

What future for the import-based refinery in a higher-cost, lower-price alumina market?

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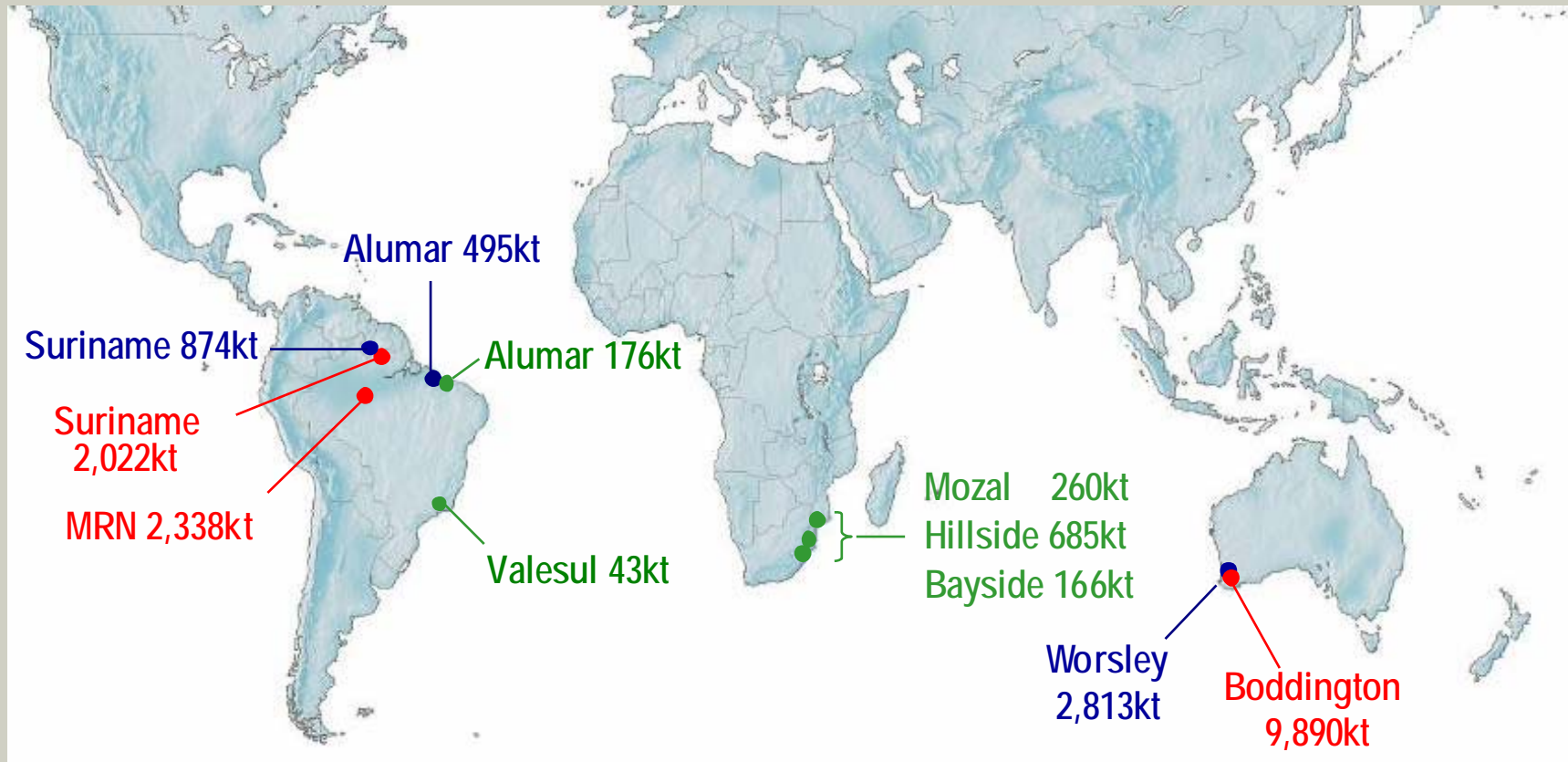


