



***How to secure sustainability of
Uranium mining business in a
growing market?***

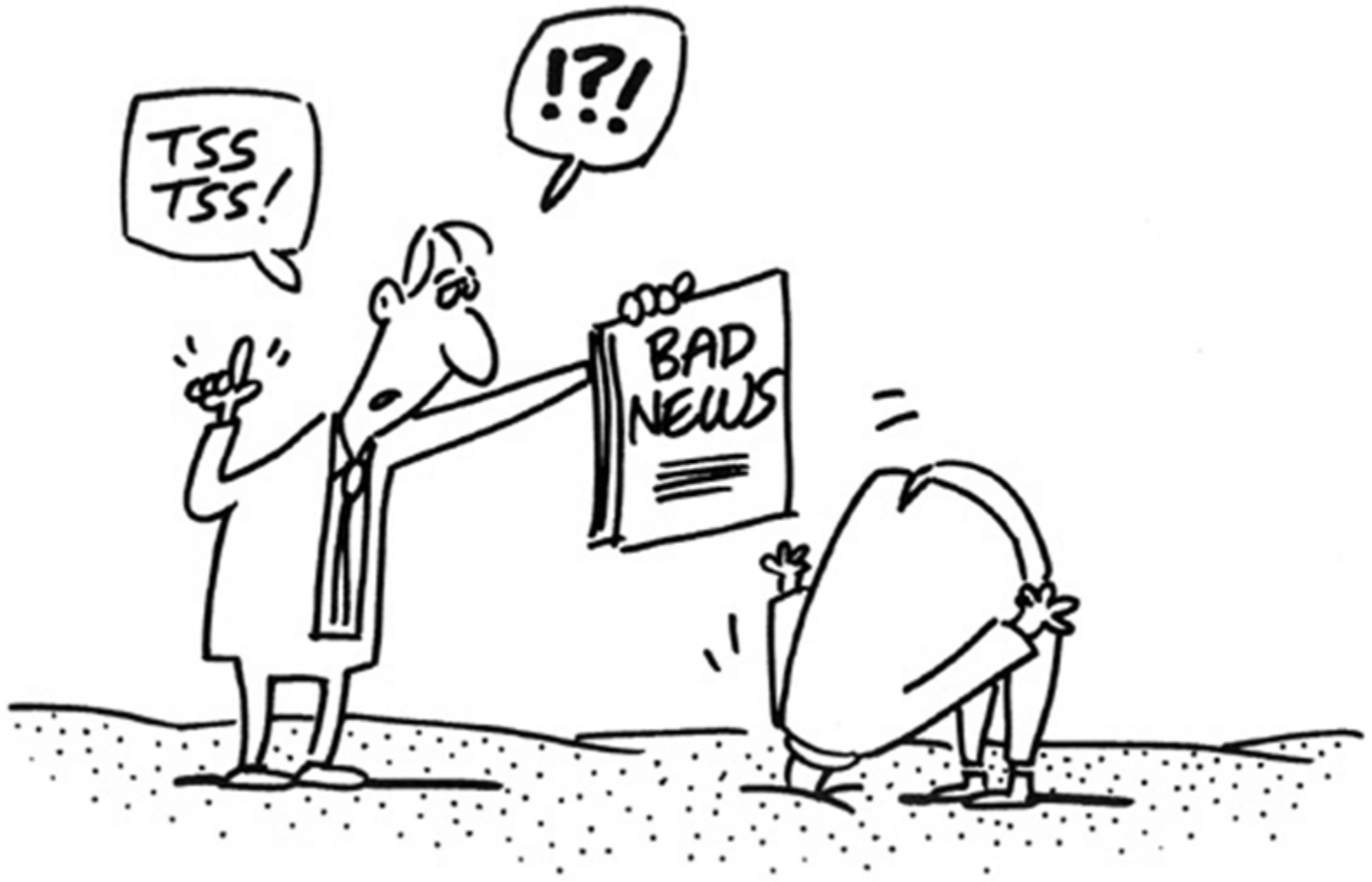
Sébastien de Montessus
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World Nuclear Association Symposium
London, September 5, 2008

