EAF and/or BF/BOF

Which route is best for Europe ?

Marcel Genet
Laplace Conseil

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Our current view of the industry

The Steel market is globalized, China is key	**Agree**
Market is +/- static in developed world	**Agree**
There is a large and persistent overcapacity	**Agree**
Overcapacity is correlated with low profits	**Agree**
Therefore we need to cut excess capacity	**Disagree**

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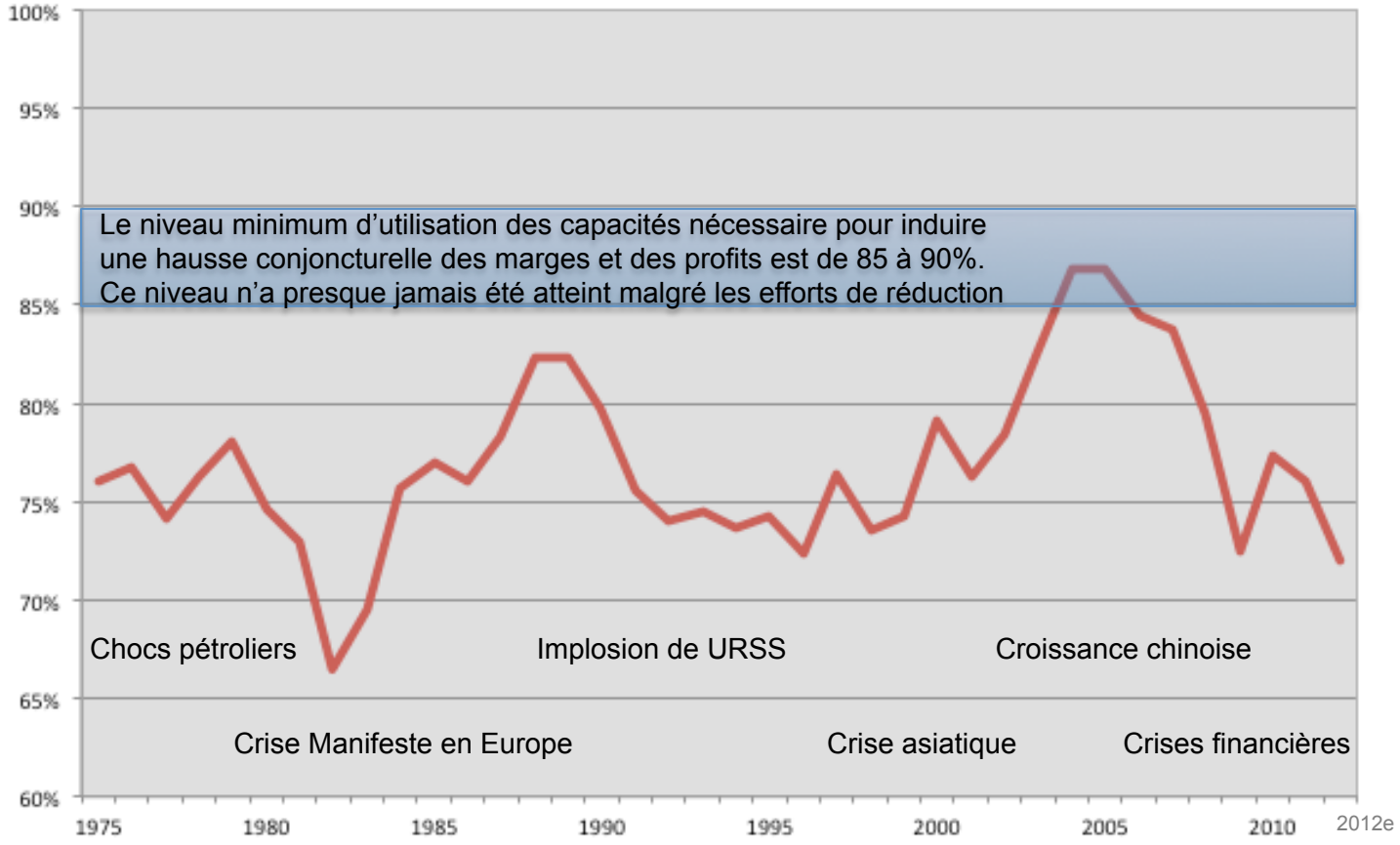
While highly desirable, overcapacity has never been significantly cut in the last 35 years !

- 1980 EU Manifest Crisis ; 1 billion DM aid for 1 Mt capacity cut
- 1980 US free market and “ruthless ultra liberalism”
- 1990 Japan MITI and industry consensus method
- 2000 China autocratic policy for 100 Mt of “obsolete” capacity
- Closures lead to high disruption to customer relationships
- Closures generate enormous badwill with workers, authorities
- Closures are extremely costly and take years to implement
- Bankruptcy almost always lead to restart with new owner
- It is easier to quit smoking…

Depuis 1975, le marché mondial de l'acier a quasiment toujours été surcapacitaire

Evolution du taux d'utilisation des capacités mondiales de production d'acier brut



