

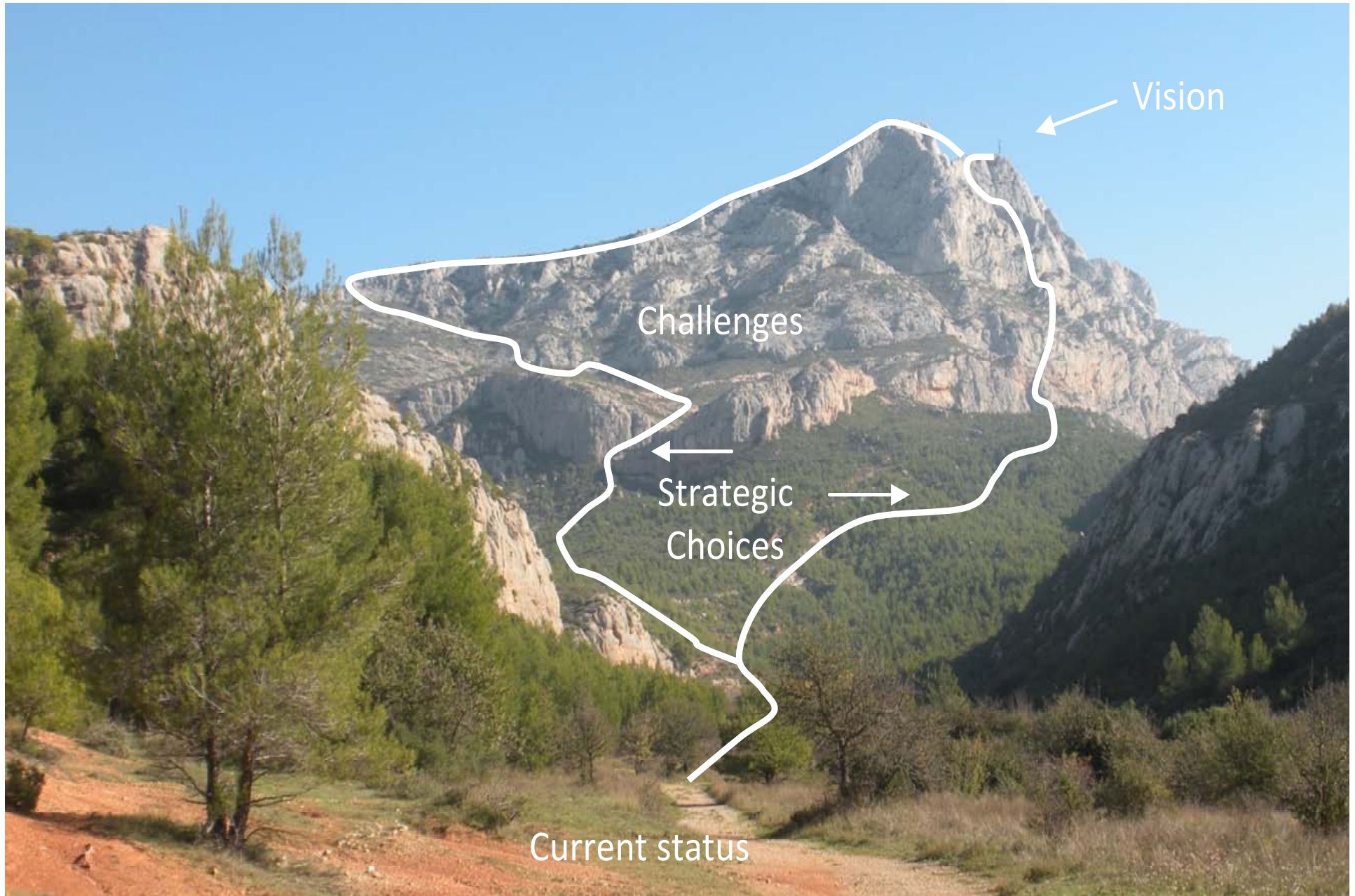
# Conceptual Study – Mine of the Future

## *Views on mining by 2030 and beyond*

Bergforsk May 5<sup>th</sup> 2010, Luleå

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Jan Johansson<sup>2</sup>, Torbjörn Naarttijärvi<sup>4</sup>, Björn Öhlander<sup>2</sup>

**Affiliations:** <sup>1</sup>Nordic Rock Tech Centre AB,  
<sup>2</sup>Luleå Univ. of Technology, <sup>3</sup>Boliden Mineral AB, <sup>4</sup>LKAB

