IMPLEMENTING UNF C2009 FOR GOOD MINERAL RESOURCE MANAGEMENT IN MADAGASCAR

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MADAGASCAR
MINERAL RESOURCES OF MADAGASCAR

LOCATION MAP

MINERAL POTENTIAL OF MADAGASCAR
MINERAL RESOURCES CLASSIFICATION IN MADAGASCAR
(Ref: Chambre des mines de Madagascar – 2015)

• **Construction materials:** sand, clay, marble, granite, limestone.
• **Industrial minerals:** iron, chromium, manganese, vanadium, zirconium, titanium, graphite.
• **Metals:** cooper, iron, lead, tin, cobalt, nickel.
• **Precious metals:** gold, silver, platinum.
• **Gemstones:** sapphire, ruby, beryllium, quartz, topaz.
• **Energy minerals:** coal, uranium.

« The most attractive substances for foreign direct investors are nickel – cobalt (Ambatovy project, in production) and ilmenite – dioxide of titanium (Fort – Dauphin project, in production since 2009). However, other resources are in exploration such as coal, iron, graphite and limestone » Source: EITI report: audit and reconciliation of payments made by extractive industries and the Malagasy Government and state revenues - 2010
### 02 Examples of Mining Deposits in Madagascar for Easy Application of UNFC 2009: Commercial Project on Production

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Location</th>
<th>Status</th>
<th>Project Details</th>
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</thead>
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| **Nickel – cobalt (METALS)** | Ambatovy                   | On production      | - Lateritic ore deposits;  
- Extraction method: open pit;  
- Annual design capacity: 60,000 t/year of refined nickel and 5,600 t/year of cobalt;  
- Mine life estimation: 29 years;  
- Commissioning and start-up of the plant facilities were completed in 2012.  
- Commercial production reached on 2014: for the full year 2014, Ambatovy produced 14,821 tons (40% basis) of finished nickel;  
- Estimated capital costs of project (investment decision December 2010): $4.76 billion |
| **Ilmenite (INDUSTRIAL MINERALS)** | Fort – Dauphin, Mandena ore deposits | On production | - Heavy mineral sands deposits;  
- Extraction method: floating separation unit (floating dredge);  
- Annual design capacity: Some 750,000 tons of ilmenite (grade of 60% titanium dioxide TiO₂) and 60,000 tons of Zirsill (a mixture of zircon and sillimanite);  
- Mine life estimation: 40 years;  
- Earliest production: 2009;  
- Estimated capital costs of project (investment decision August 2005): $ 1.1 billion |
MINING SECTOR CHALLENGES TO SUSTAIN MINERAL RESOURCES MANAGEMENT:
(Chambre des Mines 2015)

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<tr>
<th>CHALLENGE</th>
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<td>Stability of tax and regulatory framework</td>
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<td>Land security for exploration areas</td>
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<td>Infrastructure development all around exploration areas</td>
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<td>Implementation of energy sources</td>
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<td>Project environmental compatibility</td>
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<td>Local content promotion</td>
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<td>Profitable project for communities</td>
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OBJECTIVES BY IMPLEMENTING UNFC 2009 IN MADAGASCAR

• TO SIMPLIFY COMMUNICATION BY USING THE SAME LANGUAGE;
• TO IMPROVE DATABASE MANAGEMENT;
• TO PROMOTE MINERAL RESOURCES;
• TO EASE CONTROL AND AUDIT OF COMPANIES ACTIVITIES.
BARRIERS

• LACK OF INFORMATION ON NON EXPLORED AREAS;
• APPLICATION FOR SMALL MINES;
HOW TO PROCEED?

• CREATION OF A COMMISSION GROUPING ALL CONCERNED ENTITIES;
• INFORMATION / COMMUNICATION AS NEW WORKING TOOL;
• APPLICATION;
• EVALUATION;
• EXPERT ADVICE WILL BE WELCOME.
THANK YOU FOR YOUR ATTENTION