Source : OCDE, Analyse Laplace Conseil

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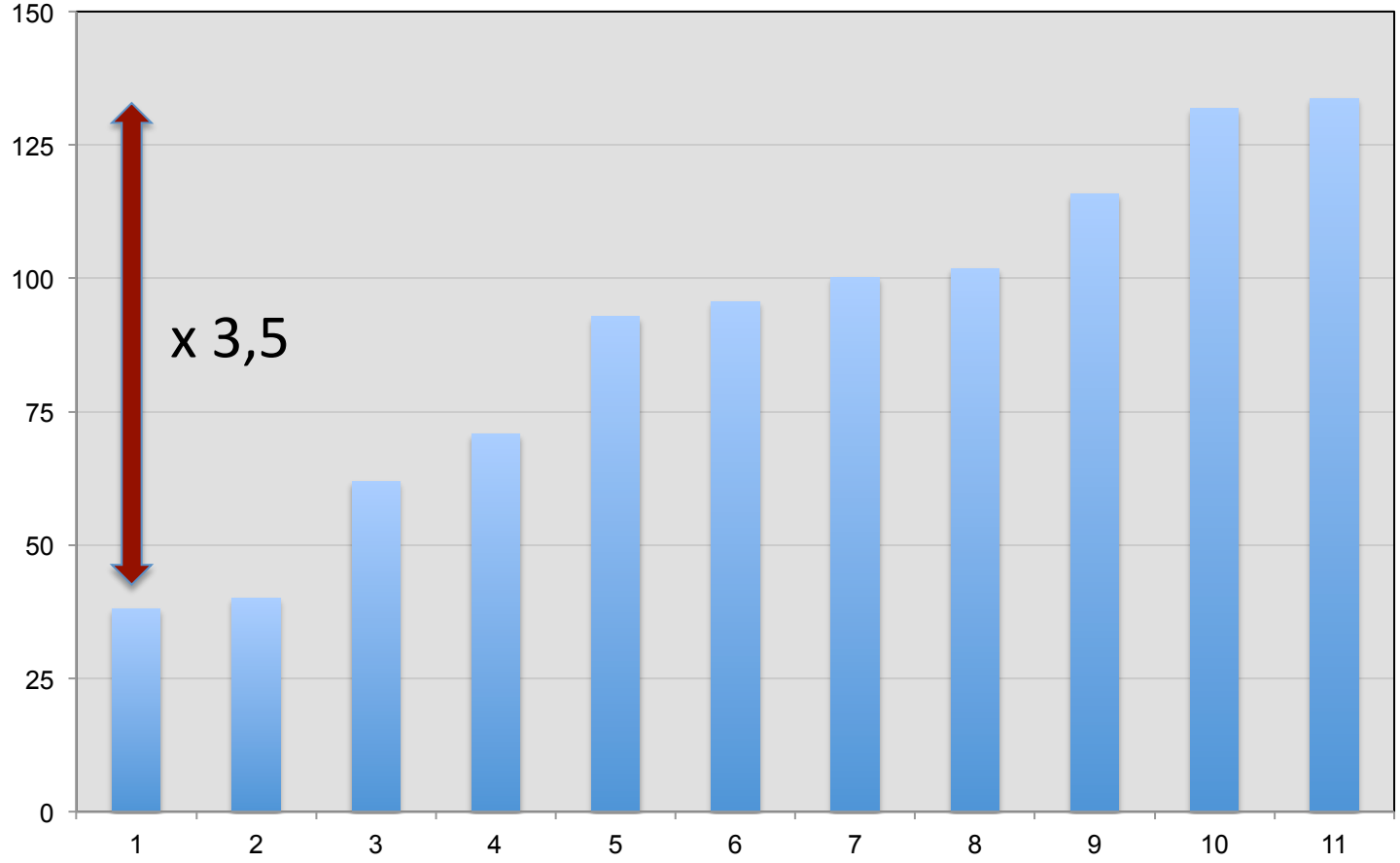
The market will not save you; generic solution won't save you; good strategy will

Value as of May 2012 of a capital of 100 $ invested in June 2006 in 11 leading global steel companies



Source : Bloomberg

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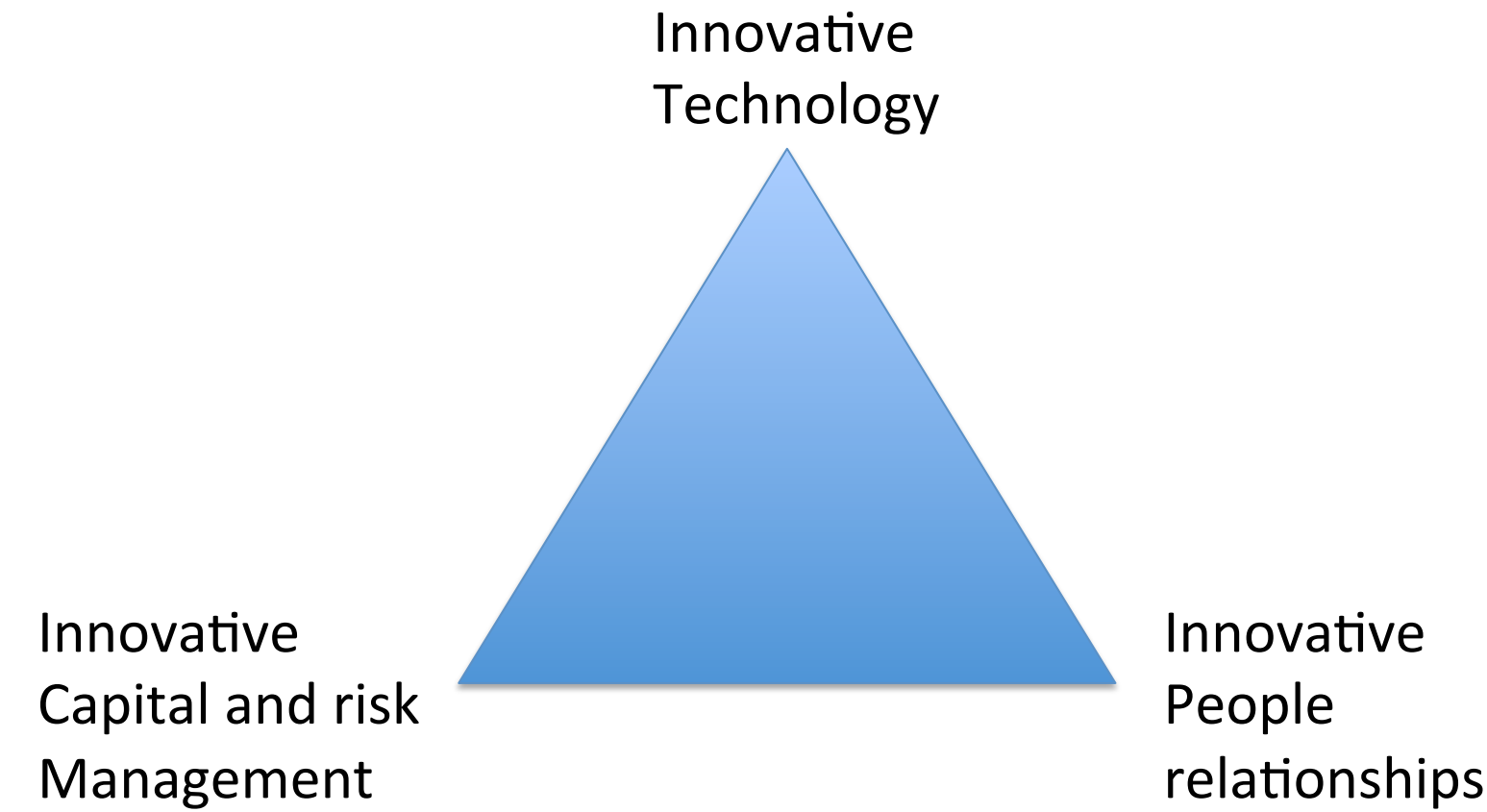
Good strategy is the result of an innovative equilibrium between capital, labor and technology.



