



European Mining Business Forum 2016
Bulgaria, Sofia, 13 Sep 2016

Risk management in the mining industry

Pre-requisite for sustainable development



I. Why industry dialogue is important?

II. Overview of global trends

III. Key risks

IV. Key success drivers

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Potential socio-economic impact of mining industry

Positive

- Personal income increase
 - small-scale mining employs 15m+ people (85% of industry workers) worldwide,
 - 100m+ people depend on it directly for their livelihood
- Creation of jobs and skills building for the poorest of society
- Fiscal contribution
- Local economic development – infrastructure, roads, schools, colleges, etc.
- Indirect economics impact – raw materials, vertical integration, services, etc.

Negative

- Governance and corruption issues
- Social performance
- Health, Safety, Security, Environment

Public dialogue – key to reduce negative implications

- Sound mineral regulation and licensing system
 - Improves investment climate
 - Attracts responsible private sector investments
- Closure plans ahead of the beginning of mining
 - Controls unemployment
- Social and environmental standards
 - Quality of life and tourism
- Procedures for public industry dialogue
 - Key to reduce negative implications

Who is right and who is wrong?



People say: – *Kutuzov did not have one eye*
– *How come? Kutuzov had one eye*

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New reality

1. Falling commodity prices
2. Slowdown in growth of developing markets
3. Geopolitical tensions
4. Technological progress and digitalization

