An Overview of the UNFC 2009 System*

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Abstract

Different stakeholders have differing needs for project evaluation, portfolio management and regulatory reporting. The UNFC-2009 applies to fossil energy and mineral reserves and resources located on or below the Earth’s surface and is intended to serve the needs for classification at a global level (for energy and mineral supply studies), for governments (resources management and policy formulation), for industry (business process management) and for financial reporting.

UNFC-2009 is a generic system in which quantities are classified on the basis of the three fundamental criteria of economic and social viability (E), field project status and feasibility (F), and geological knowledge (G), using a numerical coding system. Combinations of these criteria create a three-dimensional system. The aim of my session would be to explore how the UNFC-2009 can meet the needs of all internal and external stakeholders including SEC and IASB financial requirements, international energy and mineral studies, government resources management, investor requirements and business process management.
An overview of the UNFC 2009 system

Michael D Lynch-Bell, Chairman United Nations Expert Group on Resource Classification and Partner, Ernst & Young LLP

AAPG European Region Annual Conference
19 October 2010
United Nations regions

ESCWA
ECE
ESCAP
ECA

ECLAC
UN economic commission for Europe

► Five UN Regional Commissions
► UNECE: Europe, CIS, North America, Turkey and Israel
► Based in Geneva, 56 Governments
► Mission to foster sustained economic growth and cooperation among member countries
► Assist countries with transition and developing economies
► Nine key programmes: economic cooperation and integration, environmental policy, housing and land management, statistics, sustainable energy, technical cooperation, timber, trade and transport
Where does expert group fit in the UN system?

United Nations

- Security Council
- Economic and Social Council (ECOSOC)
  - UN Regional Commissions
    - UN Economic Commission for Europe (ECE)
      - Committee on Sustainable Energy
        - Expert Group on Resource Classification (formerly Ad Hoc Group of Experts on Harmonization of Fossil Energy and Mineral Resources Terminology)

Intergovernmental body

Advisory body
Convergence

► SEC
► IASB
Stakeholders

Diversity in stakeholders and their characteristics

- Demonstrated by parties responding to consultation papers (e.g., SEC and IASB)

Internal and external

- Characteristics and priorities
  - Users versus preparers
  - Level of sophistication
  - View of cost/benefit

- Conflicts between stakeholder interests

- Influence on future reserves measurement, reporting and use
Interaction of stakeholders

External stakeholders

Internal stakeholders

Internal preparers

Internal users

Governance and assurance

External user
Internal stakeholders

Preparers
► Technical specialists
► Project managers
► Partners

Users
► Management
  ► Strategic planning, forecasting and budgeting
  ► Performance management and compensation awards
  ► Investment decisions – internal and external
► Preparers of reporting
► Board, audit committee
► Partners
External stakeholders

Influencers
► Standard setting bodies (IASB, FASB, SEC etc.)

Users
► Investor community
► Lenders
► Competitors
► M&A
► Government/public interest bodies
► Technical consultants
► Accounting profession
► Interested public
Useful information?

Do published reserves and resources information reflect management’s decision making process?

► Published information likely to be different to management’s view
  ► Often not the full resource base/potential
  ► Different assumptions (price/discount rate)
  ► Optimistic view?

► May in turn be different to an investor’s view
  ► Different views on risk (e.g., country, technical)
  ► Different views on sources of value (e.g., portfolio fit)
Resources to reserves to production

Start 2005

38.9 bn boe

Non-proved Resources

18.3 bn boe

Proved Reserves

1.5 bn boe

Total resources: production 39 years

End 2009

45.3 bn boe

Discovered Resource Access

Field Extensions and Improved Recovery

PRODUCTION

1.5 bn boe

Total resources: production 43 years

Source: Extract from BP Full Year 2010 Results and Strategy Update
BP resources

Diverse resource base and reserves additions

2009 Resource Base

- Conventional oil
- Deepwater oil
- Water-flood viscous and heavy oil
- Conventional gas
- LNG gas
- Unconventional gas

Proved: 18.3 bn boe

31 years

2009 Reserves Additions %

- TNK-BP
- Asia Pacific
- Angola
- Gulf of Mexico
- South America
- N. Africa, Middle East and Caspian
- Trinidad & Tobago
- North Sea
- North America Onshore

Resources at end-2009 on a combined basis of subsidiaries and equity-accounted entities. 2009 reserves additions are price adjusted.
## Net assets and market capitalisation (O&G)

<table>
<thead>
<tr>
<th></th>
<th>Net Assets 30 June 2010 $m</th>
<th>Market Capitalisation 14 October 2010 $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>72,595</td>
<td>128,686</td>
</tr>
<tr>
<td>BP</td>
<td>86,362</td>
<td>129,313</td>
</tr>
<tr>
<td>Shell</td>
<td>139,163</td>
<td>196,269</td>
</tr>
<tr>
<td>Exxon</td>
<td>145,367</td>
<td>332,495</td>
</tr>
<tr>
<td>Chevron</td>
<td>99,569</td>
<td>168,689</td>
</tr>
</tbody>
</table>

Sources: Market capitalisation – Thomson Datastream; Net Assets – preliminary results announcements.
United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009
The UNFC, what is it?