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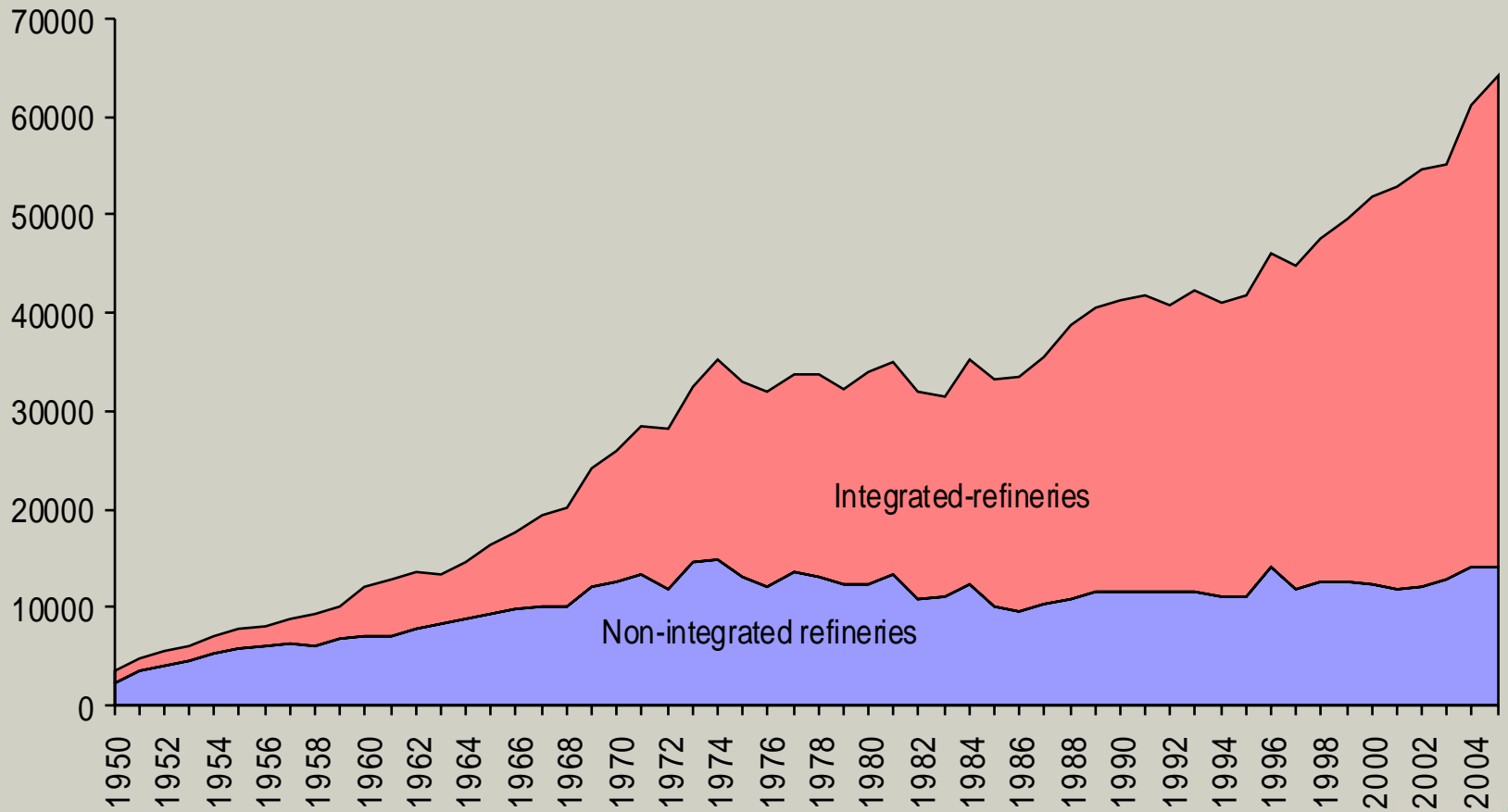
Aluminium CSG FY05 Equity Production



● Bauxite Mines ● Refineries ● Smelters

The import-based refineries represent a significant share of current alumina production

