MINING SECTOR OF UKRAINE: REVIEW AND MODERNIZATION PLANS

By Olena Grankina
AGENDA

- Iron ore
- Manganese ore
- Coal
UKRAINE POSSESSES THE LARGEST IRON ORE RESERVES IN THE WORLD

Iron ore reserves, 2010, bln tonnes

Production of iron ore, 2010, mln tonnes

Euromonitor
IRON ORE RESERVES

- 30 billion tons – confirmed iron ore reserves
- 20% of world reserves
  (1st place by reserves, 6th place by production)
- 53 deposits
- 24 in operation
- Content of iron 45%-68%

www.ukrrudprom.com/
IRON ORE BASINS AND AREAS LOCATED IN THE SOUTH-EASTERN PART OF UKRAINE

- 1 – Kremenchug (2 deposits), content of iron 27-59%
- 2 - Krivoy Rog (21 deposits), content of iron 30-67%
- 3 – Biloziirske (1), content of iron 61%
- 4 – Kerch, deposits are conserved, content of iron 28.4%

http://geoknigi.com/
MOST OF THE MINES ARE DEEP OPEN PITS AND UNDERGROUND MINES, REACHING DEPTHS OF 1000 M

Open pit

1. OJSC Yuzhnyy ODPE*, Krivoy Rog Basin
2. OJSC Tsentralnyy ODPE, Krivoy Rog Basin
3. OJSC Severnyy ODPE, Krivoy Rog Basin
4. OJSC Inguletskiy ODPE, Krivoy Rog Basin
5. ArcelorMittal, Krivoy Rog
6. OJSC Poltavskiy ODPE, Kremenchug Area

Underground

1. OJSC Kryvorozhskiy Iron Ore Plant, Krivoy Rog Basin
2. OJSC Sukhaya Balka, Krivoy Rog Basin
3. ArcelorMittal, Krivoy Rog Basin
4. Zaporozhskiy Iron Ore Plant, Bilozirske Area

*ODPE – Ore dressing and processing enterprise

www.ukrrudprom.com
IRON ORE PRODUCTION PICKS UP AFTER RECESSION

US Geological Survey
IRON ORE PRODUCTION BY ORE DRESSING AND PROCESSING ENTERPRISES

Iron ore nonsintered

- OJSC Kryvorozhskiy Iron Ore Plant: 17%
- Zaporozhskiy Iron Ore Plant: 27%
- OJSC Sukhaya Balka: 22%
- ArcelorMittal: 14%

Iron ore concentrate

- OJSC Inguletskiy ODPE: 23%
- OJSC Severnyy ODPE: 14%
- OJSC Poltavski ODPE: 10%
- OJSC Yuzhnyy ODPE: 14%
- ArcelorMittal: 17%

Iron ore agglomerate

- OJSC Yuzhnyy ODPE: 100%

Iron ore pellets

- OJSC Severnyy ODPE: 41%
- OJSC Poltavski ODPE: 49%
KRIVIY RIH, SEVERNYY ORE DRESSING AND PROCESSING ENTERPRISE
IRON ORE MARKET IS MOSTLY UNDER PRIVATE SECTOR CONTROL

Ore dressing and processing enterprise (ODPE)

Tsentralsnyy

Inguletsky

Severnnyy

Kryvorizhsky

Poltavsky

Krivyy Rih MBP of Oxidated Ores

Yuzhnyy

Sukhaya Balka

Ukrainian State
IRON ORE PLANTS (IOP) OWNERSHIP

- Kryvorizhskyy
- Zaporizhskyy
- Kamyshev-Burunskyy (not functioning)
- KSK Consulting
- www.ukrrudprom.com
PRIVATISATION PLANS OF THE LAST STATE ASSET WITHIN IRON ORE PRODUCTION

**Time:** by the end of 2011 in case of full repayments to the previous investors

**Expected Results:** KGOKOR will add 34% to Ukraine’s total export volumes of iron ore

**Krivoy Rih Mining and Beneficiation Plant of Oxidated Ores - KGOKOR**

**Key Candidates:** ArcelorMittal, Evraz and the tandem of Smart and Metinvest

**Required Investments:** KGOKOR is about 70% completed and requires more than USD 800 m in investments to finish construction and start operations

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A NUMBER OF IRON ORE DEVELOPMENT PROJECTS ARE PLANNED BY UKRAINIAN FERREXPO