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Well adapted technology must be coupled to sound labor relationship and smart capital management

- Smart technological choices are different by region as a result of *local* availability and price of raw material and energies, *local* market size, share, product mix and *local* skills base.

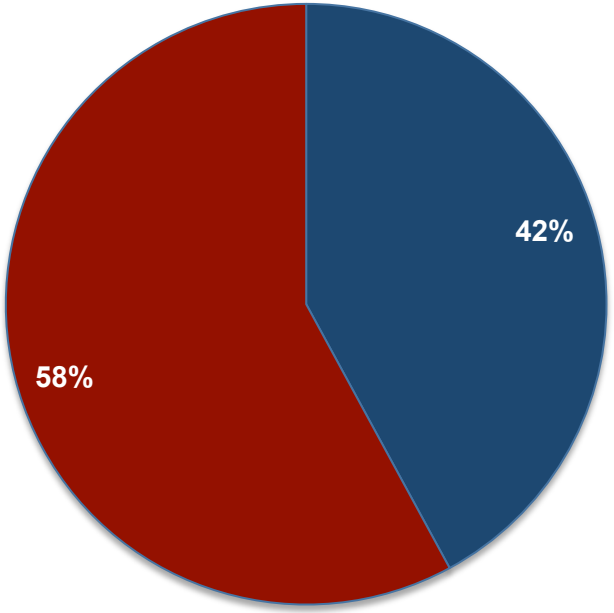
- A global or international company can get leverage as long as it remembers that, for the most part, steel (unlike iron ore or coal) is a local business and “one size does not fit all”.

- It is impossible to make good steel with a poorly motivated workforce, adversarial unions and discouraged management

- It is impossible to make good steel with financial management disconnected from the customers, the suppliers and the workforce aspirations. Further, volatility must be addressed with modern tools

In this presentation, I will focus on a single example, the strategic choice between integrated mills and scrap based mills

In EU 27, the share of EAF is currently equal to 42% of the total crude steel production



Source WorldSteel, Laplace Conseil analysis

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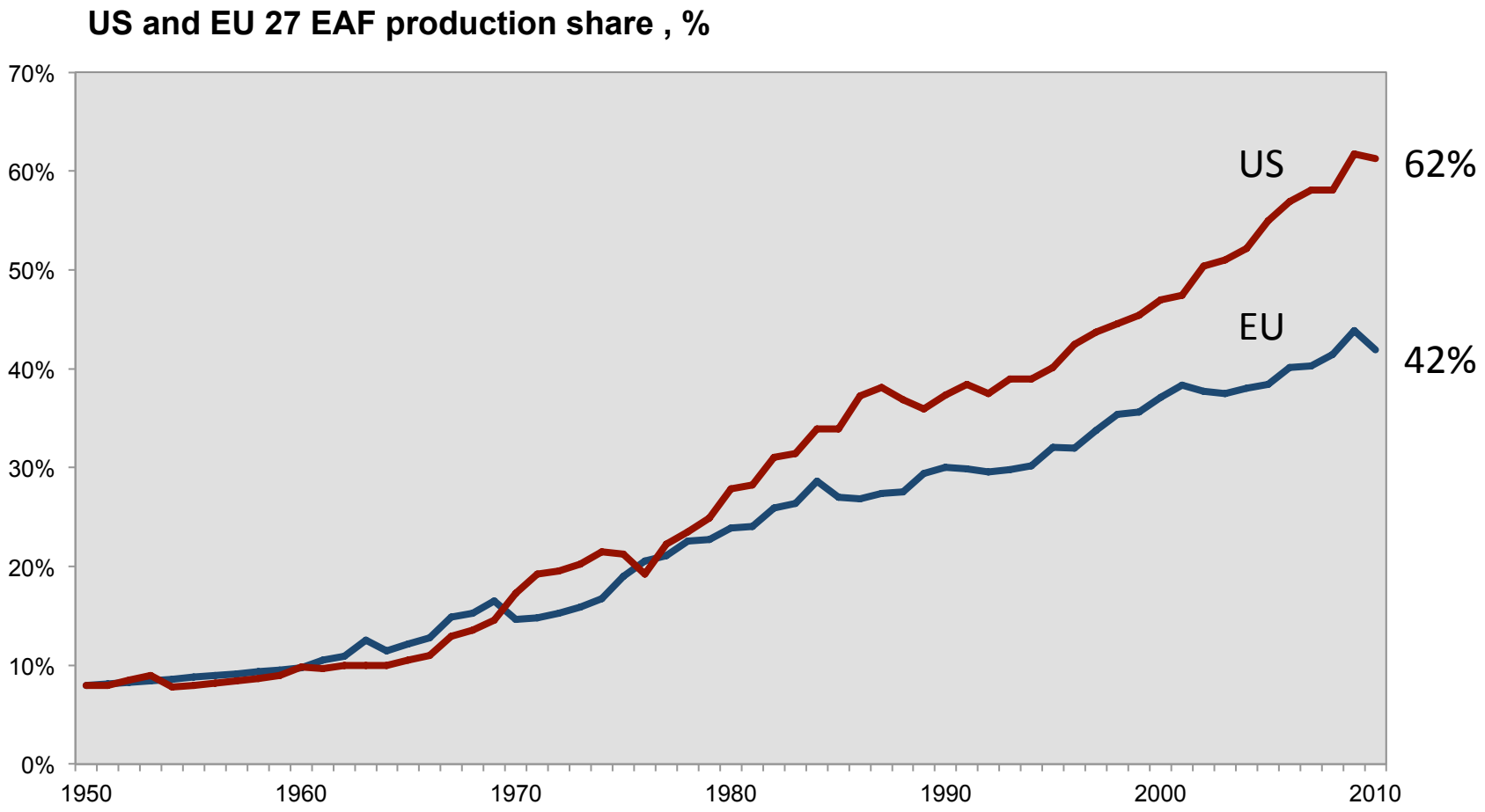
In EU27, EAF steel production share has grown to 42%, while it has grown to 62% in US