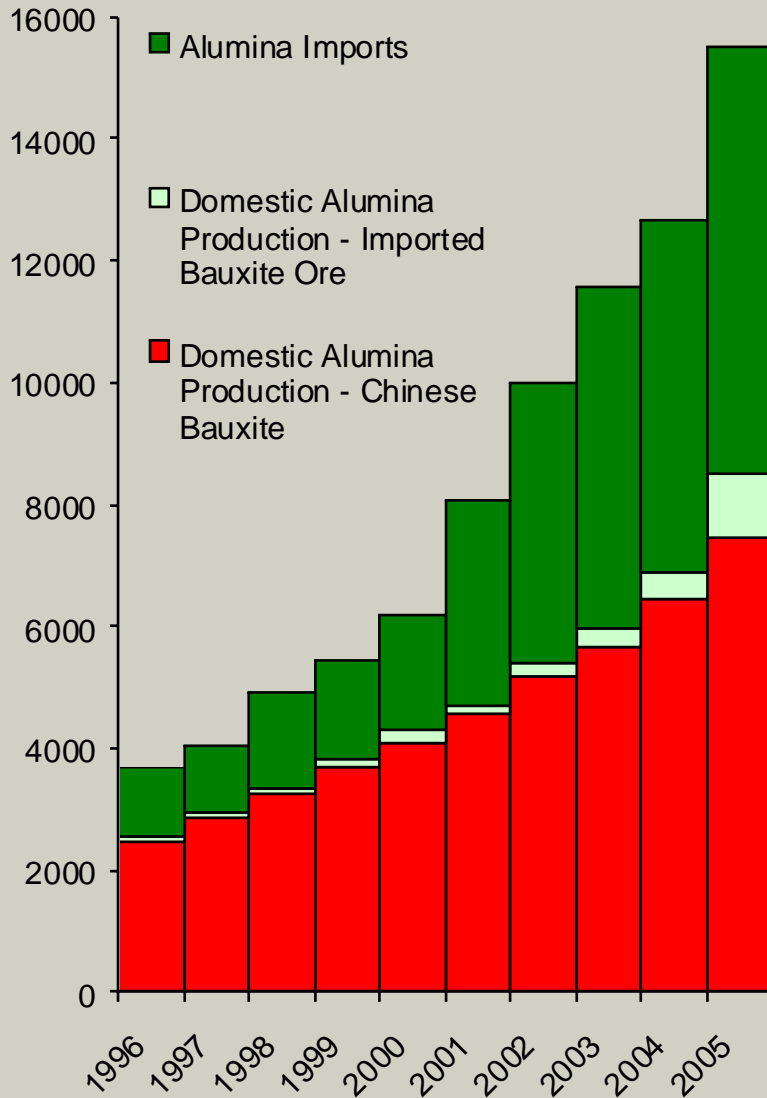
Alumina production, '000 Tonnes



Source: BHP B, USGS

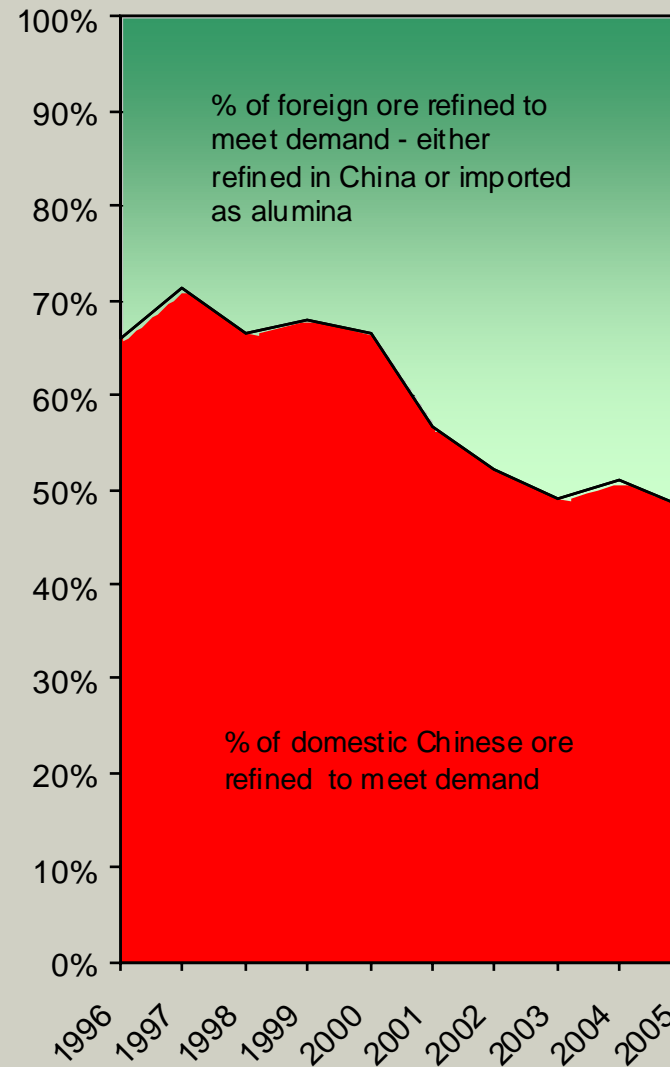
Chinese dependence on imported ore is approximately half.

Alumina ('000 tonnes)



Source: CNIA

How China's demand for alumina is being met?