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Poltavskiy ODPE</th>
<th>Poltavskiy ODPE</th>
<th>Yeristovo deposit</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project description</td>
<td>Extension of the current pit</td>
<td>Upgrade of the existing concentrator facilities</td>
<td>Development of a new pit, construction of new processing facilities and a pellet plant</td>
<td>100% replacement of vehicle fleet</td>
</tr>
<tr>
<td>Project goal</td>
<td>Extending the useful life of the pit to 2038, increasing the mining capacity by 25% to 35mtpa</td>
<td>Increase of 65% Fe pellets share from 50% to 100% in the total sales</td>
<td>Achieving new production capacity of 28mtpa of iron ore, 10mtpa of concentrate and 7.5mtpa of pellets</td>
<td>Purchase of 77 dump trucks and 45 excavators</td>
</tr>
<tr>
<td>Capex MUSD</td>
<td>168</td>
<td>212</td>
<td>1500</td>
<td>350-380</td>
</tr>
<tr>
<td>Timeline</td>
<td>Q1 2013</td>
<td>End of 2014</td>
<td>2015</td>
<td>2014</td>
</tr>
</tbody>
</table>

Source: FERREXPO
METINVEST HOLDING HAS EARMARKED HALF A BILLION USD FOR ITS IRON ORE DEVELOPMENT PROJECTS

<table>
<thead>
<tr>
<th>ODPE Name</th>
<th>Investment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severnyy ODPE</td>
<td>USD 322.5 m</td>
<td>• Reconstruction of indurating machines;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Modernization and an integrated automation of the processing plant;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Construction of conveyor ore transportation at Pervomaisky open pit;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Purchase of major mining equipment</td>
</tr>
<tr>
<td>Inguletskiy ODPE</td>
<td>USD 168.8 m</td>
<td>• The launch of the second line of the complex of magnetic floatation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>concentration;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Integrated automation of the enrichment processing;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Environmental projects implementation</td>
</tr>
<tr>
<td>Tsentralny ODPE</td>
<td>USD 11.3 m</td>
<td>• Slime facilities development;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Construction of a new crushing and handling complex</td>
</tr>
</tbody>
</table>

Source: www.metinvestholding.com
EVRAZ GROUP AND SMART HOLDING PLAN TO INVEST 133 MUSD INTO THEIR IRON ORE DEVELOPMENT IN 2011

Current planned activities at Yuzhniy ODPE:

<table>
<thead>
<tr>
<th>Description of investment</th>
<th>Value of investment  MUSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital construction of infrastructure facilities</td>
<td>24.4</td>
</tr>
<tr>
<td>Overhaul (major repair of equipment)</td>
<td>17.4</td>
</tr>
<tr>
<td>Current repairs</td>
<td>27.4</td>
</tr>
<tr>
<td>Purchase of new equipment</td>
<td>3.5</td>
</tr>
<tr>
<td>Purchase of new equipment to replace worn-out</td>
<td>17</td>
</tr>
<tr>
<td>Major repairs of buildings</td>
<td>8.3</td>
</tr>
<tr>
<td>Construction of a cyclic-carrier</td>
<td>3</td>
</tr>
<tr>
<td>Introduction and development of IT-technologies</td>
<td>1.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Long-term projects</th>
<th>Value of investment  MUSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewed construction of cyclic-continuous ore delivery line</td>
<td>28.5</td>
</tr>
<tr>
<td>Repair of ore production and preparation plant.</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: www.ugok.info
CAPEX OF ARCELORMITTAL KRIVIY RIH INTO IRON ORE DEVELOPMENT WILL EXCEED 400 MUSD

Long-term projects on modernization and environment protection activities are under implementation. Modernization program of 2010 included:

<table>
<thead>
<tr>
<th>Description of investment</th>
<th>Value of investment MUSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconstruction of crushing plants</td>
<td>41</td>
</tr>
<tr>
<td>Construction of new horizon – 1135 m</td>
<td>62</td>
</tr>
<tr>
<td>Capital repair of the blast-furnace No.6 with introduction of environment protection activities</td>
<td>107</td>
</tr>
<tr>
<td>Gas cleaning of the converter shop</td>
<td>118</td>
</tr>
<tr>
<td>Construction of packaging line at light-section mills No 2,4</td>
<td>20</td>
</tr>
</tbody>
</table>

In 2011 the continuation of the main projects and initiation of the new projects:

- Implementation of innovative hydro-hybrid filter technology
- Comprehensive renovation of gas cleaning equipment
- Start up of 1.2 million mt capacity first continuous billet caster and ladle furnace

AMBITIOUS DEVELOPMENT PLANS BY EVRAZ GROUP AND DONETSKSTAL

Evraz Group (Sukhaya Balka)

- In 2011 plan to finish construction of crushing and bunker complex at 1500 m horizon