- Umbrella system:
  - Internationally applicable
  - Internationally acceptable
- Harmonization – terminology and definitions
- Uses numerical codification system
- Applies to fossil energy and mineral reserves and resources
The UNFC, who for?

- Energy and mineral studies
- Resources management functions
- Corporate business processes
- Financial reporting standards
UNFC, how did we get here?

- 1992 – initiated first version
- 1997 – first version published (solid fuels and mineral commodities)
- 2001 – AHGE formed
- 2004 – UNFC extended
  - Oil, natural gas and uranium
  - ECOSOC resolution 2004/233
UNFC, how did we get here?

- 2005 – collaboration with SPE/CRIRSCO
- 2007 – mapping task force/IASB
- 2008 – agreement to assess UNFC 2004 for revision
- 2008 – new version released for comment
- 2009 – AHGE March 2009
  - AHGE October 2009
  - Committee on sustainable energy, November 2009
What’s been changing?

- 2005 – new Russian classification
- 2006 – revised CRIRSCO template
- 2007 – SPE/AAPG/WPC/SPEE PRMS (SPE-PRMS)
- 2007 – updated Canadian Oil & Gas handbook
  - Volume 1 including definitions of resources and reserves
- 2008 – revised SEC Oil & Gas definitions
- Etc.
UNFC-2009, Expert Group and Committee on Sustainable Energy

► ECOSOC resolution 2004/233 – consistent with
  ► UNFC-2009 simplified, generic and user-friendly
► Agreed UNFC-2009 be adopted now
  ► Testing and roll-out of UNFC-2009 needed, proposed feedback period every two years
► Agreed to drop ‘ad hoc’ and change name to expert group on resource classification
► Current two year mandate expires end 2009. Agreed five year mandate to 2014
UN framework classification for petroleum

**Total in-place**
- Produced
- Recoverable
- Additional quantities in-place

**Principles**

**Economic and commercial viability**
- E1 Confirmed to be economic
- E2 Expected to become economic
- E3 Not expected to become economic

**Field project status and feasibility**
- F1 Feasibility confirmed
- F2 Feasibility under evaluation
- F3 Feasibility not known
- F4 No project identified

**Classification**

**Geological knowledge**
- G1 High confidence
- G2 Moderate confidence
- G3 Low confidence
- G4 Potential accumulation

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14 February 2011
### Category Definition

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Extraction and sale has been confirmed to be economically viable</td>
</tr>
<tr>
<td>F1</td>
<td>Feasibility of extraction by a defined development project or mining operation has been confirmed</td>
</tr>
<tr>
<td>G1</td>
<td>Quantities associated with a known deposit that can be estimated with a high level of confidence</td>
</tr>
</tbody>
</table>

**UNFC Class: 111**
## UNFC-2009 – categories and subcategories

<table>
<thead>
<tr>
<th>Axis</th>
<th>Criteria</th>
<th>Categories</th>
<th>Sub-categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-axis</td>
<td>Economic and social viability</td>
<td>E1</td>
<td>E1.1, E1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>E3</td>
<td>E3.1, E3.2, E3.3</td>
</tr>
<tr>
<td>F-axis</td>
<td>Field project status and feasibility</td>
<td>F1</td>
<td>F1.1, F1.2, F1.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F2</td>
<td>F2.1, F2.2, F2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F4</td>
<td></td>
</tr>
<tr>
<td>G-axis</td>
<td>Geological knowledge</td>
<td>G1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>G2</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>G3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>G4</td>
<td></td>
</tr>
</tbody>
</table>
UNFC-2009 – examples of classes

[Diagram showing layers of data classification based on socio-economic viability, project feasibility, and geological knowledge, with color codes for different project types: Commercial projects, Potentially commercial projects, Non-commercial projects, Exploration projects, Additional quantities in place, Other combinations, Extracted quantities, and Codification (E1;F2;G3).]
### UNFC-2009 – based on categories only