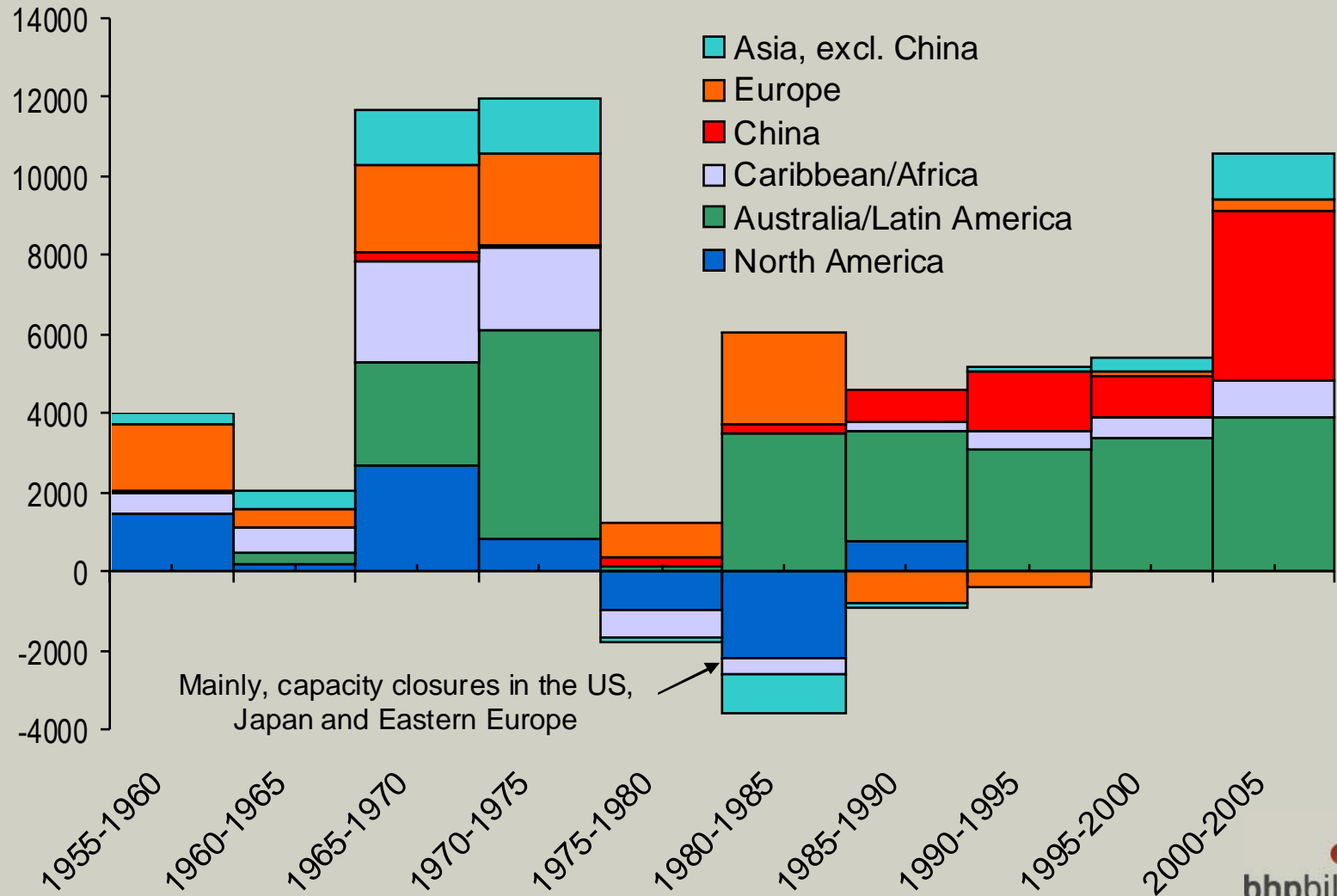
Source: CNIA



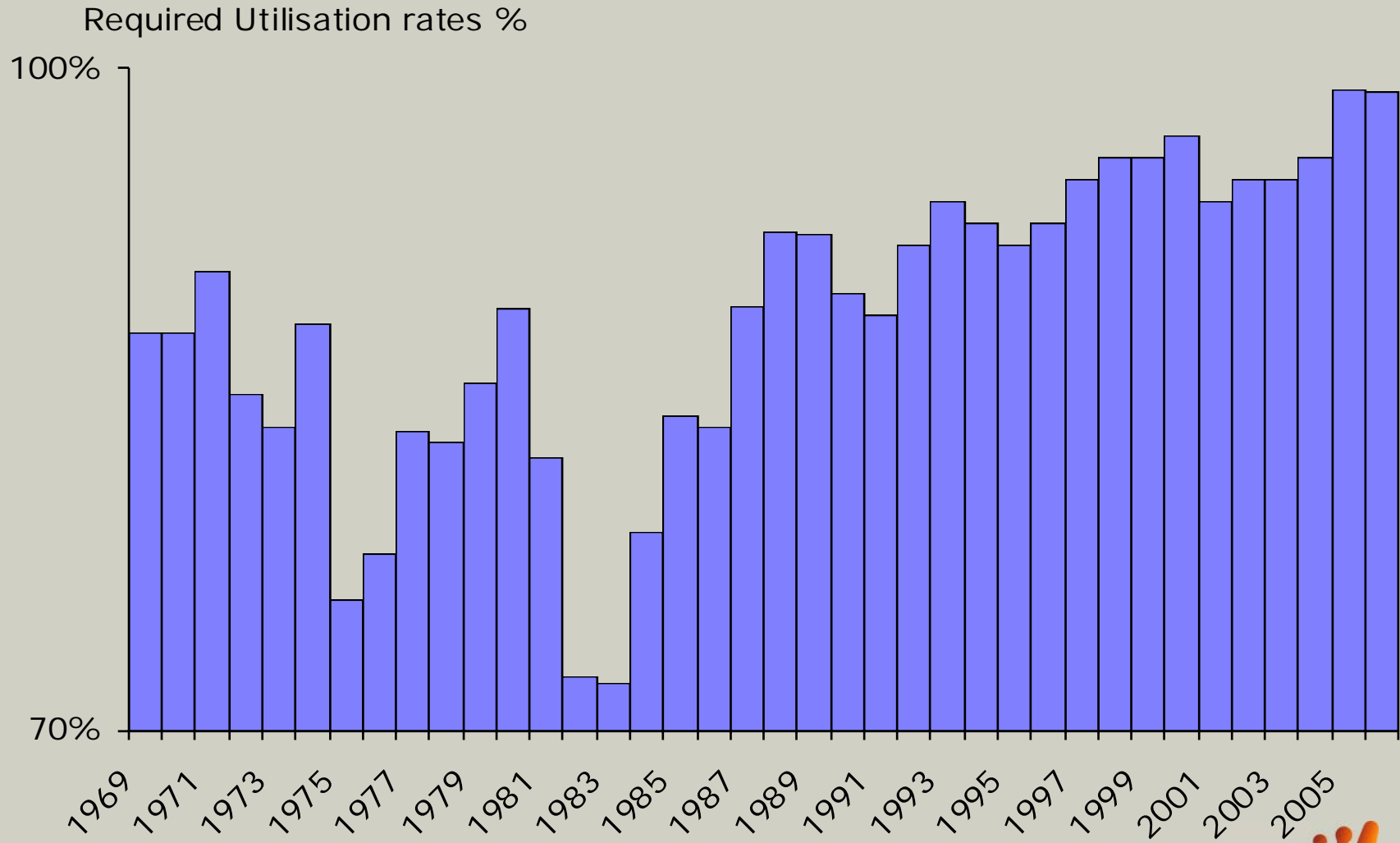
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Alumina capacity additions and closures since the 1950s – supply growth has not returned to levels seen in the 1960s - will supply growth from China/Australia/Latin America be able to keep pace with new demand?