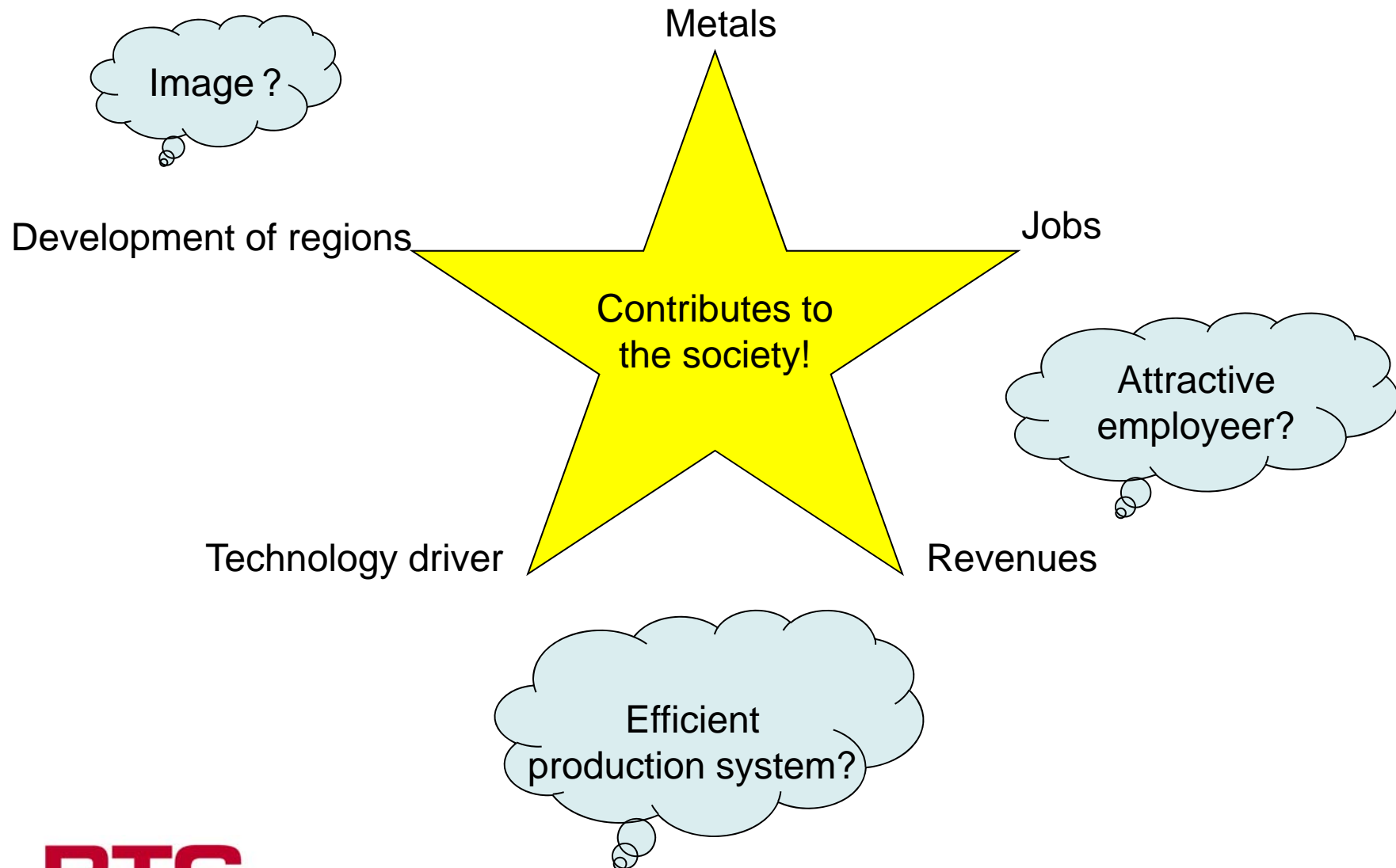


# Conceptual study - Mine of the Future

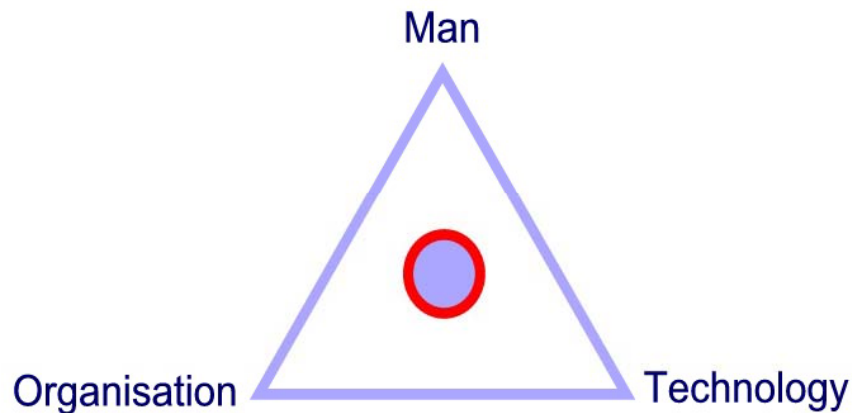