Donetskstal

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Construction of Vasinovsky Ore Dressing and Processing Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project goal</td>
<td>Achieving new production capacity of 20mtpa of iron ore</td>
</tr>
<tr>
<td>Capex USD</td>
<td>USD 1.0 bln</td>
</tr>
<tr>
<td>Timeline</td>
<td>2017</td>
</tr>
</tbody>
</table>

Investment Capital Ukraine, www.steelorbis.com/
AGENDA

- Iron ore
- Manganese ore
- Coal
UKRAINE IS SECOND IN THE WORLD BY PRODUCTION OF MANGANESE ORE

- 2.4 billion tons – proven reserves of manganese ore
- 75% of the CIS reserves, 86% of the CIS production
- 2nd in the world by total reserves, 1st – by proved reserves
- The types of manganese ore produced in Ukraine include carbonate, oxide-carbonate and oxide ores

Source: www.infomine.com
MANGANESE ORE DEPOSITS ARE LOCATED IN THE SOUTHERN PART OF UKRAINE

Average content of manganese in Ukraine - 24%

For comparison:
- Australia – 41%,
- SAR – 45%,
- Gabon – 50%,
- Brazil – 41%,
- India - 43%

Nikopol’skiy manganese ore basin includes:
- Nikopolskiy deposit (33% of reserves) - the main deposit of manganese ore
- Velikotokmaskiy deposit (67% of reserves) – is not quarried

1 – Nikopol’skiy manganese ore basin

Source: http://geoknigi.com/
MANGANESE ORE PRODUCTION IS UNDER CONTROL OF UKRAINIAN BUSINESS GROUP ‘PRIVAT GROUP’

The Privat Group is an influential business group in Ukraine grouped around the Privatbank. The group is controlled by the Ukrainian businessmen Henadiy Boholyubov, Oleksiy Martynov, and Ihor Kolomoysky (the latter being the leading partner, best known to public). Privat controls nearly 20% of the world ferroalloy market.

- Marganetskyy ODPE (5 mines, 2 open pits)
  - 80% extraction - underground
  - 20% extraction – open pit
- Ordzhenikidze ODPE
  - 100% extraction – open pit
- Tavricheskiy ODPE was conserved in 1995

http://etender.in.ua
MANGANESE ORE PRODUCTION IN UKRAINE

Source: Ukrrudprom, infgeo.ru
Ordzhonikidze Ore Dressing and Processing Enterprise produces 70% of manganese ore in Ukraine.

Main product is manganese concentrate of different sorts with content of pure manganese 26%-43%.

In 2011 the total amount of USD 25 m is spent for:

- Reconstruction of processing plant
- Repair of all railway tracks

Source: www.nikstrade.com
AGENDA

- Iron ore
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UKRAINE IS SIXTH IN THE WORLD BY COAL RESERVES AND THIRTEENTH BY COAL PRODUCTION

Share of world coal reserves, %, 2010

- USA: 28.8%
- Russia: 9.2%
- China: 7.2%
- Australia: 7.2%
- India: 4.1%
- Ukraine: 19%

Production of coal, mln tonnes, 2010

- China: 3240 mln tonnes
- USA: 985 mln tonnes
- India: 570 mln tonnes
- Australia: 423 mln tonnes
- Indonesia: 317 mln tonnes
- South Africa: 306 mln tonnes
- Germany: 254 mln tonnes
- Poland: 182 mln tonnes
- Kazakhstan: 133 mln tonnes
- Turkey: 111 mln tonnes
- Colombia: 85 mln tonnes
- Ukraine: 74 mln tonnes

Source: Statistical review of world energy
UKRAINE HAS SUBSTANTIAL COAL RESERVES

- Total reserves: 117.12 bn tons
  - Including:
  - 56.25 bn tons – proved reserves
    - Including:
    - 17.21 bn tons of coke (30.6%)
    - 7.6 bn tons of anthracite (13.5%)

Source: The State Energy Strategy
WORKING CONDITIONS OF COAL EXTRACTION ARE VERY COMPLICATED

-- 90% of beds are dangerous in terms of the gas,
-- 60% are dangerous due to possible explosion of coal dust,
-- 30% are dangerous due to spontaneous coal combustion

Source: Ministry of Coal Industry, State Statistics Committee
28 WORKERS WERE KILLED IN A JULY 29 METHANE GAS EXPLOSION AT SUKHODILSKA-SKHIDNA COAL MINE

Statement by owner of the mine billionaire Rinat Akhmetov

- He is taking under his personal control the maximum possible outfitting Sukhodilska-Skhidna coal mine, and all the other coal mines that are the part of the System Capital Management (SCM) Group, with the most modern equipment, which provides for maximum safety.