Source : WorldSteel, Laplace Conseil analysis

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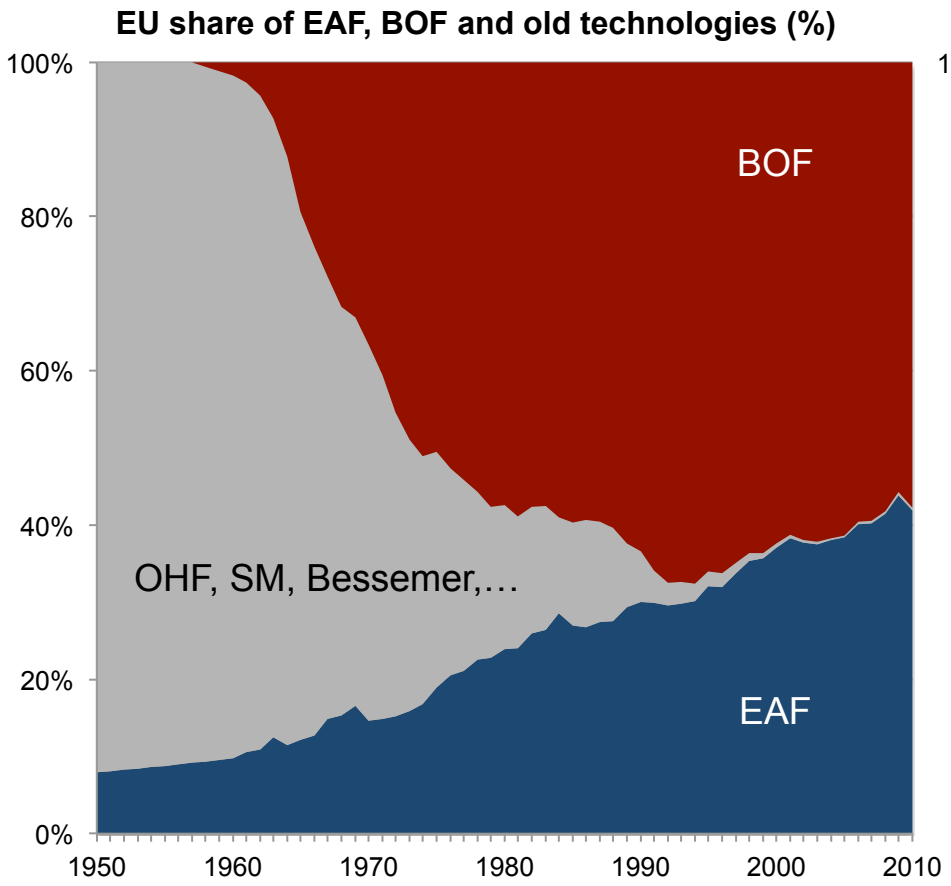
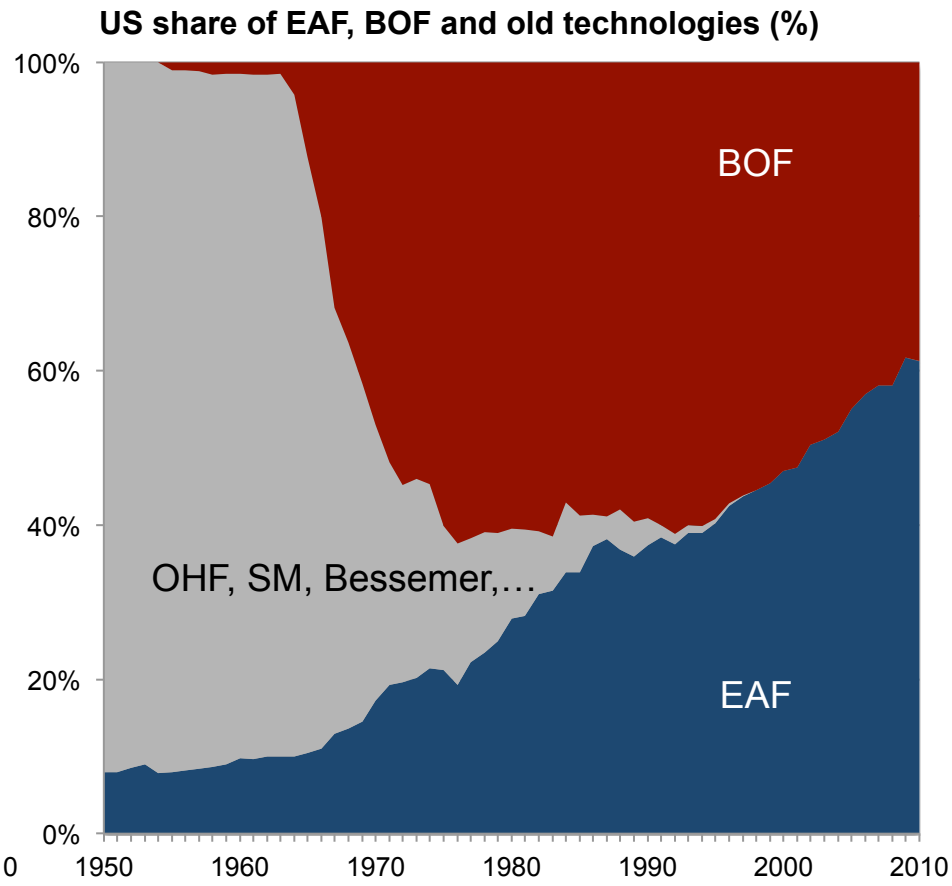
In the US, the EAF replaced a greater share of the obsolete technologies than in Europe