'000 tonnes – Alumina Capacity

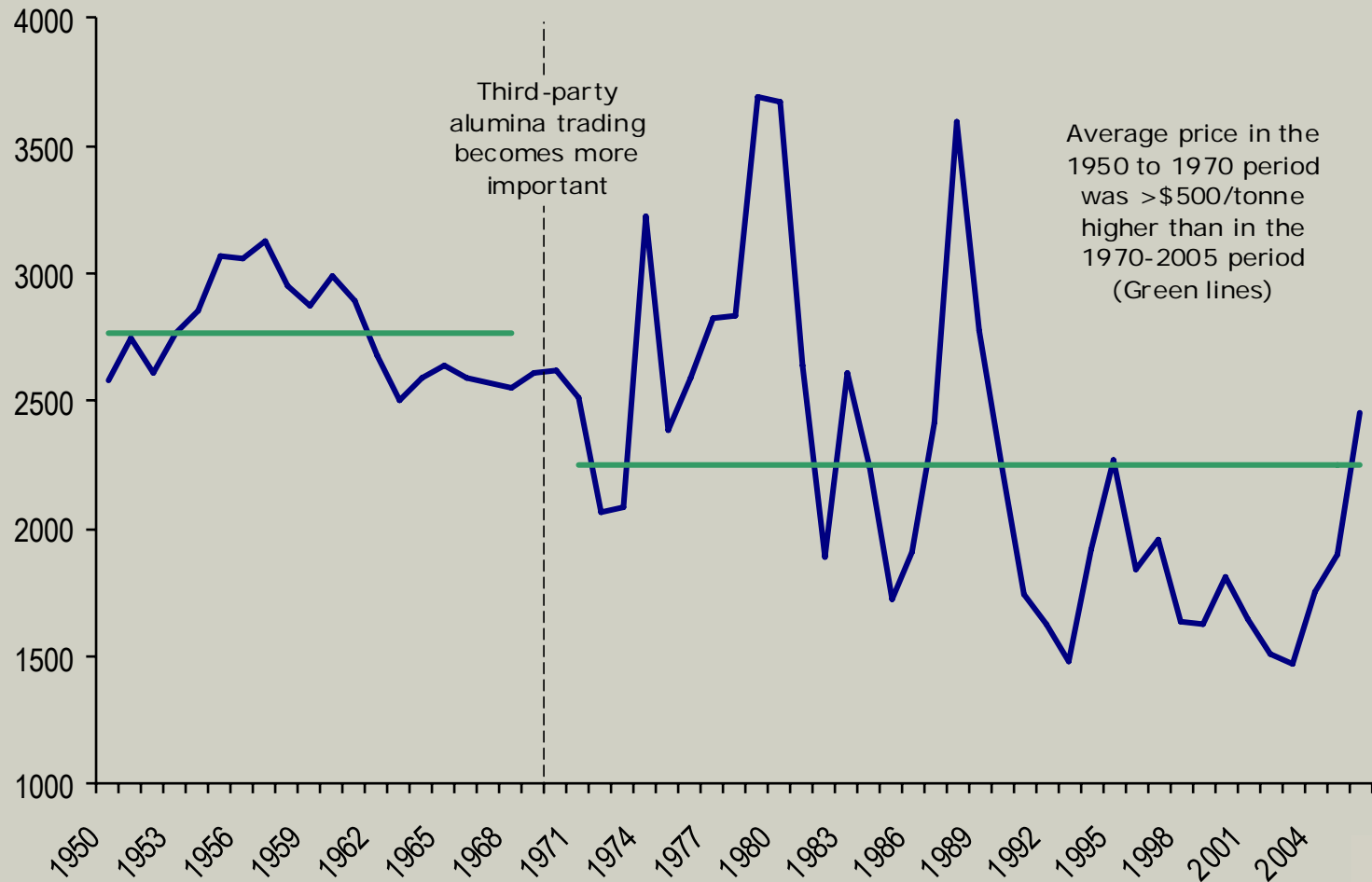


The market is extremely tight on the back of sluggish capacity growth and demand from China – no spare capacity currently available.