- All profit that SCM incurred in 2010 (USD 464.5 million), according to the shareholder’s decision will be spent on the development and modernization of production.

- This year USD 1.75 million will be invested into safety at Sukhodilska-Skhidna coal mine.

- Last year, USD 99.7 million (62.6% higher than in 2009) were spent on labour protection and industrial safety.
EU HAS INVESTED 10 BILLION EUROS IN THREE YEARS TO THE COAL INDUSTRY RESTRUCTURING PROJECT IN UKRAINE

Occupational safety and investments defined as basis for development of coal industry

Project Manager Wojtek Mlodzeevsky named the following main objectives of the project:

- Supporting the development and implementation of reforms in the coal sector
- Improving work safety and environmental safety
- Assistance in privatization and closure of mines and related social problems
- Spreading of the new technology and modern thinking in the coal industry

For us, it is essential that the project had been able to improve the management of Ukrainian mining safety work. Together with our European colleagues we have analyzed the Ukrainian realities, developed necessary recommendations, and, under our supervision, these recommendations were already implemented at some mines. In particular, coal mines “Dolzhanskaya-Capital” and “Krasnolimanskaya” now work according to the international safety standards

Mr. Igor Yatsenko, Ministry of Energy and Coal Industry of Ukraine

Source: www.epravda.com.ua
UKRAINE HAS TWO BLACK COAL BASINS: LVIV-VOLYN AND DONBASS

- Up to 100% is underground exploration
- Open Pits – illegal production, “kopanky”
- The average depth of the coal beds – 720 m
- Up to 20% of mines operating at a depth of 1000-1400 m

1 – Lviv-Volyn basin
2 – Donetsk basin (Donbass)
COAL PRODUCTION HAS REDUCED SINCE UKRAINE BECAME INDEPENDENT

Source: Statistical Review of World Energy
THERE ARE ABOVE 138 STATE-OWNED MINES AND NEARLY 20 LARGE PRIVATE MINES IN UKRAINE

Main players in coal extraction sector

State-owned mines
87% by number
51% by production

Private mines
13% by number
49% by production

Ministry of Energy and Coal Industry

DTEK (SCM)
24% of coal market of Ukraine

Small private mines

Control over mines’ management

Leasing or concession

Private business

Source: Institute of Economic and Political Research
PRIVATIZATION AND CONCESSION

- According to the state programme of reforms of the coal industry for 2010-2014 privatization should take place in 2011-2012.

- The Ministry of Coal Industry of Ukraine has already chosen 84 mines liable for privatization, which extracted 88% of coal in the state sector in 2010.

- However, currently the Ministry of Energy and Coal Industry is working on draft law on mines concessions.

- Therefore, current trend is focus on concession, not on privatization.

- In April 2011 two Ukrainian coal companies - Sverdlovantrasit and Roven’kiantrasit were granted for concession to DTEK (SCM), which is supposed to invest 42 mln Euro into mines development. Concession of these mines was granted for 20 years.

Source: Cabinet of Ministers of Ukraine, Ukrrudprom
## PLANNED INVESTMENTS TO THE STATE-OWNED MINES 1/2

<table>
<thead>
<tr>
<th>Company</th>
<th>Name of mine</th>
<th>Capex required USD m</th>
<th>Investment period, year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>technical re-equipment</td>
<td>capital construction</td>
</tr>
<tr>
<td>DUEK</td>
<td>Yuzhnodonbasskaya № 3 Shahtoupravlenie</td>
<td>5,7</td>
<td>52,4</td>
</tr>
<tr>
<td></td>
<td>Yuzhnodonbasskoe № 1</td>
<td>75,5</td>
<td>23,6</td>
</tr>
<tr>
<td>Makeevugol</td>
<td>Kirova</td>
<td>31,1</td>
<td>28,7</td>
</tr>
<tr>
<td></td>
<td>Bazhanova</td>
<td>9,0</td>
<td>39,3</td>
</tr>
<tr>
<td>Krasnoarmeiskugol</td>
<td>Stahanova</td>
<td>61,1</td>
<td>17,4</td>
</tr>
<tr>
<td></td>
<td>Krasnolimanskaya</td>
<td>15,5</td>
<td>23,0</td>
</tr>
<tr>
<td>Selidovugol</td>
<td>№ 1-3 Novgrodivskaya</td>
<td>26,8</td>
<td>25,7</td>
</tr>
<tr>
<td></td>
<td>Russia</td>
<td>17,9</td>
<td>23,0</td>
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<tr>
<td>Dobropol'eugol</td>
<td>Biletskaya</td>
<td>16,4</td>
<td>4,9</td>
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<td></td>
<td>Pioneer</td>
<td>13,8</td>
<td>22,0</td>
</tr>
<tr>
<td>Shahterskantratsit</td>
<td>Shahtoupravlenie &quot;Shahterskoe-Glubokoe&quot;</td>
<td>4,9</td>
<td>11,4</td>
</tr>
</tbody>
</table>