<table>
<thead>
<tr>
<th>Extracted</th>
<th>Sales Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-sales Production</td>
<td></td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td><strong>Categories</strong></td>
</tr>
<tr>
<td>EF G</td>
<td>E</td>
</tr>
<tr>
<td>Future recovery by commercial development projects or mining operations</td>
<td>Commercial Projects</td>
</tr>
<tr>
<td>Potential future recovery by contingent development projects or mining operations</td>
<td>Potentially Commercial Projects</td>
</tr>
<tr>
<td></td>
<td>Non-Commercial Projects</td>
</tr>
<tr>
<td>Additional quantities in place associated with known deposits</td>
<td>3</td>
</tr>
<tr>
<td>Potential future recovery by successful exploration activities</td>
<td>Exploration Projects</td>
</tr>
<tr>
<td>Additional quantities in place associated with potential deposits</td>
<td>3</td>
</tr>
</tbody>
</table>
## UNFC classes defined by categories and subcategories

<table>
<thead>
<tr>
<th>Total commodity initially in place</th>
<th>Sales production</th>
<th>Non-sales production</th>
</tr>
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<tbody>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>Subclass</td>
<td>Categories</td>
</tr>
<tr>
<td>Commercial projects</td>
<td>E</td>
<td>F</td>
</tr>
<tr>
<td>On production</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>Approved for development</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Justified for development</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Potentially commercial projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development pending</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Development on hold</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Non-commercial projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development unclarified</td>
<td>3.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Development not viable</td>
<td>3.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Additional quantities in place</td>
<td>3.3</td>
<td>4</td>
</tr>
<tr>
<td>Exploration projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[No subclasses defined]</td>
<td>3.2</td>
<td>3</td>
</tr>
<tr>
<td>Additional quantities in place</td>
<td><strong>3.3</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>
## UNFC-2009 – alignment with other systems

<table>
<thead>
<tr>
<th>Known deposit</th>
<th>UNFC-2009</th>
<th>CRIRSCO (minerals)</th>
<th>SPE-PRMS (petroleum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial projects</td>
<td>On production</td>
<td>Mineral reserve</td>
<td>Reserves</td>
</tr>
<tr>
<td></td>
<td>Approved for development</td>
<td></td>
<td>Approved for development</td>
</tr>
<tr>
<td></td>
<td>Justified for development</td>
<td></td>
<td>Justified for development</td>
</tr>
<tr>
<td>Potentially commercial projects</td>
<td>Development pending</td>
<td>Mineral resources</td>
<td>Development pending</td>
</tr>
<tr>
<td></td>
<td>Development on hold</td>
<td></td>
<td>Development unclarified or on hold</td>
</tr>
<tr>
<td>Non-commercial projects</td>
<td>Development unclarified</td>
<td>Not defined</td>
<td>Contingent resources</td>
</tr>
<tr>
<td></td>
<td>Development not viable</td>
<td></td>
<td>Development not viable</td>
</tr>
<tr>
<td>Additional quantities in place</td>
<td>Not defined</td>
<td></td>
<td>Unrecoverable</td>
</tr>
<tr>
<td>Potential deposit</td>
<td>Exploration projects</td>
<td>Exploration results</td>
<td>Prospective resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Prospect</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Lead</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Play</td>
</tr>
<tr>
<td>Additional quantities in place</td>
<td>Not defined</td>
<td></td>
<td>Unrecoverable</td>
</tr>
</tbody>
</table>
UNFC-2009 – a proposal for integration

Formal agreement that certain bridging modules would be maintained by the ‘owners’, but subject to EGRC approval

UNFC-2009
Some high level rules required

Bridging module A
SPE-PRMS petroleum rules

Bridging module B
CRIRSCO minerals rules

Mapping module C
System C other rules

Mapping module D
System D other rules

Mapping module E
System E other rules
EGRC programme of work 2010-2011

- Continue work on specifications in collaboration with CRIRSCO/SPE
- Facilitate mapping of other classification systems to UNFC-2009 and testing – technical advisory group to be established
- Support IASB extractive activities research project
- Explore how UNFC could be used in classifying injection projects
- Education and outreach: communications subcommittee
- UNFC Workshops: Warsaw, June 2010 and Ankara, end-2010
- Respond to requests from Africa, Asia and Latin America to hold regional events
Conclusions

► UNFC is a long-term activity, with significant and varied global stakeholder support
► Umbrella system: - Internationally applicable
  - Internationally acceptable
► Harmonization – terminology and definitions
► Uses numerical codification system
► Unique – applies to fossil energy and mineral reserves and resources
► Going forward specifications and guidelines and testing is key
► Next session of Expert Group – Geneva, 6-8 April 2011
Thank you
UN Expert Group on Resource Classification

www.unece.org/energy/se/reserves.html