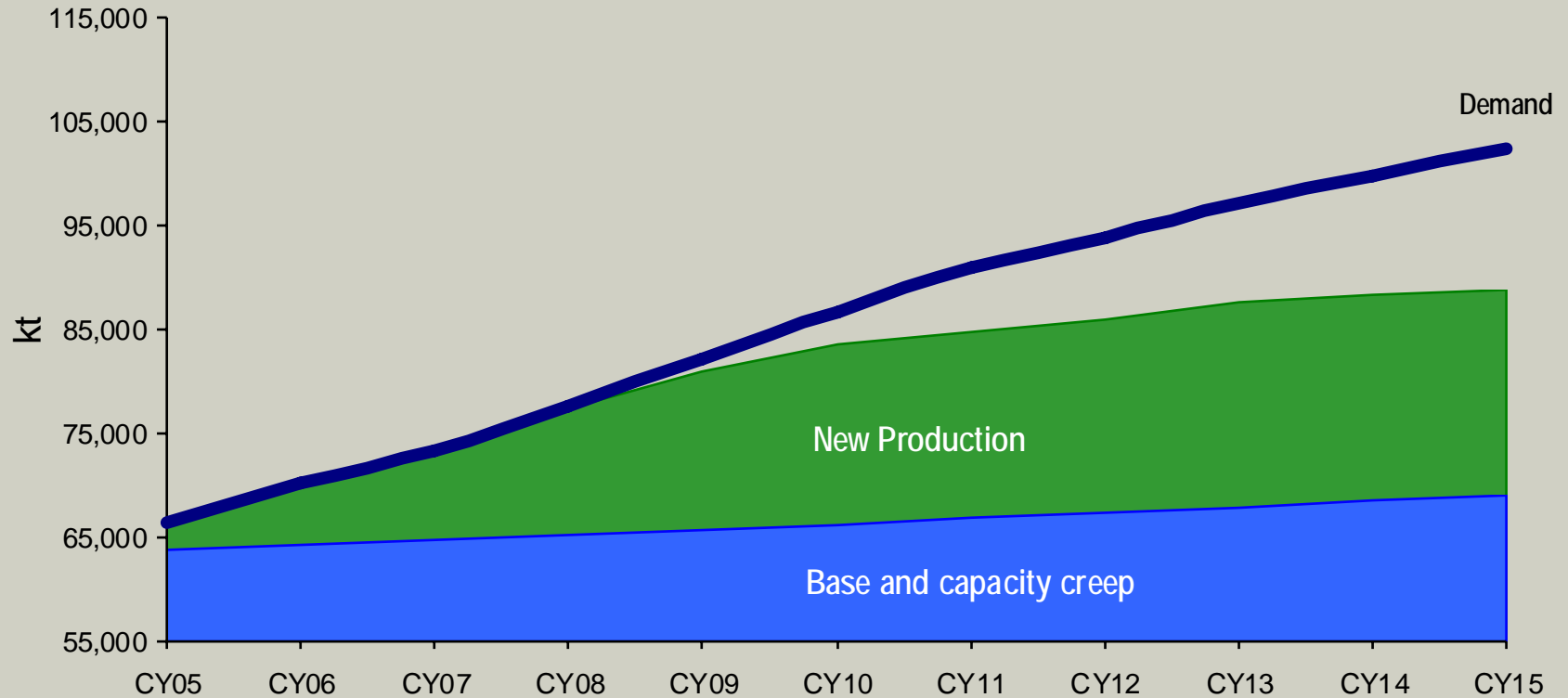


Aluminium prices in the post-war period were sufficient to meet the initial alumina forays into new geographies. More recently, the price linkage to the LME has not encouraged sufficient alumina capacity build.

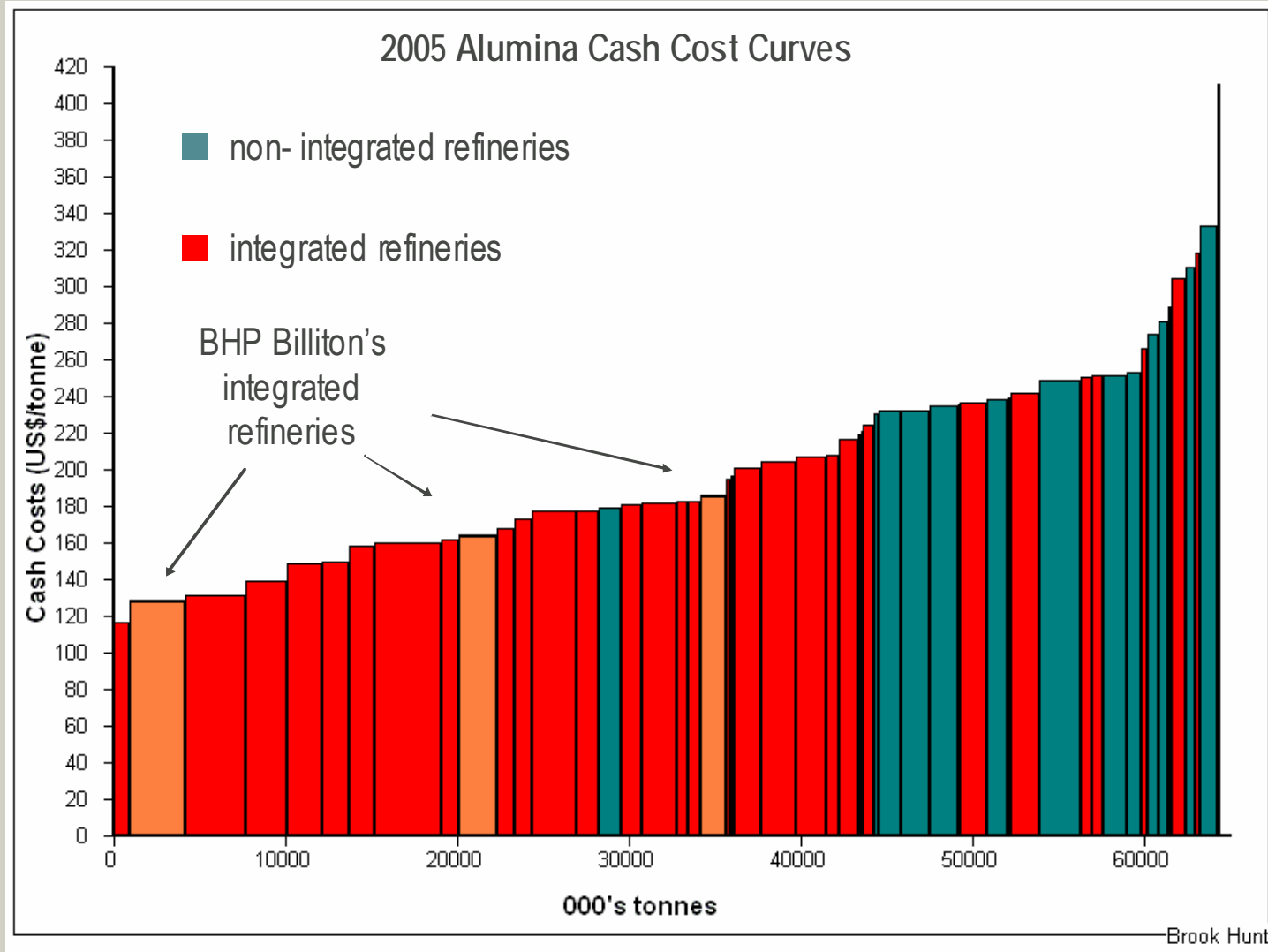
US\$/tonne real aluminium price in 2005 money