Source : WorldSteel, Laplace Conseil analysis

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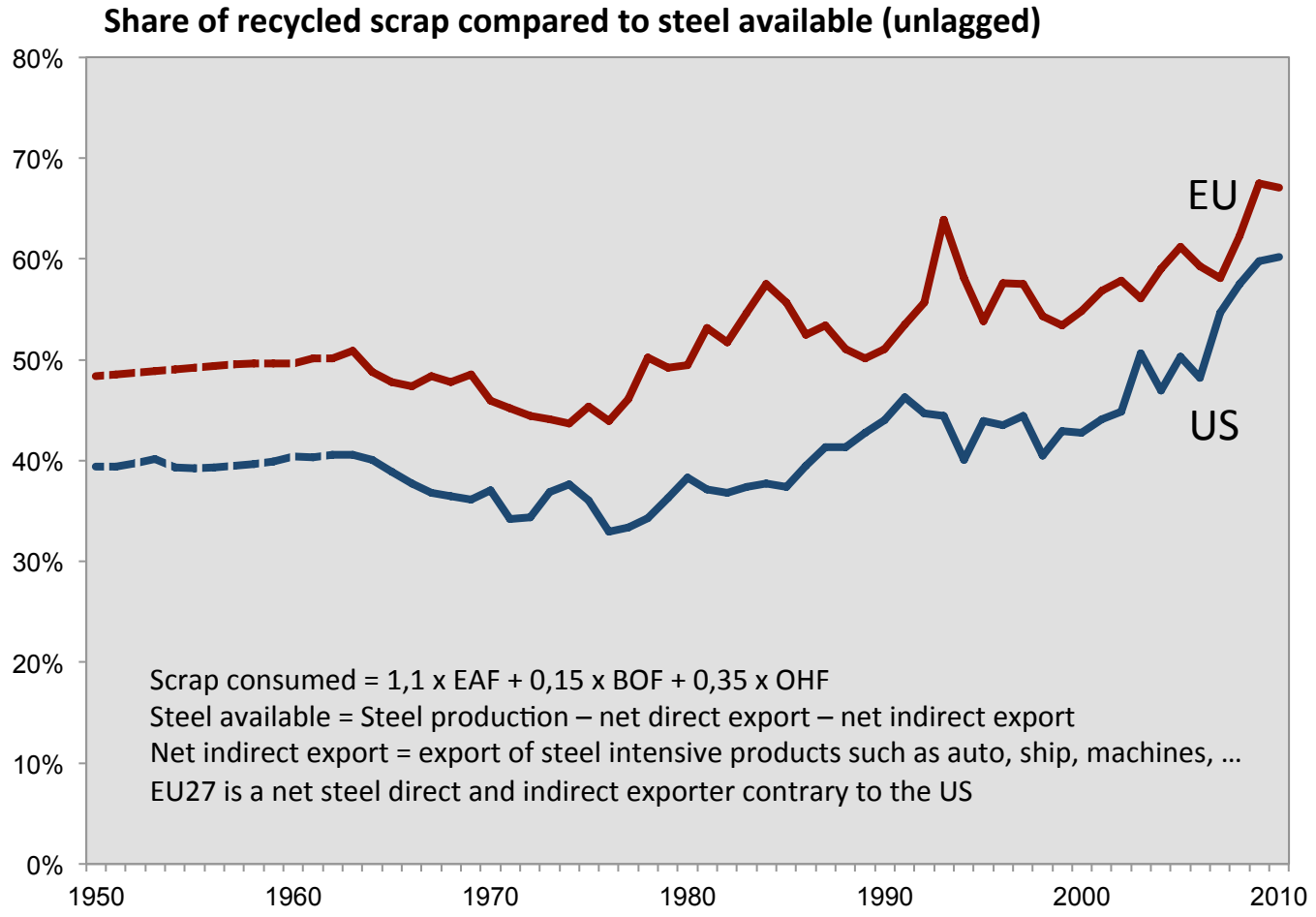
Nevertheless, EU27 recycle a greater share of the steel available in the region than does the US



