The United Nations Framework Classification for Fossil Energy and Mineral Resources

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United Nations Economic Commission for Europe
Geneva, Switzerland
UN Economic Commission for Europe (UNECE)

- Economic and Social Council
- Five UN Regional Commissions
- UNECE: Europe, CIS, North America, Turkey & Israel
- Based in Geneva, 56 Governments
- Mission to foster sustained economic growth and cooperation among its member countries
- Assist countries with transition and developing economies
- 9 programmes of work, including energy
## History of UNFC

### Early Focus on Solid Fuels & Minerals
- **1992**
  - German Government proposes 3-D classification to UNECE Working Party on Coal to meet the need for an internationally acceptable reserve/resource classification system capable of integrating transitioning economies from Eastern Europe and Former Soviet Union.
- **1996**
- **1997**
  - UN Economic & Social Council (ECOSOC) invites global application of the UNFC for Solid Fuels & Mineral Commodities through ECOSOC Resolution 1997/226.

### Petroleum & Other Minerals
- **2001**
  - UNECE creates Group of Experts to extend the UNFC to petroleum and other mineral resources (e.g. uranium).
- **2003**
  - UNECE Committee on Sustainable Energy adopts UNFC for petroleum & minerals.
- **2004 - Present**
  - UNECE Ad Hoc Group of Experts developing UNFC as global common code.

### Global System
- **2004**
  - UN ECOSOC recommends appropriate measure taken for global application of UNFC for petroleum & minerals “UNFC 2004” in Resolution 2004/233.
One common code for multiple users…

- Energy policy formulation
- National resource management
- Business process management
- Financial reporting

United Nations Framework Classification for Fossil Energy and Mineral Resources (UNFC) is for both minerals and fossil energy (coal and petroleum)
Classification of Resources and Reserves in Compliance with International Standards

- UNFC is an umbrella system to which other classifications can map, and a system on its own
- UNFC is harmonized with SPE PRMS (Petroleum) and CRIRSCO (Minerals) systems
- UNFC is developed by stakeholders (including the UN ECOSOC) with the assistance of professional organisations
- UNFC (2004) is being simplified in 2009

ONE COMMON SYSTEM IS ACHIEVED THROUGH UNFC
Proposed Revision of the UNFC

- Simplify the 2004 UNFC
- Facilitate harmonization with the 2006 CRIRSCO (Minerals industry) template and the 2007 SPE/WPC/AAPG/SPEE Petroleum Resources Management System (SPE-PRMS) and others.
- Elements of first order importance for application in energy statistics are more or less in place. Comments are essential: Deadline 6 February.
- Elements of second order importance may be introduced in the form of specifications yet to be developed.
It must become an integral part of IRES/SEEA-E
The UNFC in Standards for Energy Statistics

- The UNFC classifies quantities that will be:
  - Recovered and sold,
  - Recovered but not sold
  - Will not be recovered

- Recovered quantities, their qualities and values are measured or estimated at the reference point.

- Recoverable quantities are seen as products of recovery projects, affording coherence with statistical information relating to recovery efforts.

- Early geologic classifications saw recoverable quantities (reserves) as a property of the accumulation or deposit without explicit reference to recovery projects. This fails to meet the requirement for coherence.
Going from Quantities in Place to Project Recoverables

Exploration projects

Potentially and non-commercial projects

Commercial projects

To be calculated
... in detail
UN Framework Classification (UNFC) for Petroleum

**Total in-place**

- E1 Confirmed to be economic
- E2 Expected to become economic
- E3 Not expected to become economic

**Principles**

- F1 Feasibility confirmed
- F2 Feasibility subject to evaluation
- F3 No feasibility
- F4 No project identified

**Classification**

- G1 High confidence
- G2 Moderate confidence
- G3 Low confidence
- G4 Potential
The criteria (E, F, G) are divided into categories (1, 2, 3, 4).