March 2009 – Dec 2010



# Current status of the mining industry

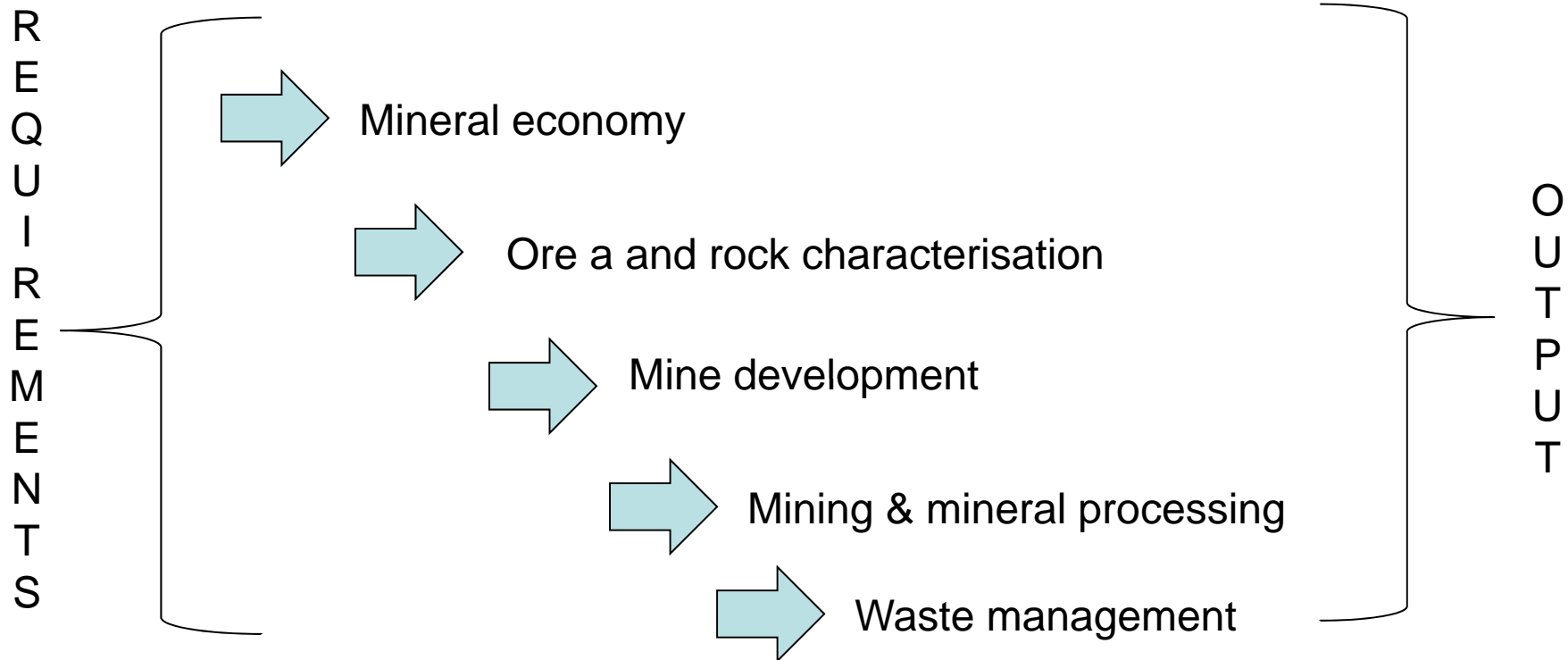
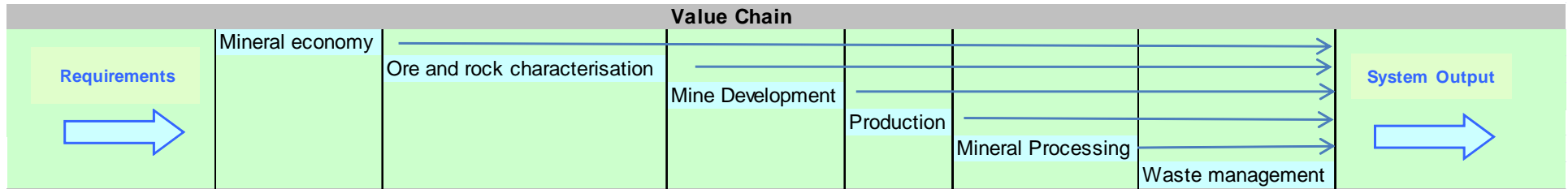