Executive summary

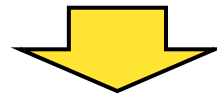
- ▶ Strong increase of Uranium demand expected in next 20 years driven by the Nuclear 'Renaissance'

Bad news first



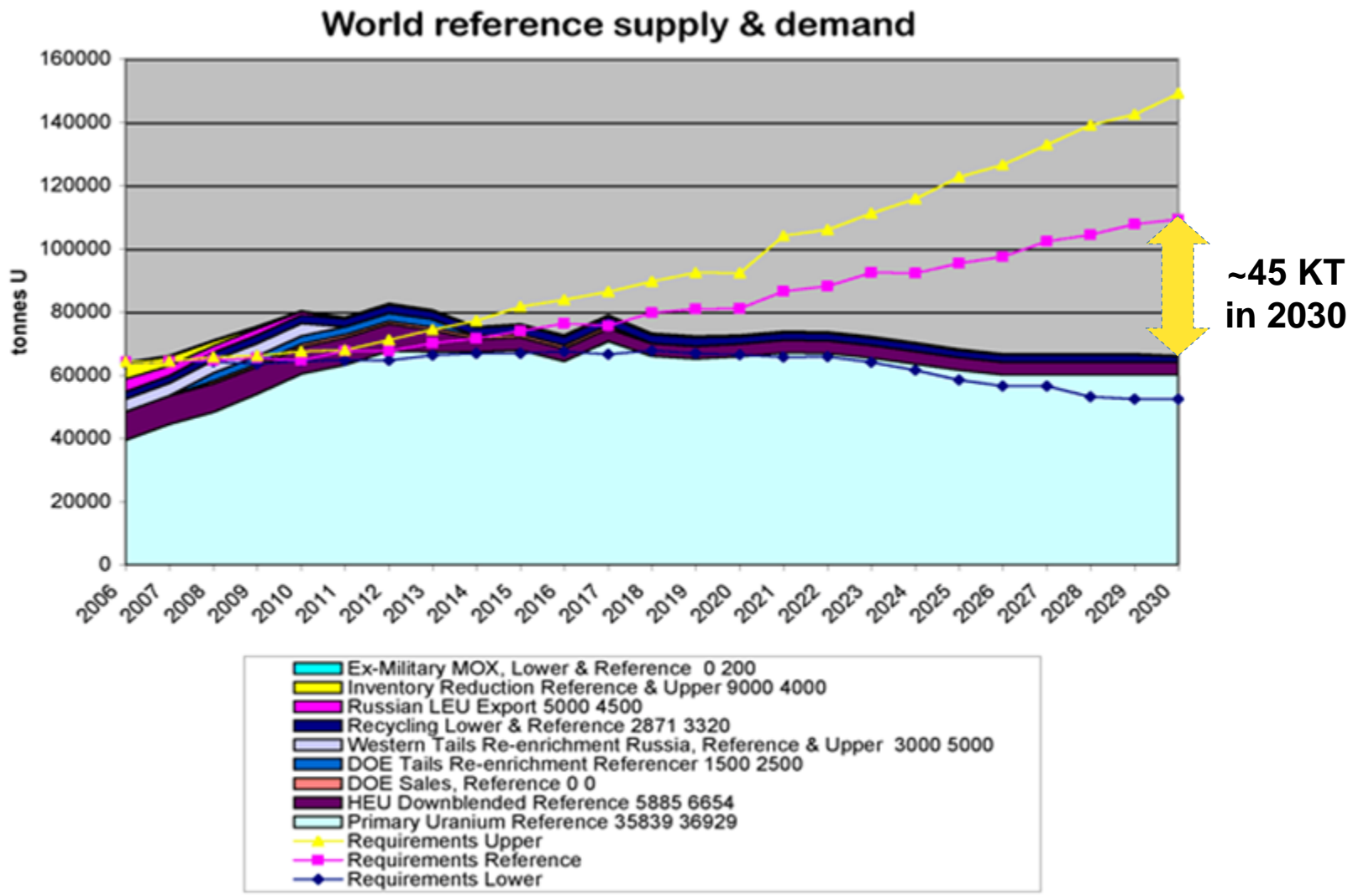
Executive summary

- ▶ Strong increase of Uranium demand expected in next 20 years driven by the Nuclear ‘Renaissance’
- ▶ Large investments required to finance new mines development and some projects to be delayed or canceled as:
 - ◆ CAPEX increase
 - ◆ Investors are increasingly selective
 - ◆ Volatility increases on market indicators
- ▶ Operating costs of mines hit by a strong cost inflation and the scarcity of resources: raw materials, workforce, equipments...
- ▶ New mines more difficult and expensive to exploit



