SEEA classifications of energy resources

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Two dimensions are relevant for SEEA:

1) Classification by type of energy resource: Coal, oil, gas, etc.
   SEEA 2003:
   EA.1 Natural resources

   **EA.11 Mineral and energy resources**
   EA.111 Fossil fuels
   EA.112 Metallic minerals
   EA.113 Non-metallic minerals

   EA.12 Soil resources
   EA.13 Water resources
   EA.14 Biological resources

2) Classification by "quality"/uncertainty:
   SEEA 2003: Reference to proven, probable and possible reserves
   (McKelvey type classification)

   SNA 2008: 12.17 ...sub-soil assets are defined as those proven subsoil
   resources ... that are economically exploitable, given current technology and
   relative prices.
Classification by type of energy resource:

New overall asset classification of EA.11 Mineral and energy

<table>
<thead>
<tr>
<th>EA.1</th>
<th>Natural Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA.11</td>
<td>Mineral and energy resources</td>
</tr>
<tr>
<td>EA.111</td>
<td>Petroleum resources</td>
</tr>
<tr>
<td>EA.111.1</td>
<td>Natural gas (including NGL and condensate)</td>
</tr>
<tr>
<td>EA.111.2</td>
<td>Crude Oil</td>
</tr>
<tr>
<td>EA.111.3</td>
<td>Natural bitumen, extra heavy oil, shale oil, sand oil and others n.e.c.</td>
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<tr>
<td>EA.112</td>
<td>Non-metallic minerals and solid fossil energy resources</td>
</tr>
<tr>
<td>EA.112.1</td>
<td>Non-metallic minerals except coal and peat</td>
</tr>
<tr>
<td>EA.112.2</td>
<td>Coal</td>
</tr>
<tr>
<td>EA.112.3</td>
<td>Peat</td>
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<tr>
<td>EA.113</td>
<td>Metallic minerals</td>
</tr>
<tr>
<td>EA.113.1</td>
<td>Uranium ores</td>
</tr>
<tr>
<td>EA.113.2</td>
<td>Other metallic minerals</td>
</tr>
<tr>
<td>EA.12</td>
<td>Soil resources</td>
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<tr>
<td>EA.13</td>
<td>Water resources</td>
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</tbody>
</table>
International Energy Agency (IEA)
Oil shale production and direct use should be covered under coal. The production of shale oil (secondary product) is covered under oil.

UNSD Energy Statistics Section
Oil Shale: A sedimentary rock containing a high proportion of organic matter (kerogen), which can be converted to crude oil or gas by heating.

World Resouces Institute:
Unconventional oil—which includes tar sands, heavy oil, bitumen, or shale oil—refers to any type of crude-like resource that does not flow easily and is hence difficult to produce.
“The Oil and Gas Journal reclassified 174 billion barrels of Canadian oil sands to “established reserves” in 2002, catapulting the country to second behind Saudi Arabia in terms of total petroleum reserves”.

World Energy Council: “The total world resource of shale oil is estimated at 2.8 trillion barrels”
Classification by asset characteristics

New SEEA classification based on the UNFC abbreviated classification

**UNFC:** United Nations Framework Classification for Fossil Energy and Mineral Resources

**Why include such a classification:**
- Adds information on the “quality” of the resources
- Helps determine which part of the resources should be subject for monetary valuation
UNFC 2008 and SEEA

UNFC 2008 abbreviated classification:

**Known deposits:**
- Commercial projects
- Potentially commercial projects
- Non-commercial projects
- Additional quantities in place

**Potential deposits:**
- Exploration projects
- Additional quantities in place

Suggested SEEA assets classification:

- Commercial recoverable resources
- Potentially commercial recoverable resources
- Non-Commercial and Other Known Deposits
- Not included
### Definition of the classes

#### Table 2  SEEA mineral and energy classification by resource characteristics

<table>
<thead>
<tr>
<th>Classes</th>
<th>E: Economic and social viability</th>
<th>F: Field Project Status and Feasibility</th>
<th>G: Geological knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Commercial Projects</td>
<td>E1. Extraction and sale has been confirmed to be economically viable.</td>
<td>F1. Feasibility of extraction by a defined development project or mining operation has been confirmed.</td>
<td></td>
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<td></td>
<td>or</td>
<td>or</td>
<td>or</td>
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<tr>
<td>B. Potential Commercial Projects</td>
<td>E1. Extraction and sale has been confirmed to be economically viable.</td>
<td>F2.1 Project activities are ongoing to justify development in the foreseeable future. or F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay.</td>
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<tr>
<td></td>
<td>or</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td>C. Non-Commercial Projects and Other Known Deposits</td>
<td>E1. Extraction and sale has been confirmed to be economically viable.</td>
<td>F2.3 There are no current plans to develop or to acquire additional data at the time due to limited potential. or F4. No development project or mining operation has been identified.</td>
<td></td>
</tr>
</tbody>
</table>

**Potential deposit (not included in SEEA-E):**

| Exploration Projects | E3. Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability. | F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay. | |
| Additional Quantities in Place | E3. Extraction and sale is not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability. | F3. Feasibility of extraction by a defined development project or mining operation cannot be evaluated due to limited technical data. or F4. No development project or mining operation has been identified. | |

**UNFC - 2008 categories:**

- **G1 + G2 = Moderate/best estimate**
- **G1 + G2 = High level of confidence**
- **G1 = High level of confidence**
- **G2 = Moderate level of confidence**
- **G3 = Low level of confidence**
- **G4 = Estimated quantities associated with a potential deposit, based primarily on indirect evidence (G4).**
Mapping of national classifications against abbreviated UNFC/SEEA

• Should not cause big problems due to the high level of aggregation

Generally, the moderate (best) estimate of Commercial Recoverable resources can be obtained by selecting the proved and probable reserves from the e.g. CRIRSCO and SPE-RPMS classification.

• Mapping schemes worked out by the UNFC Ad Hoc Group of Experts
Next steps:

UNFC 2009 is currently being finalised by the UNECE Group of Experts on Harmonization of Fossil Energy and Mineral Resources Terminology

Align SEEA classification with SEEA 2009
Questions

1) Do you agree with the classification of energy resources within the classification of natural resources presented in table 1?

2) Do you agree in principle with the SEEA classification by resource characteristics presented in table 2 (subject to the finalisation of UNFC 2009).