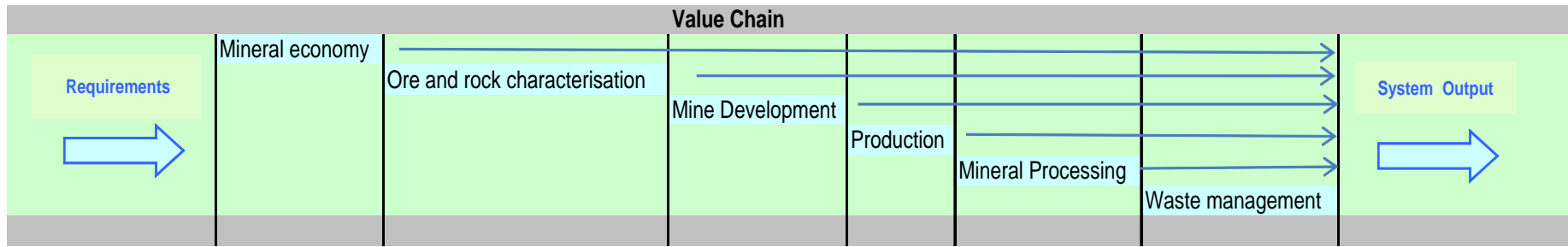
# Point of departure



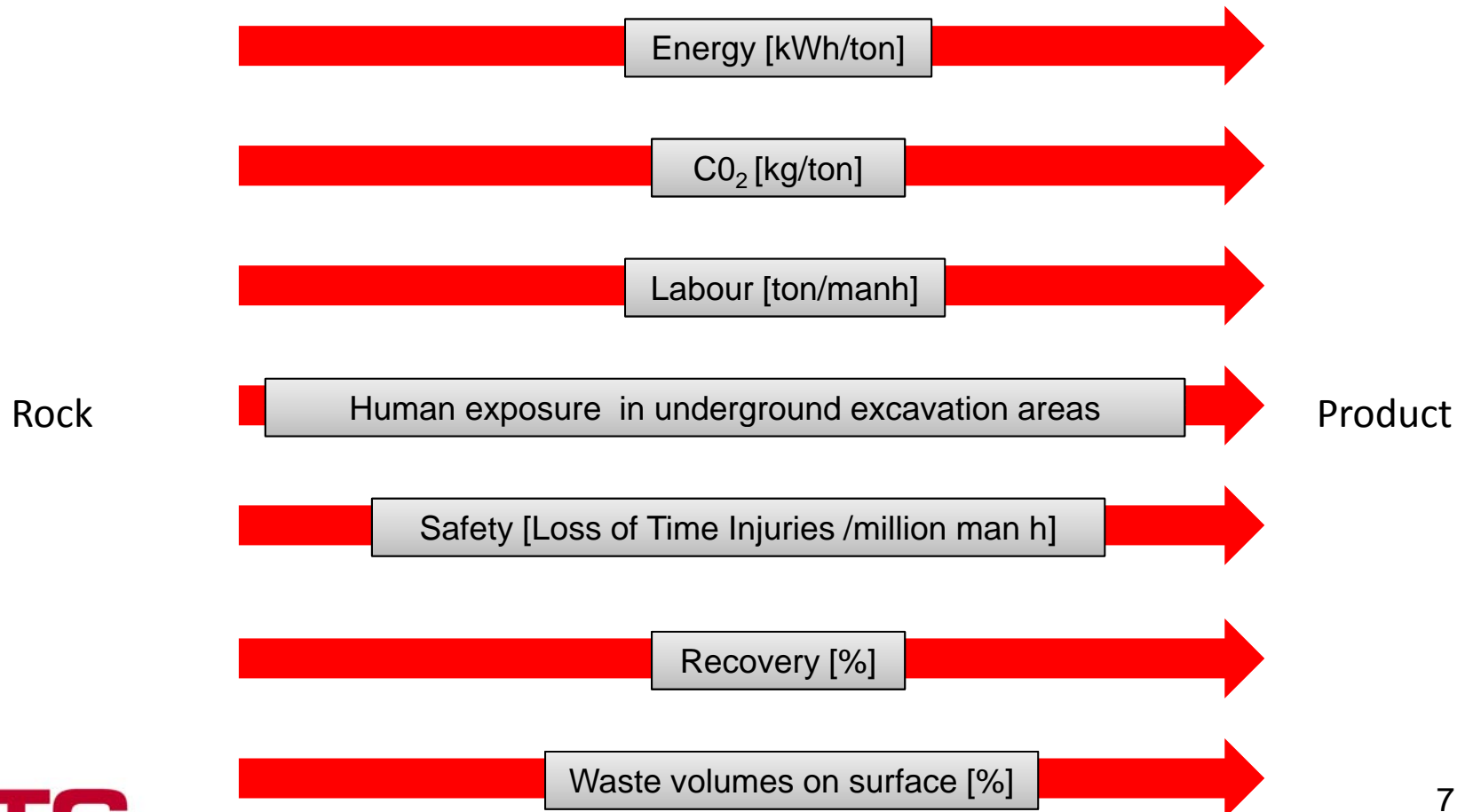
- Focussed on the overall production system - from the ore and its characterisation - to the finished raw material (to smelter/pellets plant)
- Deep mine 1,500 – 2,000 m
- Two types of mineralisation - mass mining type and vein type;