1. Falling commodity prices in the last 3 years

Oil down 55%



Gold down 20%



Copper down 40%

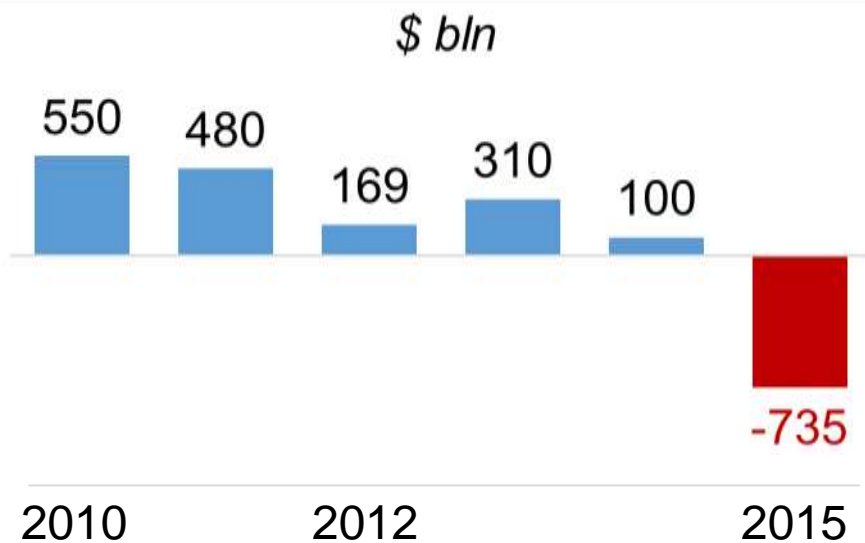


Tin down 20%

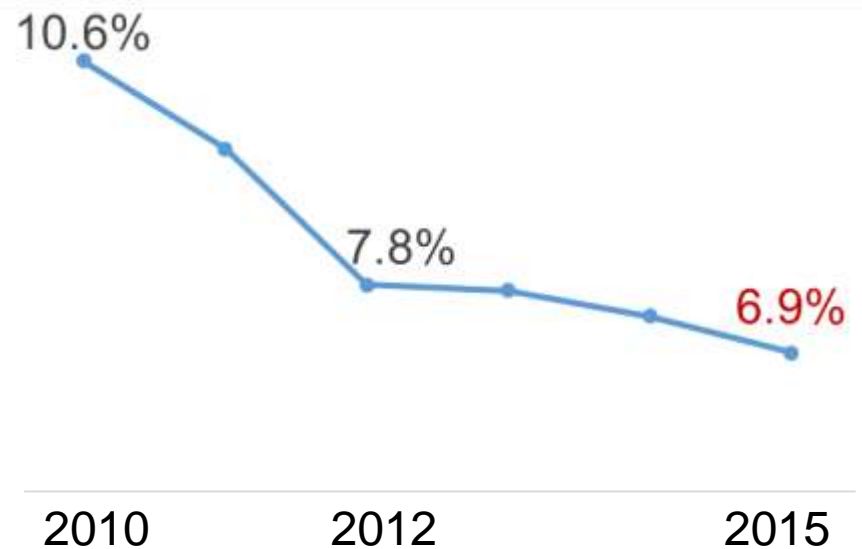


2. Slowdown of developing markets

- Capital flows to developing markets turned negative



- China is growing at historically lowest rates



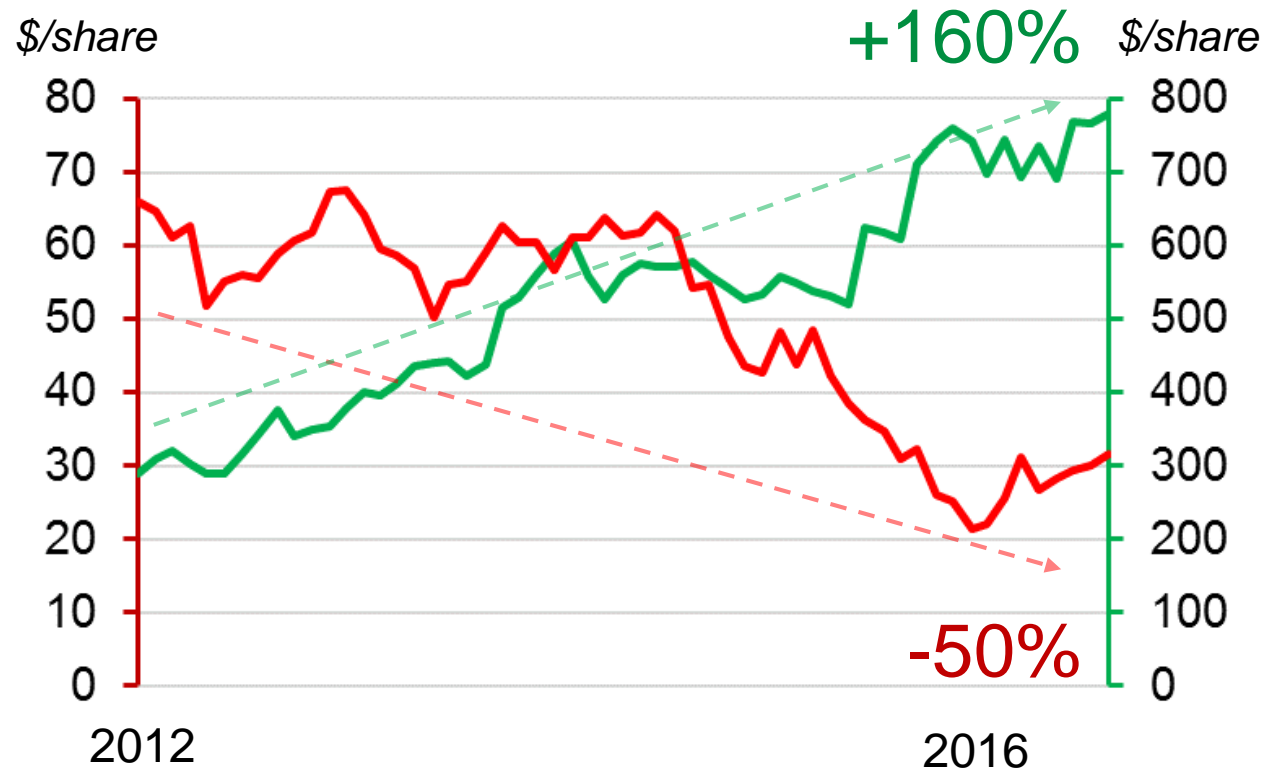
3. Geopolitical tensions

- Refugees
 - 1m people displaced p.a.
- Brexit
 - Contagion effect?
- Tensions between East and West
- Middle East, North Korea
 - Stability of supply of raw materials?