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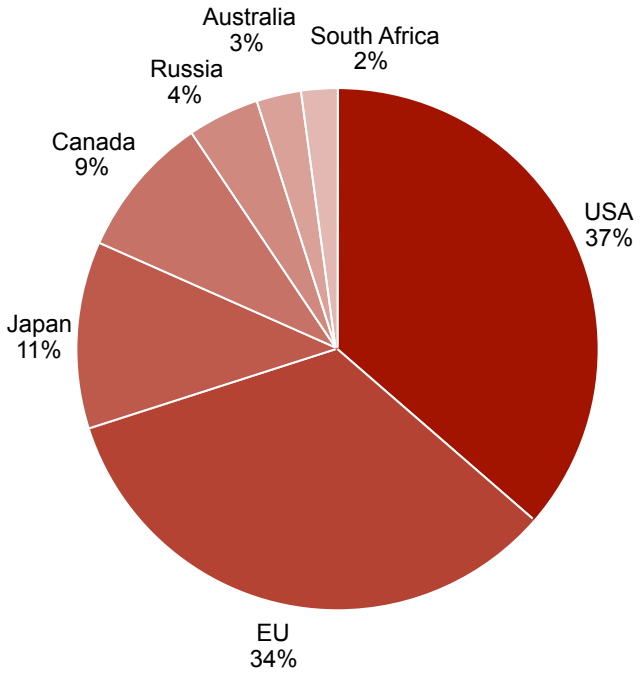
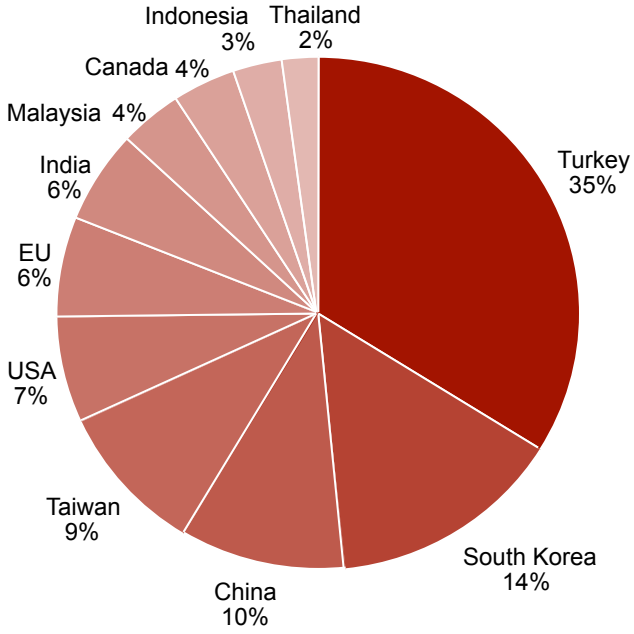
US and EU 27 are by far the largest scrap exporters. Turkey, Korea and China, the largest importers

Steel scrap exporters, 2010 Mt



Steel scrap importers, 2010



Source: BIR, Laplace Conseil

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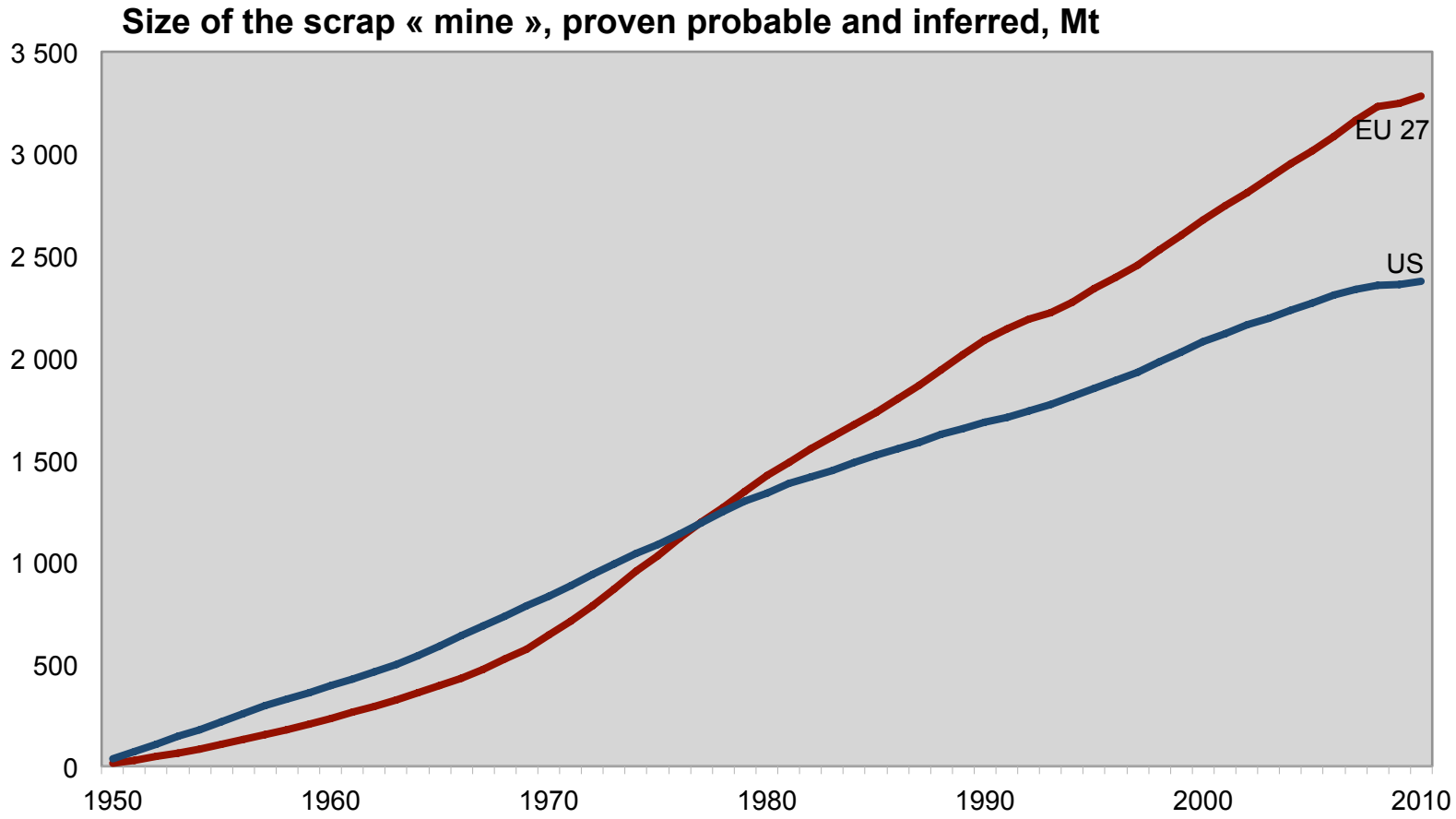
The EU scrap “mine” is bigger than the US “mine” but not all can be collected now !