Source: Ukrrudprom
## PLANNED INVESTMENTS TO THE STATE-OWNED MINES 2/2

<table>
<thead>
<tr>
<th>Company</th>
<th>Name of mine</th>
<th>Capex required USD m</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>technical re-equipment</td>
<td>capital construction</td>
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<tr>
<td>Torezantratsit</td>
<td>Progress</td>
<td>18,2</td>
<td>7,7</td>
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<tr>
<td>Luganskugol</td>
<td>Shahtoupravlenie ‘Lugansk’</td>
<td>29,4</td>
<td>12,6</td>
</tr>
<tr>
<td></td>
<td>Nikanor-Nova</td>
<td>25,6</td>
<td>15,3</td>
</tr>
<tr>
<td>Pervomayskugol</td>
<td>Gorskaya</td>
<td>13,7</td>
<td>6,2</td>
</tr>
<tr>
<td>JSC Lisichanskugol</td>
<td>Melnikova</td>
<td>14,6</td>
<td>192,1</td>
</tr>
<tr>
<td></td>
<td>Partisanskaya</td>
<td>34,8</td>
<td>19,8</td>
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<tr>
<td>Anthrasyt</td>
<td>Komsomolskaya</td>
<td>47,4</td>
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<td></td>
<td>Frunze</td>
<td>8,3</td>
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<td>Rovenkianthrasyt</td>
<td>Vahrusheva</td>
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<tr>
<td>Sverdlovantratsyt</td>
<td>Dolzhanskaya-Capitalnaya</td>
<td>8,4</td>
<td>7,5</td>
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<tr>
<td>Lvovugol</td>
<td>Stepova</td>
<td>18,7</td>
<td>10,8</td>
</tr>
</tbody>
</table>
DTEK IS THE LARGEST PRIVATELY-OWNED VERTICALLY-INTEGRATED ENERGY COMPANY IN UKRAINE

Coal assets in Ukraine

- Pavlogradugol (10 mines)
- Dobropolyeugol (5 mines)
- Komosomolets Donbassa
- Sverdlovantrasit (5 mines)
- Roven’kiantrasit (5 mines)

5 Coal Preparation Plants:
- Pavlogradskaya
- Kurakhovskaya
- Dobropolskaya
- Oktyabrskaya
- Mospinskoye

Purchase assets in Ukraine

Ukraine is a core market. The company is interested in enterprises, which produce gas coals. In particular, Dobropolyeugol (is now leased by DTEK) and also non-bituminous coal groups, which the company would like to fill in

Purchase assets abroad

In medium-term DTEK interested in buying assets in Rostov Region (Chikh Mine)

Investments

Investments in energy assets are planned at level of USD 20 bn till 2030, including USD 6 bn during next 5 years, including USD 1.5 bn in coal

Source: www.scm.com.ua
DTEK – VERTICAL INTEGRATION MODEL

Source: www.dtek.com
SADOVAYA GROUP – THE FIRST MINING COMPANY WHICH HAS MADE LISTING ON THE WARSAW STOCK EXCHANGE

Company sold 25% of shares for 30.4 mln USD

Project Name

Modernization and development of existing mines Sadovaya and Rassvet-1. The group intends to increase operating capacities and productivity at its current mines and to mechanize coal extraction following the installation of modern mining equipment

Construction of two coal enrichment complexes to process the group’s coal waste deposits

Acquisition and development of the Roskoshniy and Krasnoluchskaya Severnaya coal deposits. The group expects to complete the acquisition in 2011. After the acquisition of these two deposits, the group’s total coal resources will increase from 23.1 million tonnes to 122.2 million tonnes

Source: http://ukrainian-energy.com
The main activities of the program are meant to bring the following benefits to the Swedish companies:

• Company/product/trademark promotion & marketing among selected and targeted audience including local relevant businesses, project owners, municipal and regional authorities

• Exhibition of particular products/solutions

• Presentation at the business forum including sector-specific workshops (Mining & Industrial equipment/solutions, smart energy use, infrastructure, cleantech, other)

• B2B meetings with partners/potential partners/potential customers in the region in accordance with specifications and format developed jointly by Your company and STC in the course of preparation of the event