New production along with the existing refining base will be required to meet growing alumina demand from China and elsewhere



The non-integrated refinery tends to reside at the top-end of the cost curve – further cost increases should steepen the alumina cost curve.

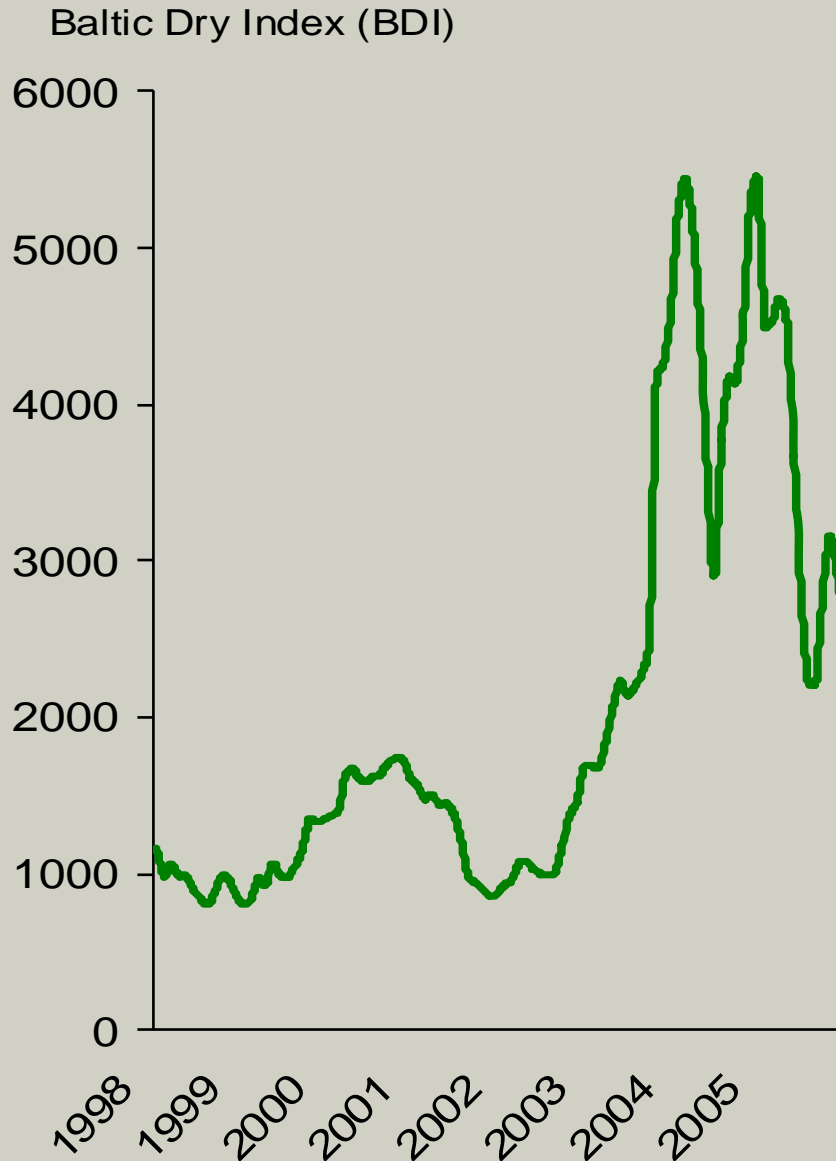


Brook Hunt



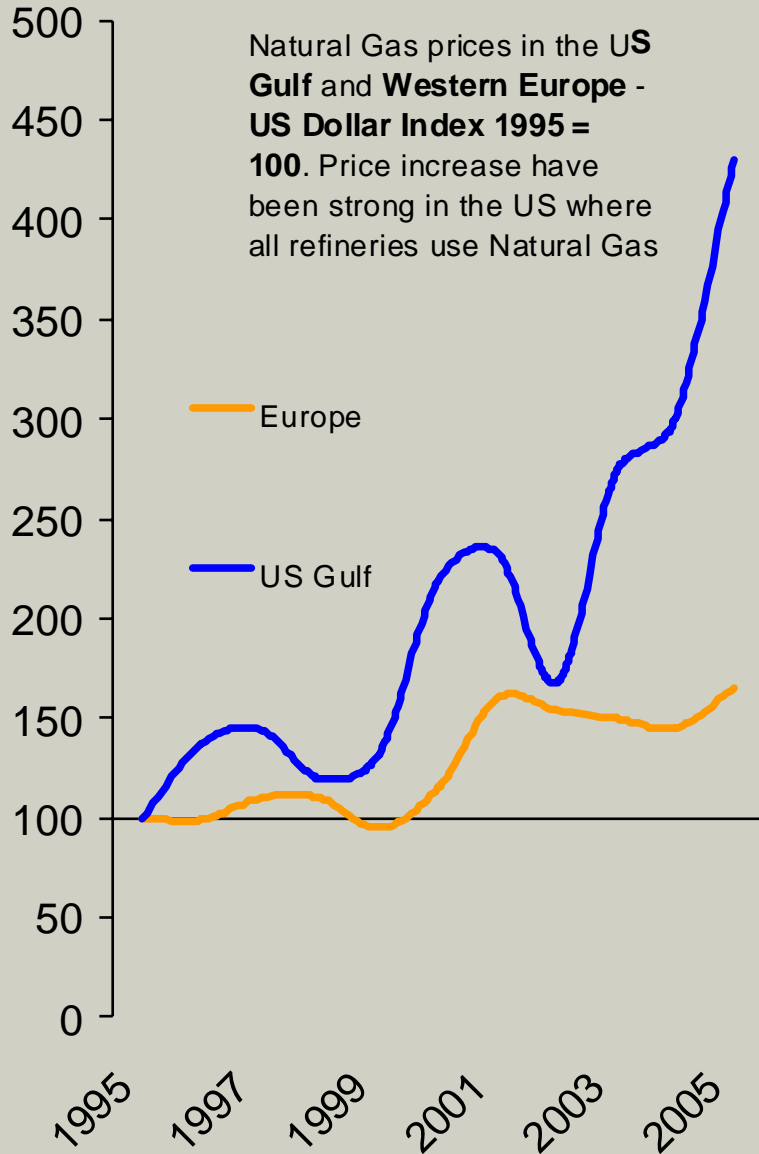
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Freight is the obvious additional cost for a non-integrated refinery – freight rates have been very volatile recently.

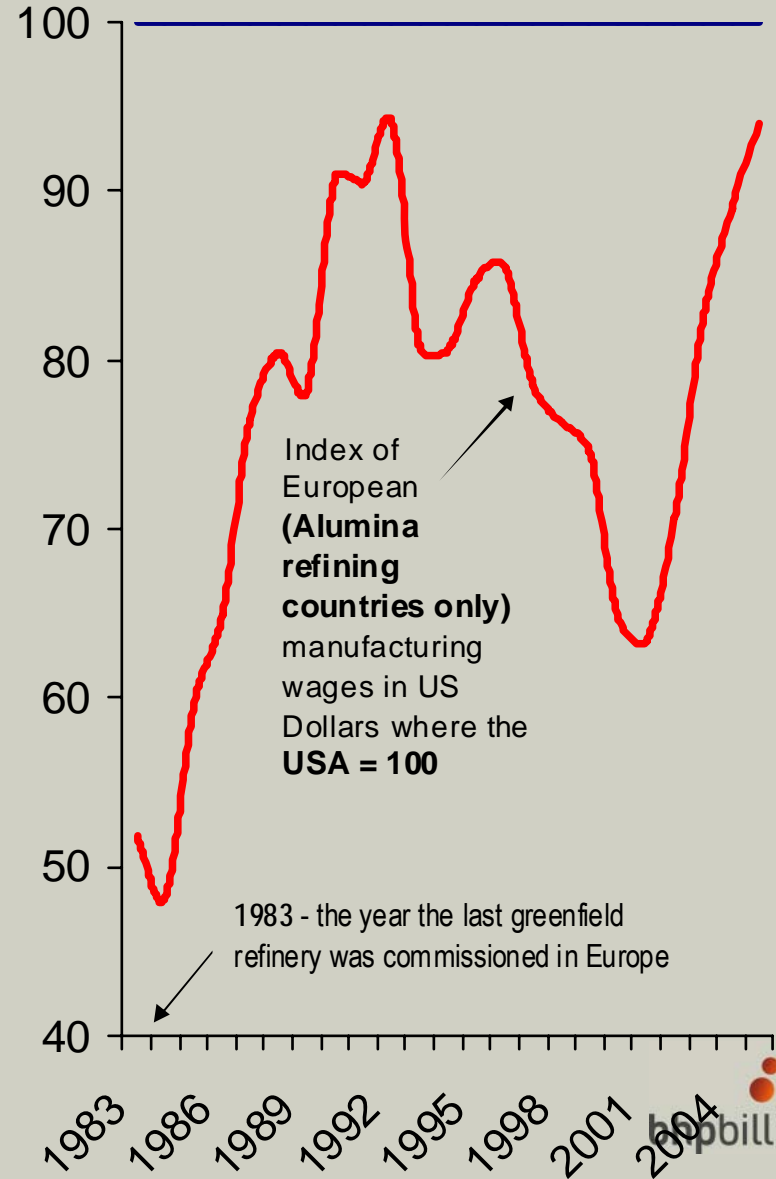


Source: MB

Raw material cost inflation has impacted non-integrated operating costs - Natural Gas and Labour



Source: DOE, Eurostat, BP statistics



Source: US Labor Bureau, BHP B



Summary

- The existing non-integrated capacity will continue to play an important part in meeting future demand.
- Lower capital and labour costs suggest further non-integrated capacity will be built in China.
- Non-integrated production is likely to face higher operating costs in the future
- Besides the existing base of capacity, the industry will need to develop in new geographies.
- To meet all the above conclusions, the industry needs a higher price level going forward.