Resource quantities are classified by an E, an F and a G category.
Codification continued

• The categories are quoted in fixed order: EFG
• The category letters are removed, but the numbers are retained.
• The resources are identified by a number code (111), (334), etc.
• Codification facilitates communication independent of alphabet.
Draft Revised UNFC - Details
Mapping of UNFC to Other Classifications

• UNFC Mapping Task Force established June 2007

• Mapping of UNFC to the SPE PRMS, CRIRSCO Template and Russian Federation Classification Systems

• Mapping was built upon results from SPE and CRIRSCO mapping for IASB research project for reporting extractive activities

• Results presented at the 5th Group of Experts Meeting April 2008
Draft Revised UNFC

- **Section 1 - Scope**
  Fossil energy and mineral resources classified to help energy and mineral studies, government resource management, business process management and financial reporting

- **Section 2 – Categories reflect real restrictions in:**
  - The social and economic domain
  - The technical and industrial domain
  - The geological domain

- **Section 3 – A simple core**

- **Section 4 – Expansion to meet common needs**

- **Section 5 – Expansion to meet local needs**

- **Section 6 – Maintenance**

- **Annexes 1 and 2: Definition of categories and subcategories**
Section 2
Section 3: Abbreviated version of UNFC, showing primary classes

<table>
<thead>
<tr>
<th>Total commodity initially in place</th>
<th>Past Production</th>
<th>Sales Production</th>
<th>Non-sales Production&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future recovery by commercial development projects or mining operations</td>
<td>Commercial Projects&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Class</td>
<td>Categories</td>
</tr>
<tr>
<td>Potential future recovery by contingent development projects or mining operations</td>
<td>Potentially Commercial Projects&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
<td>2&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Non-Commercial Projects&lt;sup&gt;5&lt;/sup&gt;</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Additional quantities in place associated with known deposits&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Exploration Projects</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Potential future recovery by successful exploration activities</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> Future non-sales production is categorized as E3.1. Resources that will be extracted but not sold can exist for all classes of recoverable quantities. They are not shown in the figure.

<sup>2</sup> G categories may be used discretely, particularly when classifying solid minerals and quantities in place, or in cumulative form (e.g. G1+G2), as is commonly applied for recoverable fluids.

<sup>3</sup> Commercial Projects have been confirmed to be technically, economically and socially feasible. Recoverable quantities associated with Commercial Projects are defined in many classification systems as Reserves, but the term Reserves is widely misunderstood.

<sup>4</sup> Potentially Commercial Projects are expected to be developed in the foreseeable future, in that the quantities are assessed to have reasonable prospects for eventual economic extraction, but technical and/or commercial feasibility has not yet been confirmed. Consequently, not all Potentially Commercial Projects may be developed.

<sup>5</sup> In some cases, Potentially Commercially Projects may satisfy the requirements for E1.

<sup>6</sup> Non-Commercial Projects include those that are at an early stage of evaluation in addition to those that are considered unlikely to become technically and commercially feasible developments within the foreseeable future.

<sup>7</sup> A portion of these quantities may become recoverable in the future as commercial circumstances change or technological developments occur. Depending on the commodity type and recovery technology (if any) that has already been applied, some or all of these quantities may never be recovered due to physical and/or chemical constraints.
### Section 4: UNFC Classes and Sub-Classes Defined by Sub-Categories

<table>
<thead>
<tr>
<th>Class</th>
<th>Sub-class</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-sales Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial Projects</td>
<td>On Production</td>
<td>1 1.1 1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Approved for Development</td>
<td>1 1.2 1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Justified for Development</td>
<td>1 1.3 1, 2, 3</td>
</tr>
<tr>
<td>Potentially Commercial Projects</td>
<td>Development Pending (economic)</td>
<td>1 1.2 1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Development Pending (marginal)</td>
<td>2 2.1 1, 2, 3</td>
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<tr>
<td></td>
<td>Development On Hold</td>
<td>2 2.2 1, 2, 3</td>
</tr>
<tr>
<td>Non-Commercial Projects</td>
<td>Development Unclarified</td>
<td>3.2 2.2 1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>Development Not Viable</td>
<td>3.3 2.3 1, 2, 3</td>
</tr>
<tr>
<td>Known Deposit</td>
<td>Additional quantities in place</td>
<td>3.3 4 1, 2, 3</td>
</tr>
<tr>
<td>Total commodity initially in place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Deposit</td>
<td>Exploration Projects</td>
<td>3.2 3 4</td>
</tr>
<tr>
<td></td>
<td>Additional quantities in place</td>
<td>3.3 4 4</td>
</tr>
</tbody>
</table>

1 Generic sub-classes have not been defined here, but it is noted that in petroleum the terms Prospect, Lead and Play are commonly adopted.