Better sharing of issues within the industry to ensure mining long-term sustainability

Strong increase of production is required to meet new demand in the next 20 years



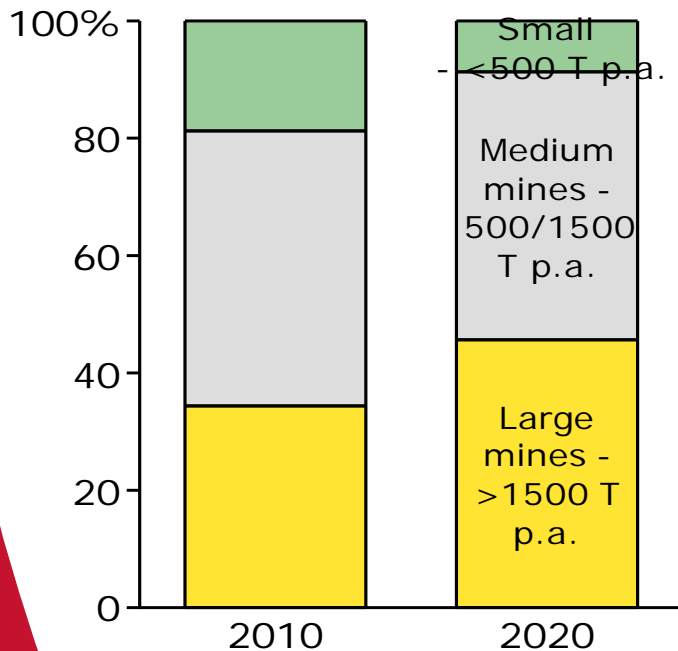
Source : WNA 2007

CAPEX for new project is rising due to larger mines and increased building costs

Share of large mines will grow for 35% in 2010 to >50% in 2020

Milling plant building cost increases

World uranium production by size of mine (%)



- ▶ Strong cost increase of raw materials used to build a new plant (steel)
- ▶ High backlog of companies building milling plants

Source : Areva estimates

At the same time, the financial crisis leads investors to select projects more carefully

- ▶ Credit crunch has affected mining investments, but there is still appetite for good projects
- ▶ Investors are selecting more carefully projects where they are confident about the supplier's
 - ◆ Ability to deliver production
 - ◆ Strong financials
- ▶ Volatility of current market indicators has strongly increased, reducing the visibility on long term investments' profitability



Some projects will be delayed or cancelled

In addition to direct costs, indirect costs are also significant in the mining life cycle



Boom in mining activities is creating tensions on several capabilities...

Exploration

- ▶ Geologists
- ▶ Environmentalists / lobbyists (esp. for Canada)
- ▶ Drilling services

Project management

- ▶ Milling engineering & construction contractors
- ▶ Project management resources, including internal resources (especially in "complex" countries)

Infra-structures

- ▶ Water
- ▶ Energy
- ▶ Logistics and transport services
- ▶ Life camp

Operations HR

- ▶ Mining Engineers
- ▶ Geo statisticians
- ▶ Geological controllers
- ▶ Middle and top management
- ▶ Trained operators / technicians (even more for underground mines)
- ▶ Plant Engineers
- ▶ Chemists / Metallurgists