# System view of the production system

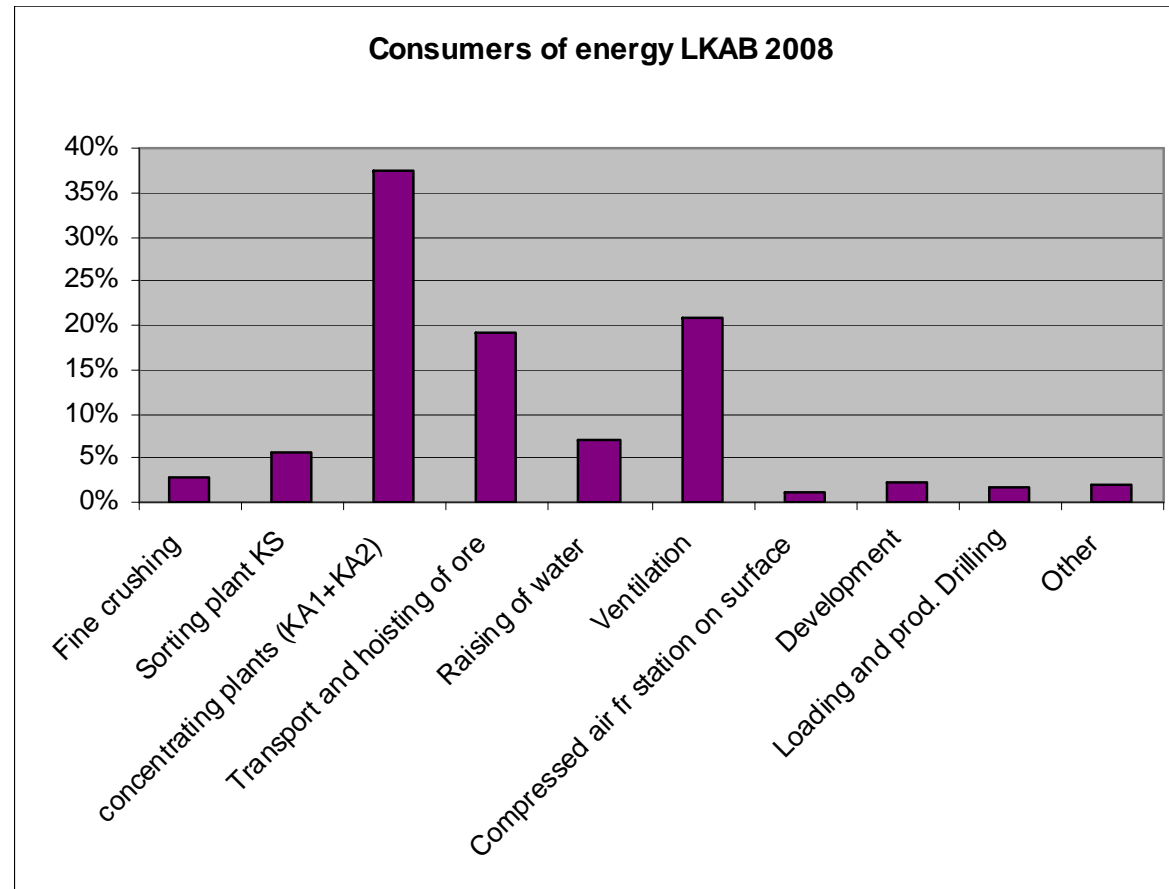
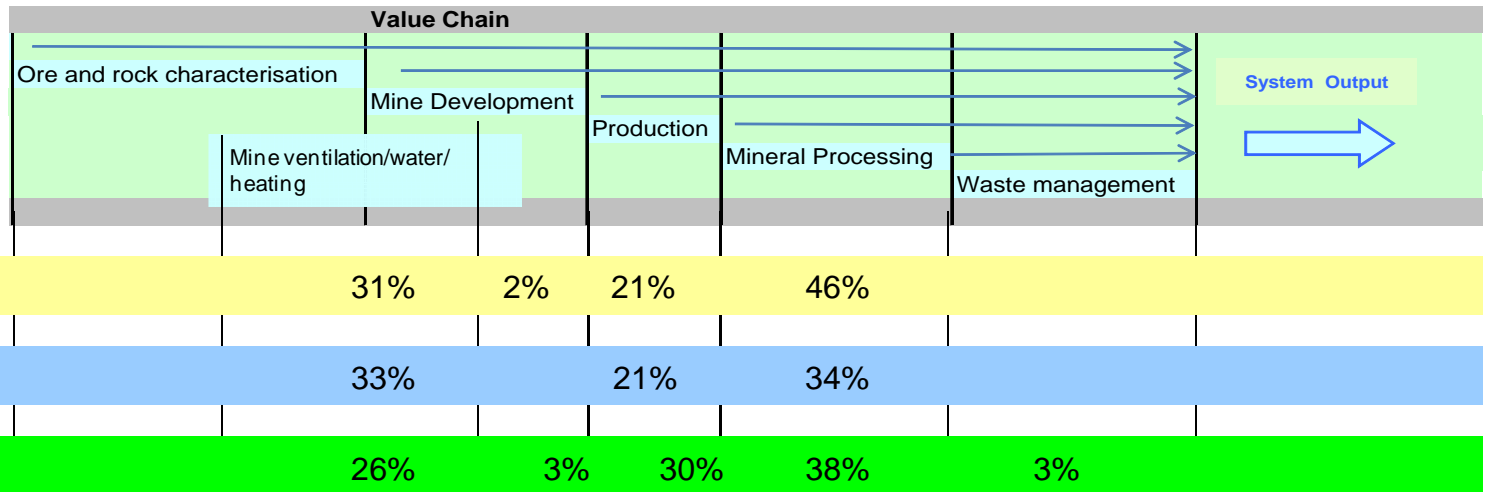




