Review 2012. Note that Commercial projects are equivalent to Proved reserves for fossil fuels.

* Billion of barrels of oil equivalent

Graphic 2: Assessment of US and Brazil current Bioenergy and Wind sectors in reserve terms using a simplified methodology.

Source: Renewable Reserves: Testing the Concept for the US and Brazil, Bloomberg New Energy Finance, March 2013.

III. Deliverables of the Task Force on Application of UNFC-2009 to Renewable Energy Resources

14. A Task Force on Application of UNFC-2009 to Renewable Energy Resources was established in May 2013 by the Bureau of the Expert Group at the request of the Expert Group following its fourth session.

15. The Phase One Taskforce Membership consists of the following members:

- Leesa Carson (public sector; minerals, geothermal)
- Raffaella Cristanetti (private sector; bioenergy)
- Frank Denelle (Task Force Chair; private sector; bioenergy; international oil and gas)
- Gioia Falcone (academia; geothermal)
- James Primrose (private sector; bioenergy; wind; international oil and gas)
- Bernard Seiller (private sector; bioenergy; solar; international oil and gas)
- Danny Trotman (private sector; finance and reporting)

Observers: Chair, Expert Group and UNECE secretariat

16. The Task Force has the authority to appoint additional members as needed to ensure stakeholder management and to complete its work, particularly for the work groups that will be responsible for the commodity specific specifications.

(a) Deliverable One: Draft specifications for the application of UNFC-2009 to renewable energy resources

17. The terms of reference for the Task Force to develop a suitable methodology for the inclusion of renewables within UNFC-2009 are provided in paragraphs 18 to 25.

18. To develop a set of specifications for the application of the UNFC-2009 to Renewables. It is envisaged that this will consist of an overarching Renewable Specification document, together with commodity-specific specifications and a conversion document that will outline the conversion principles across energy metrics to support a consistent comparison and reporting of various energy resources.

19. For the purposes of this initiative, the Renewable Reserve Task Force proposes to use the United Nations Sustainability Energy for All (SE4ALL) definition of renewable energies, namely: *“Energy from natural sources that are replenished at a faster rate than they are consumed, including hydro, bioenergy, geothermal, aerothermal, solar, wind and ocean”*.

20. The Task Force will develop a suitable programme of work including identifying the initial priority documents, with the provisional aim of finalizing the drafts by 29 January 2014 in order to present them as official documents for consideration by the fifth session of the Expert Group on Resource Classification, Geneva, 29 April - 2 May 2014. Following this it is envisaged a public consultation period of two months minimum would be undertaken. The schedule for subsequent specifications will be developed.

21. In its work programme, the Task Force will list the technologies for which, in this first phase, commodity-specific specifications will be developed. The work programme will also include the timeline towards public consultation and will be submitted to the Expert Group Bureau for approval.

22. The Task Force may develop a pilot programme to assist with the development of the methodology and to ensure that it is fit for purpose in real world situations. Communication and promotion of the proposed methodology is not part of its current scope.

23. The Task Force will not work on disclosure requirements as these are outside the mandate of the Expert Group and covered by financial and regulatory groups.

24. A possible revision of the draft specifications based on public comments will be part of the Phase Two work and subject to an updated Terms of Reference and work programme, to be approved by the Expert Group.

25. All Task Force outputs will be submitted to the Bureau of the Expert Group and are subject to approval of the Expert Group.

(b) Deliverable Two: Organization of a Consultation Workshop

26. The goal of the workshop would be to consult with as a broad group of stakeholders as possible relevant to the application of UNFC-2009 to renewable energy resources. This would ensure input from a wider range of experts/stakeholders than covered by the Task Force membership; raise awareness of the broadening of the application of UNFC-2009 to renewable energy resources; ensure alignment with other systems in place or being developed and avoid duplication of effort.

27. It is envisaged that the event would be organized in March 2014 in order to provide feedback to the fifth session of the Expert Group.