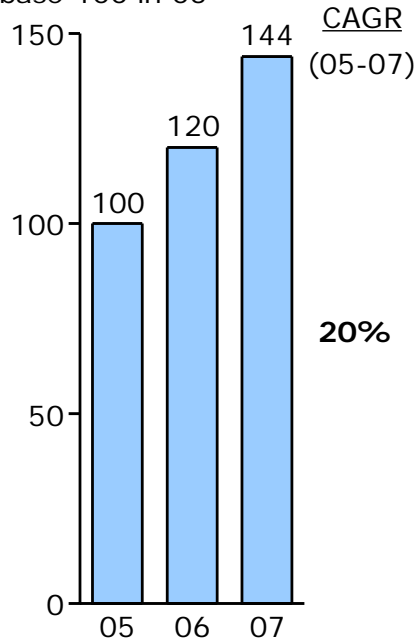
Operations purchasing

- ▶ Dumpers
- ▶ Tires
- ▶ Crushers / Grinders
- ▶ Transformers
- ▶ Chemicals
- ▶ Wheel loaders
- ▶ Backhoes/ shovels
- ▶ Conveyors/ Stackers
- ▶ Cranes
- ▶ Drills
- ▶ Radio-protection equipment

...Leading to inflation on mining costs

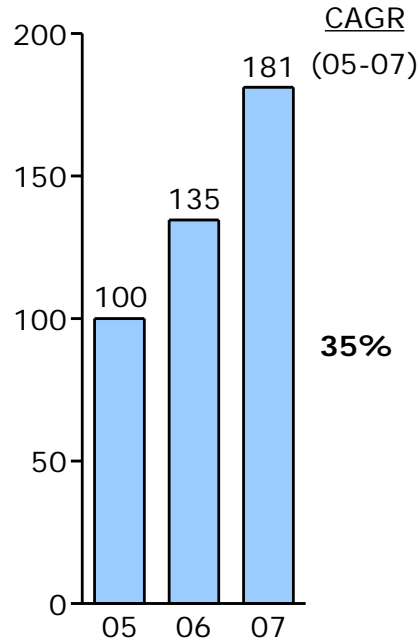
Employee average salary

Personal costs per employee (\$/Fte)
- base 100 in 05



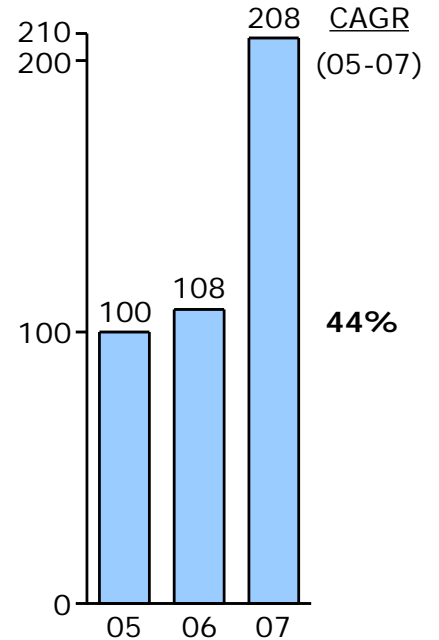
Mining equipment average costs

Unit tire cost (\$/tire)
- base 100 in 05



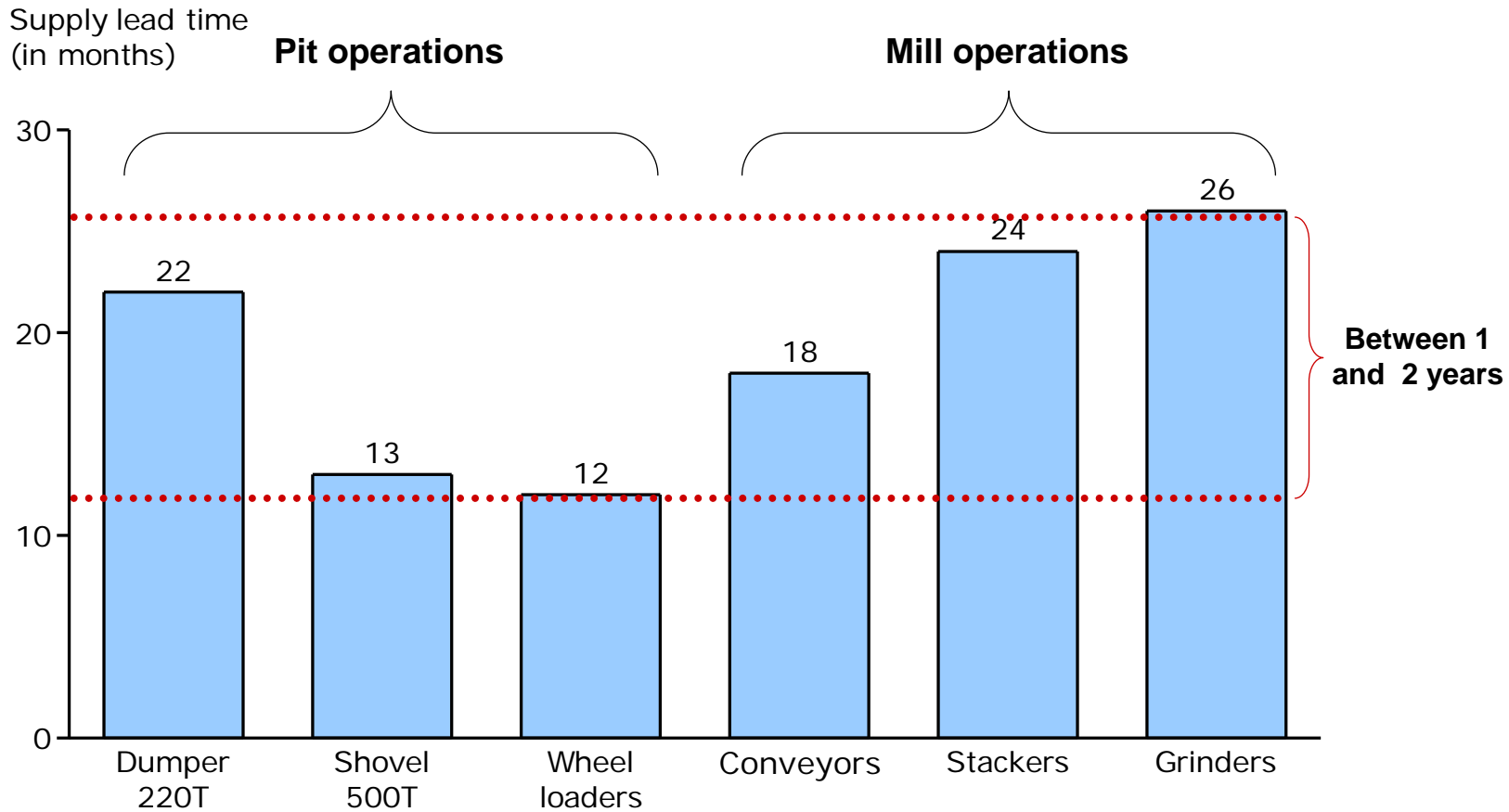
Sulphur reagent costs

Sulphur unit price (\$/T) *
- base 100 in 05



Note*: FOB VANCOUVER
Source: Suppliers quotations, Market indicators

...And ramp-up delays as supply lead-times of mining equipment are increasing



In addition, future mines will be more difficult and expensive to exploit

- ▶ Costs of production of new mines (post 2015) likely much higher than producing mines due to increase in:
 - ◆ Technical complexity : new mines will be deeper and will require new technologies (e.g. freezing techniques in Canada); ore will be more difficult to process
 - ◆ Social and environmental responsibility
 - ◆ Royalties required by countries

- ▶ New mines will be in more remote location as most accessible ores have already been found
 - ◆ Infrastructure issues
 - ◆ Utility supply issues

- ▶ Geopolitical risks are increasing linked to the geographical diversification of mining sources required to support the 'Nuclear Renaissance'

A common challenge to ensure the sustainability of the mining business

Redefine long term contracting approaches

- ▶ Uranium prices must sustain mining operations
- ▶ No correlation today between actual mining cost inflation & index used (US GDP IDP)
- ▶ Need to use benchmarks to better reflect mining industry environment



- ▶ **Propose mining industry related indicators**
- ▶ **Improve long term visibility**

Improve public perception

- ▶ Some countries/states have still bans for uranium mining & concentrates transportation
- ▶ Reluctance to nuclear
- ▶ Increasing attention to Health, Safety & Environment practices



- ▶ **Improve public trust** in nuclear through active communication
- ▶ Promote **best-in-class HSE** mining practices

Lets not be shy

Uranium mining needs to come
out of the dark

We need more transparency
...and higher visibility !

It is our responsibility to support
the nuclear renaissance



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