Source : WorldSteel, WTO, Laplace Conseil analysis

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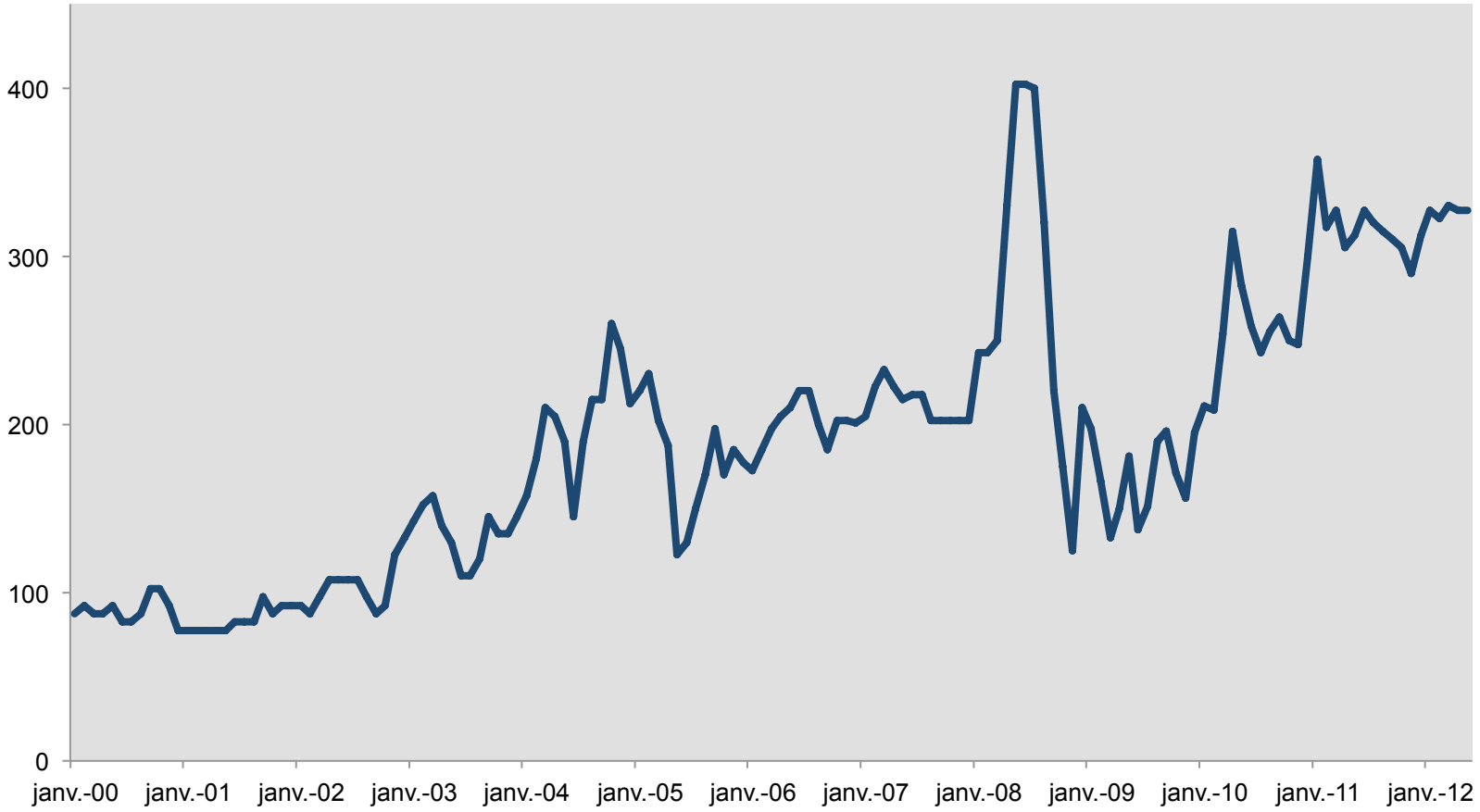
Scrap price are back to a high and volatile level as a consequence of robust world demand

European schredded scrap prices, €/t



Source : Platts/Steel Business Briefing

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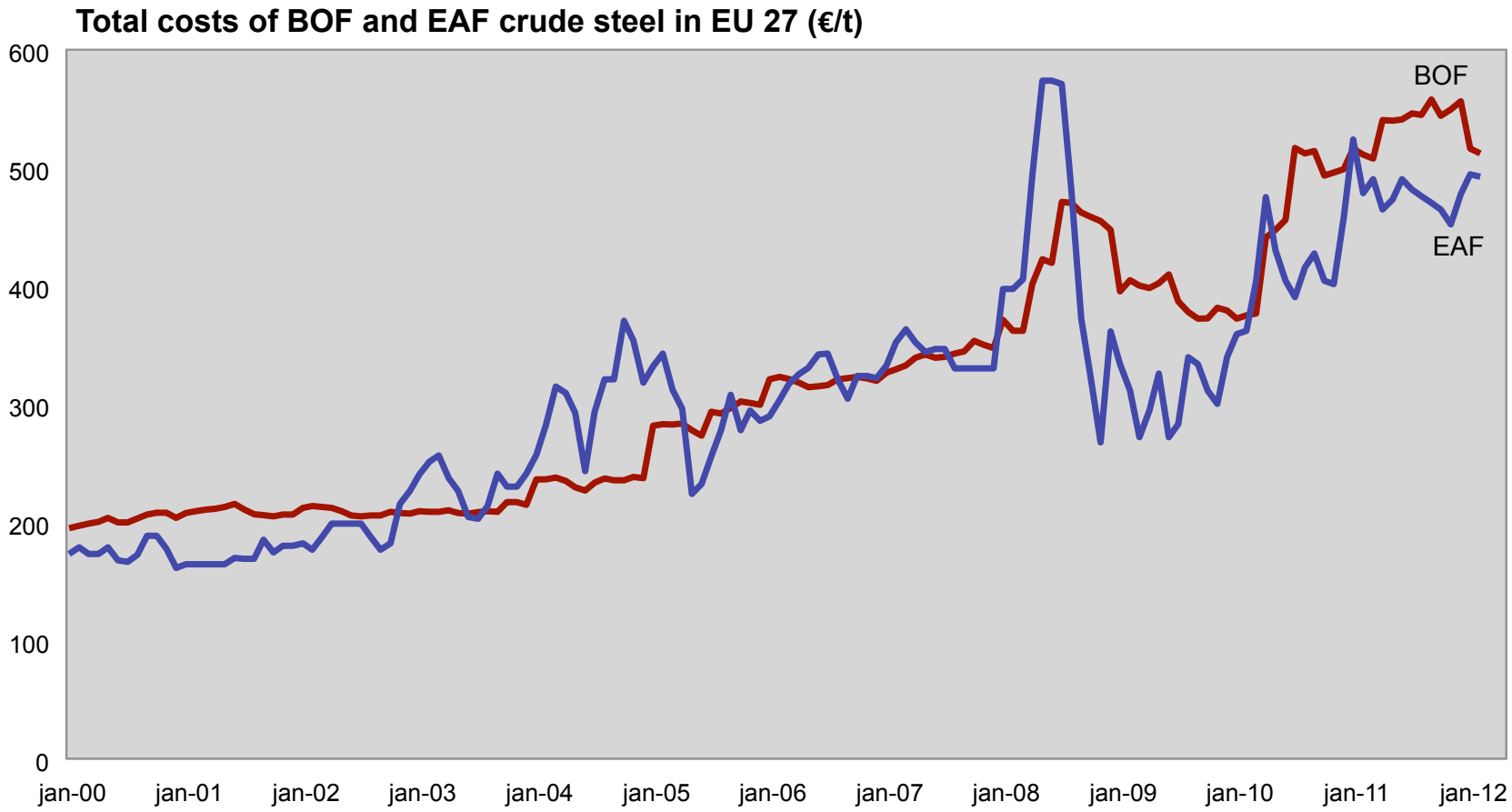
EU27' EAF costs are highly correlated to BOF costs and usually lower, especially in weaker markets