4. Technological progress and digitalization

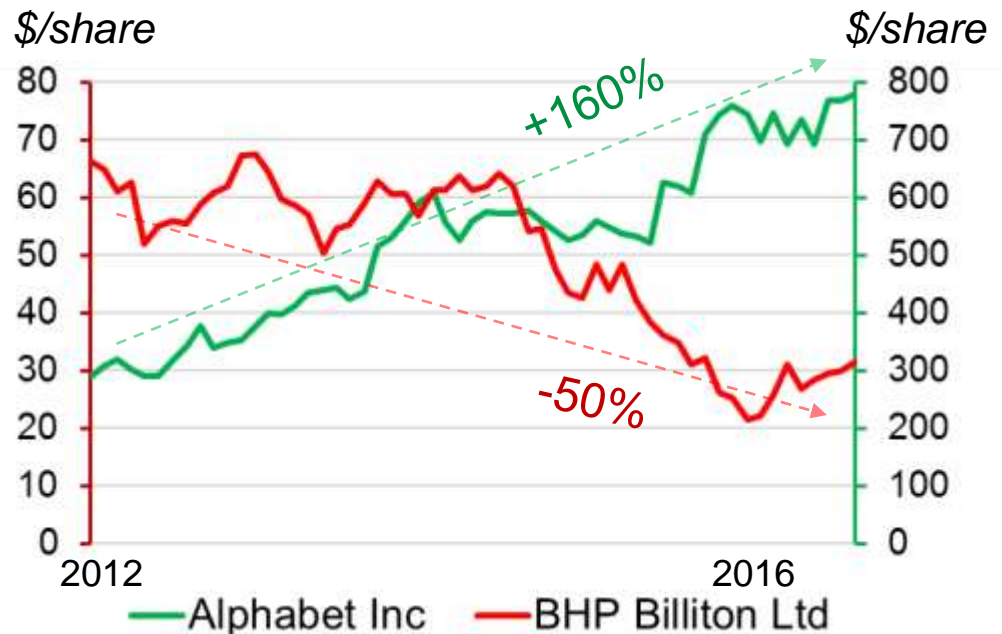
- IT era turns into digital era
 - Key breakthroughs are related to data collection and analysis
- Industry specialists collect and analyze large amounts of data:
 - Cash costs of all aluminium smelters in the world are known
 - Competitiveness of mining technologies

Winners and losers – who is who?



Traditional mining down – Data mining up

<i>Company:</i>	BHP Billiton Ltd	Alphabet Inc (former Google Inc)
<i>Industry:</i>	Traditional mining	Data mining
<i>Market cap:</i>	\$83bn	\$535bn
<i>5y share price :</i>	50% down	2.6x up
<i>Value:</i>	-\$88bn lost	+\$330bn gained



“Every morning in Africa, a gazelle wakes up. It knows it must run faster than the fastest lion, or it will be killed.

Every morning a lion wakes up. It knows it must outrun the slowest gazelle, or it will starve to death.”

African proverb

“It doesn't matter whether you are a lion or a gazelle. When the sun comes up, you better start running.”

Richard Hodgetts

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*It ain't what you don't know
that gets you into trouble.*

*It's what you know for sure
that just ain't so.*

Mark Twain

5 Key mining industry risks:

Productivity improvement

- Increase in costs due to decline in mining grades

Switch to growth

- Available resources and demand

Price and FX volatility

- Volatility of prices and FX rates

Analytics and intelligence

- Timely information management is key

Political

- Regulation, resource nationalism, sanctions, tax wars, etc.

1. Increase in costs due to decline in mining grades

Productivity improvement

Case study:

- Major copper producer mined the metal from high-grade ore and over years collected large stocks of low-grade tailing dams
- New project: re-processing of low-grade dumps, with estimated EBITDA of \$500m p.a.

Copper ore
3%+ grade



Copper

Tailing dam
1.5% grade

New re-processing project



Copper

Tailing dam

2. Available resources and decline in mining grades

Switch to growth

Case study:

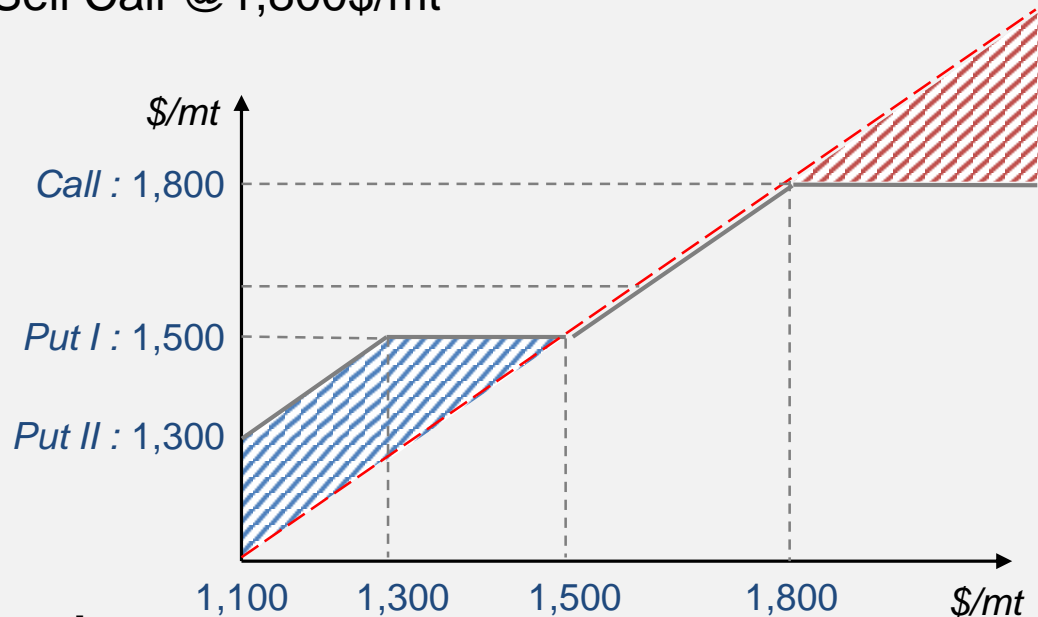
- Major gold producer started a new greenfield with estimated reserves of 32m oz., EV \$3-4bn
- Company was bought based on the above
- Trial operations yielded less gold than expected
- New geological study revealed **2x decrease** in gold reserves (by 15m oz.)
- Result:
 - Delay of project start date by several years,
 - Loss of ca. **\$1-2bn**

3. Volatility of prices and FX rates

Price and FX
volatility

Case study: zero-cost hedging strategy for Ali producer

- Buy Put I @ 1,300\$/mt
- Sell Put II @ 1,500\$/mt
- Sell Call @ 1,800\$/mt



Results:

- Protection against downside price risks
- Limited upside from price increases

*The deepest you can go into
forest is to its middle –
after that you are getting out.*

Proverb

4. Timely information management is key

Case study:

- Major mining conglomerate investment \$100m+ into IT system
- Effective management of liquidity, stocks, product flows
- Annual savings over \$30m from:
 - 4x less warehouses
 - Less stocks
 - Less planning errors

Analytics and
intelligence

5. Regulation, resource nationalism, sanctions, etc.

Case study:

- Trading houses are doing more prepayments to mitigate political risks and sanctions:
 - Trafigura \$3bn prepayment loans, prepaid Rosneft export to China
 - Glencore \$4bn loan portfolio, prepaid Libian oil export
 - Vitol prepays KRG oil export, prepaid \$3bn for KazMunaiGas oil
- Banks extend lending limits through collateralized loans:
 - Chinese companies bought copper to attract cheap liquidity through inventory financing

Political

*“Fear no one,
respect everyone”*

Chinese proverb

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Prerequisites to success

Productivity

Access to technology

Growth

Rich resources

Price and FX

Effective risk
management

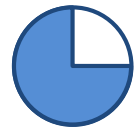
Analytics and
intelligence

Access to IT &
Human capital

Political

Supportive industry
regulation

Bulgarian mining industry – prerequisites to success



Access to technology

(+) EU is a key machinery and equipment producer



Rich resources

(+) Significant reserves
(-) Small on a global scale



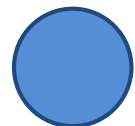
Effective risk management

(+) Developed banking sector
(+) Access to capital markets



Access to IT & Human capital

(+) BG IT sector is strong
(+) Vibrant labor market



Supportive industry regulation

(+) Low political risks
(+) Supportive regulator

- *What's the Tatar word for "Forward"?*
- *"Alga".*
- *And "Backward»?*
- *There is no «Backward» in Tatar...*
If we need, we make a U-turn and Alga!

Tatar joke