## Selection of system indicators



# Baseline Energy



# Commitments (draft)

In situ production  
of base metals

Zero waste

Fully automated mining operation  
without human interference

**Beyond Vision 2030**

**Vision 2030**

> 30 by 2030

No human exposure at production faces

No harmful emissions

No accidents

Employees satisfaction

> 30% reduction of ore losses

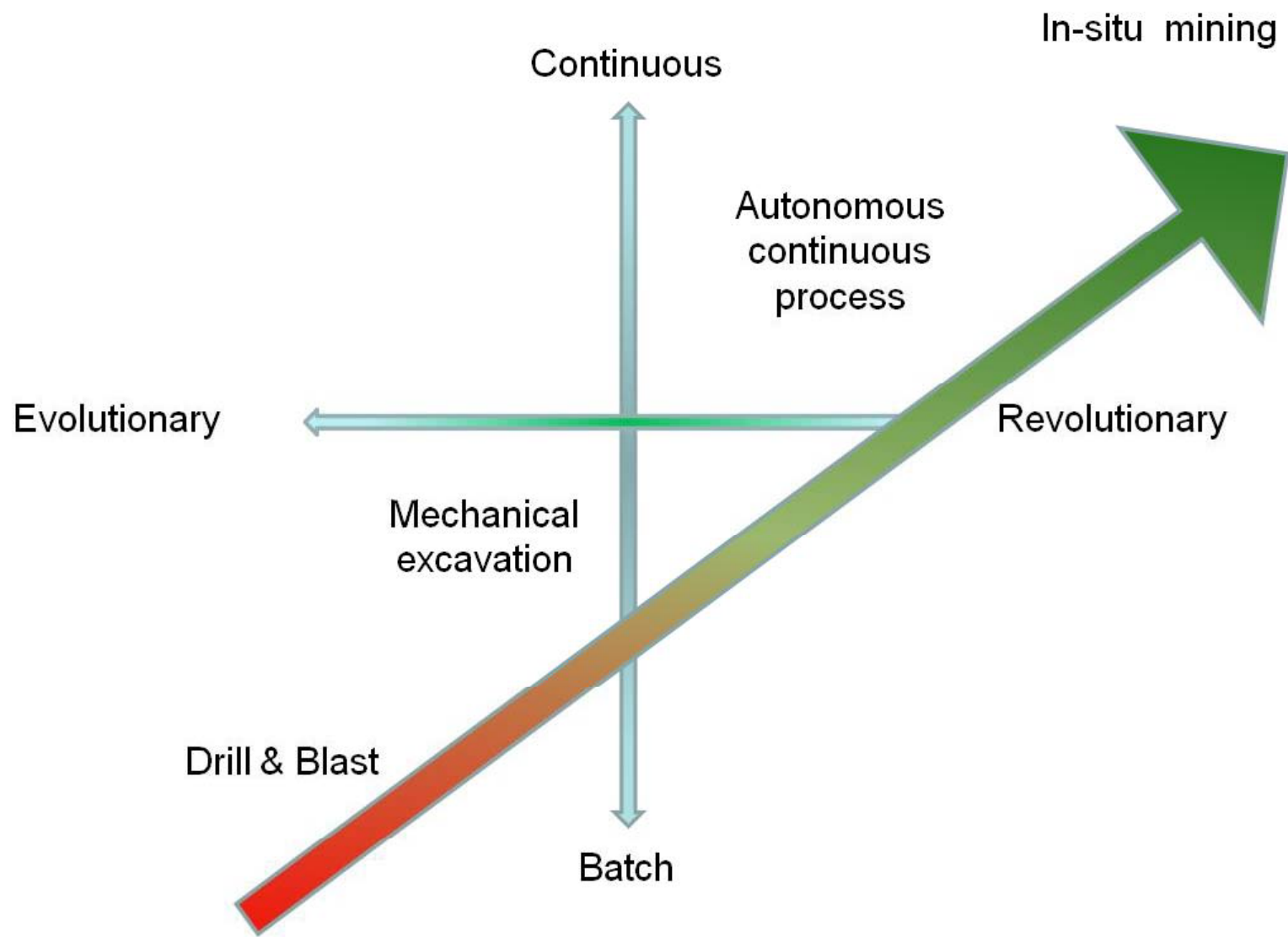
> 30% energy reduction

> 30% CO<sub>2</sub> reduction

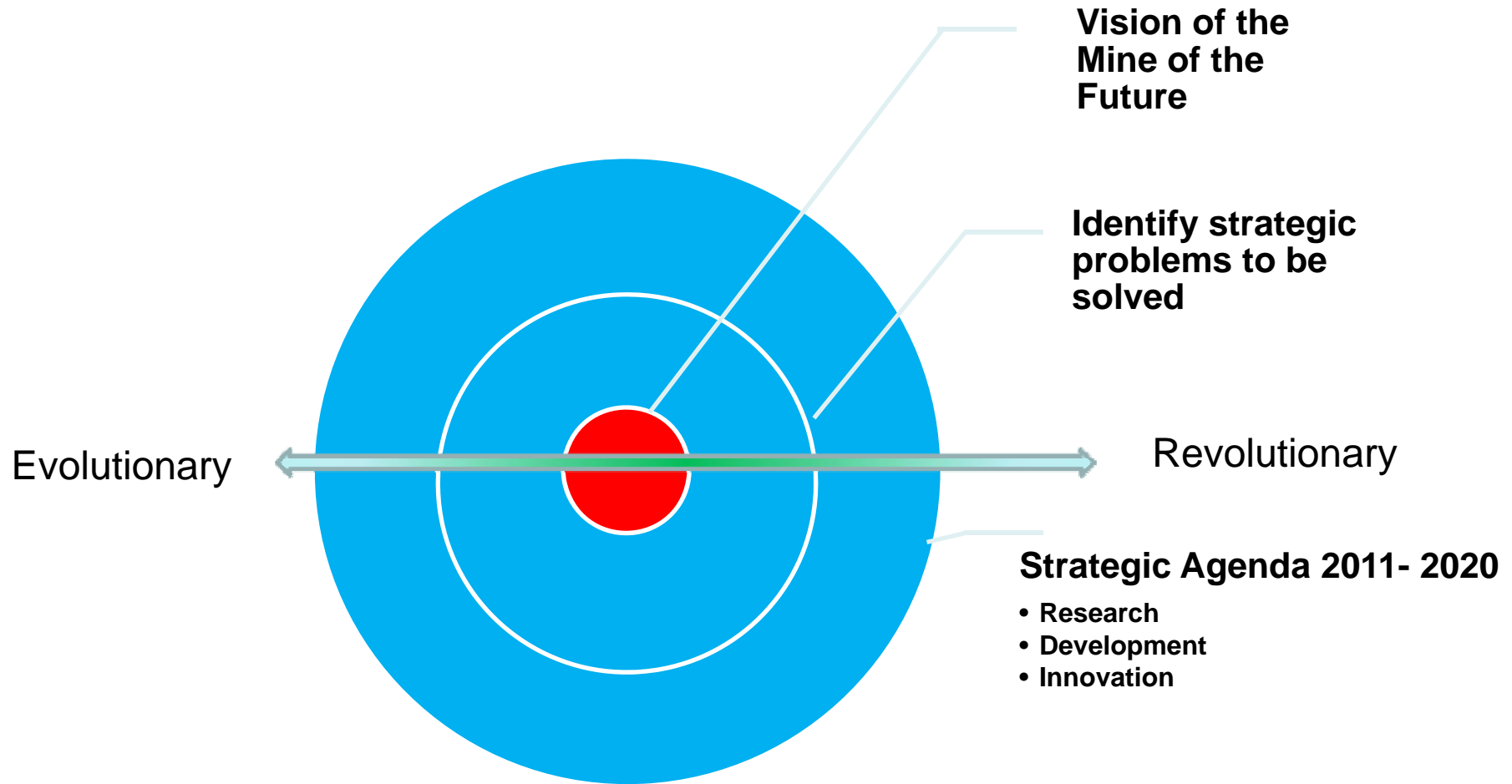
> 30% less manh/ton

> 30% less deposited waste

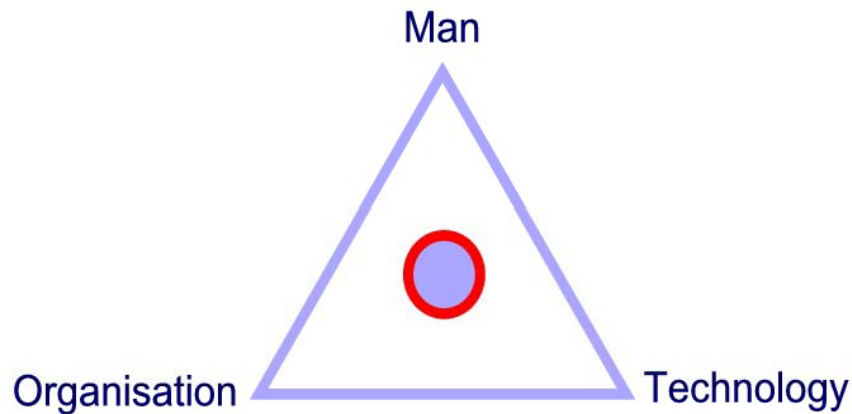
**The Base:** Competence, technology, conditions for business



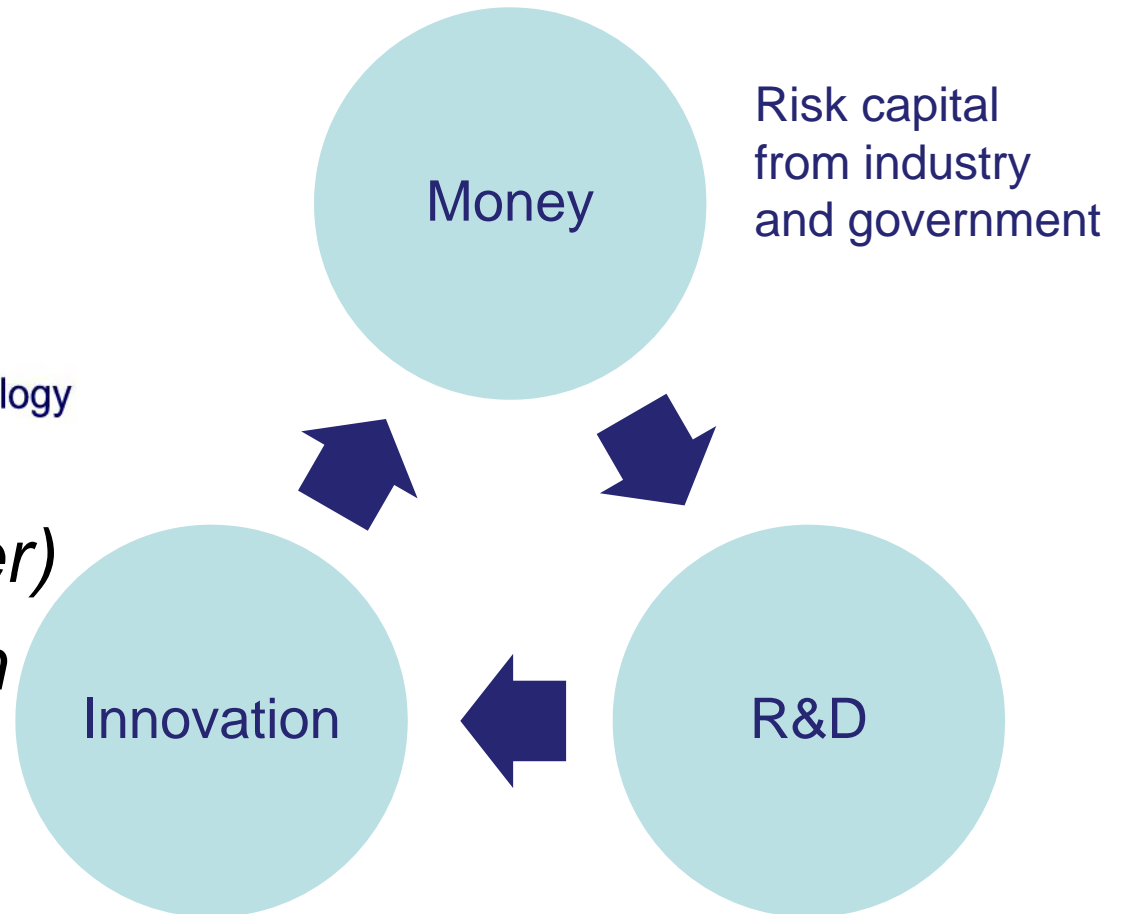
# Mine of the Future Project Deliverables



# Mining is business!



- *Technological (driver)*
- *Business innovation*
- *Organisational*



# Way forward...

- *Safe mining*
- *Lean mining*
- *Green mining*
- *An innovative organisation that attracts talented young men and women to meet the grand challenges and opportunities of future mineral supply.*

# Future status of the mining industry