Source : SBB, EIA, Worldsteel, steelonthenet.com, Laplace Conseil analysis

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CAPEX and Maintenance costs are much lower for EAF steel than for BOF steel

- New integrated capacity costs 800 – 1200 $/tonne up to semis depending of location (China is cheaper)
- New EAF capacity costs 150 – 300 $/tonne up to semis
- Annual maintenance costs represent on average 7% of Capex that is 50 - 80 $/tonne for integrated mills and 10 – 20 $/tonne for EAF
- Moreover, in integrated mills, reinvestments often come in large putlays to replace a major piece of equipment : for example a new coking battery may cost 300 – 400 M$
- Environmental costs and CO2 reduction investment compound the difficulties.

Recycling is much more environmentally friendly

- Steel recycling uses 74% less energy, 90% less virgin materials and 40% less water; it also produces 76% fewer water pollutants, 86% fewer air pollutants and 97% less mining waste.
- Recycling one tonne of steel saves 1100 kg of iron ore, 630 kg of coal, and 55 kg of limestone
- CO_2 emissions are reduced by 58% through the use of ferrous scrap.
- Recycling one tonne of steel saves 642 kWh of energy, 1,8 barrels (287 litres) of oil, 10,9 million Btu's of energy and 2,3 cubic meters of landfill space.

Source : BIR

In Greater Europe (all countries up to but excluding CIS), there are 8 to 10* mid sized integrated mills that are threatened and are risking closures, but could be rejuvenated by switching to EAF technology.

So why not ?

* 3 plants for long products, 5 to 7 for flat products

Some objections often voiced

- We cannot make all grades with EAF's ; copper pollution in scrap cannot be eliminated in the steel shop.

⇒ Yes but : 85 % of flat products and 95% of long products grades can be made. Scrap merchants are happy to recycle valuable copper from their raw material source. Prompt scrap and substitutes can be used to dilute residuals

- There is not enough scrap; an increase in demand will lead to an immediate increase in price.

⇒ No because : scrap price are set by reference to iron ore and coal prices on the basis of a global supply and demand; supply is extremely elastic. Europe is a large and growing exporter. The global equilibrium would barely be affected by a European switch of 20 – 30 Mt scrap

- There will be job losses and a need for retraining

=> Yes but : a lot less than if the plant is closed

In our judgment, the choice is based on the equilibrium between technology, social and capital

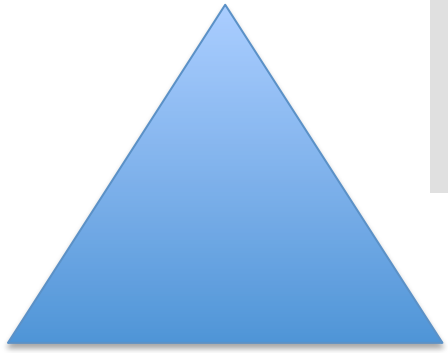
Example from History : Neuves-Maisons and Mondeville (mid 80ies)

- Neuves-Maisons in Lorraine was an aging small integrating plant producing wire rods and bars from local ore and regional coke
- Mondeville in Normandy was a similar integrated plant with local ore and fairly similar product mix.
- Both plants were unprofitable and threatened with closure
- Neuves-Maisons with a strong manager, cooperative unions and local support started a tough program to convert the plant to EAF. It is still doing well under Riva ownership.
- Mondeville started ill fated investment in “special caster” to save plant and prevent job losses for local politician. It was closed shortly after
- Today, the same dilemma is being faced by many flat steel integrated

Tough questions to ask

Innovative Technology

Do I use the BAT for my local conditions ?
How much do I need to reinvest in next 10 years
Do I want to be there in the next 10 years ?



Innovative Capital and risk Management

Shareholders Happy ?
Bankers Happy ?
Risk manager Happy ?
Your gut feeling OK ?

Innovative people relationships

Customers Happy ?
Suppliers Happy ?
Managers Happy ?
Workers Happy ?
Community Happy ?

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Thank you for your attention

I'll be happy to answer any questions you may have