



China and its impact on the global ferrosilicon market

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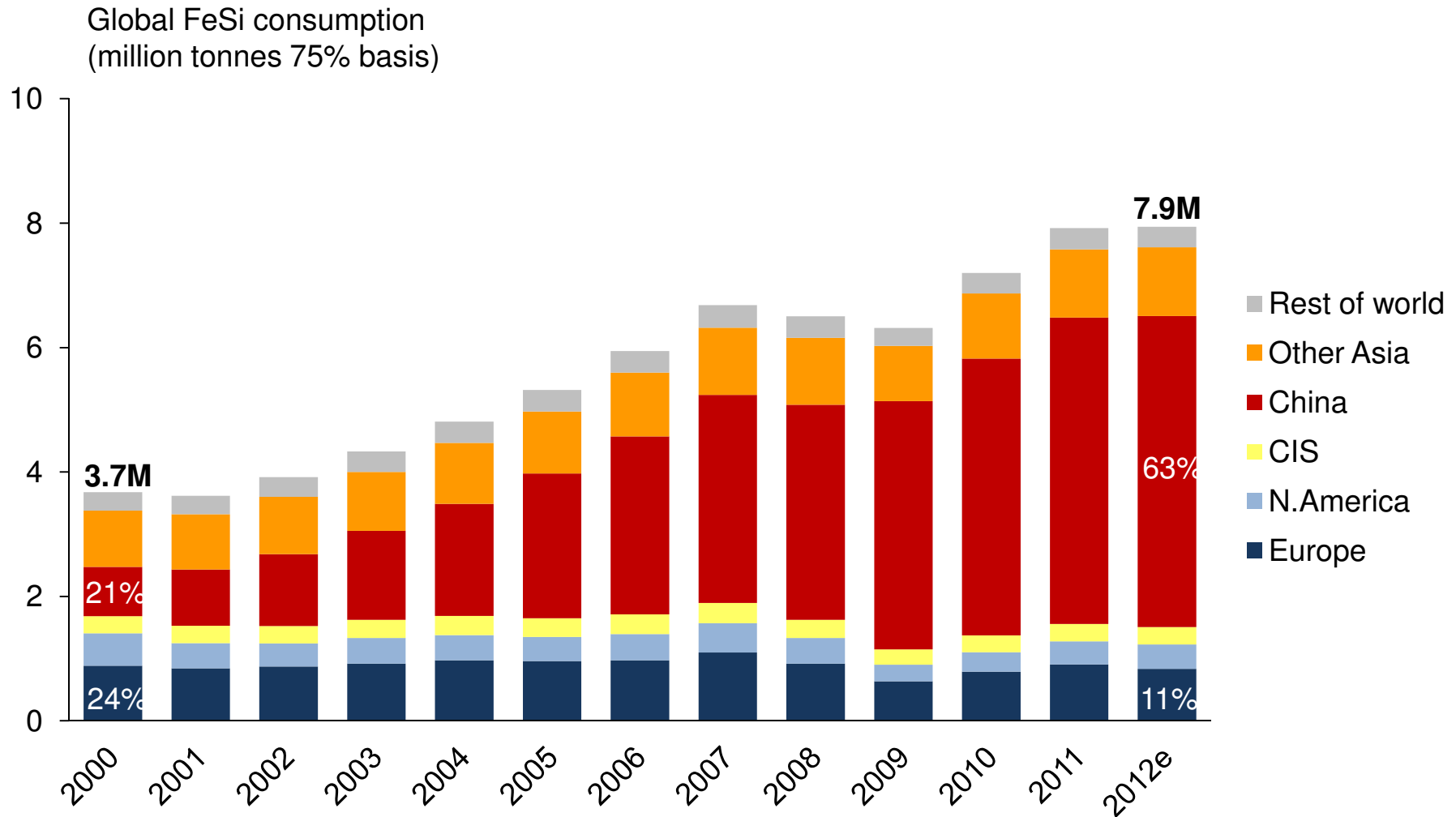


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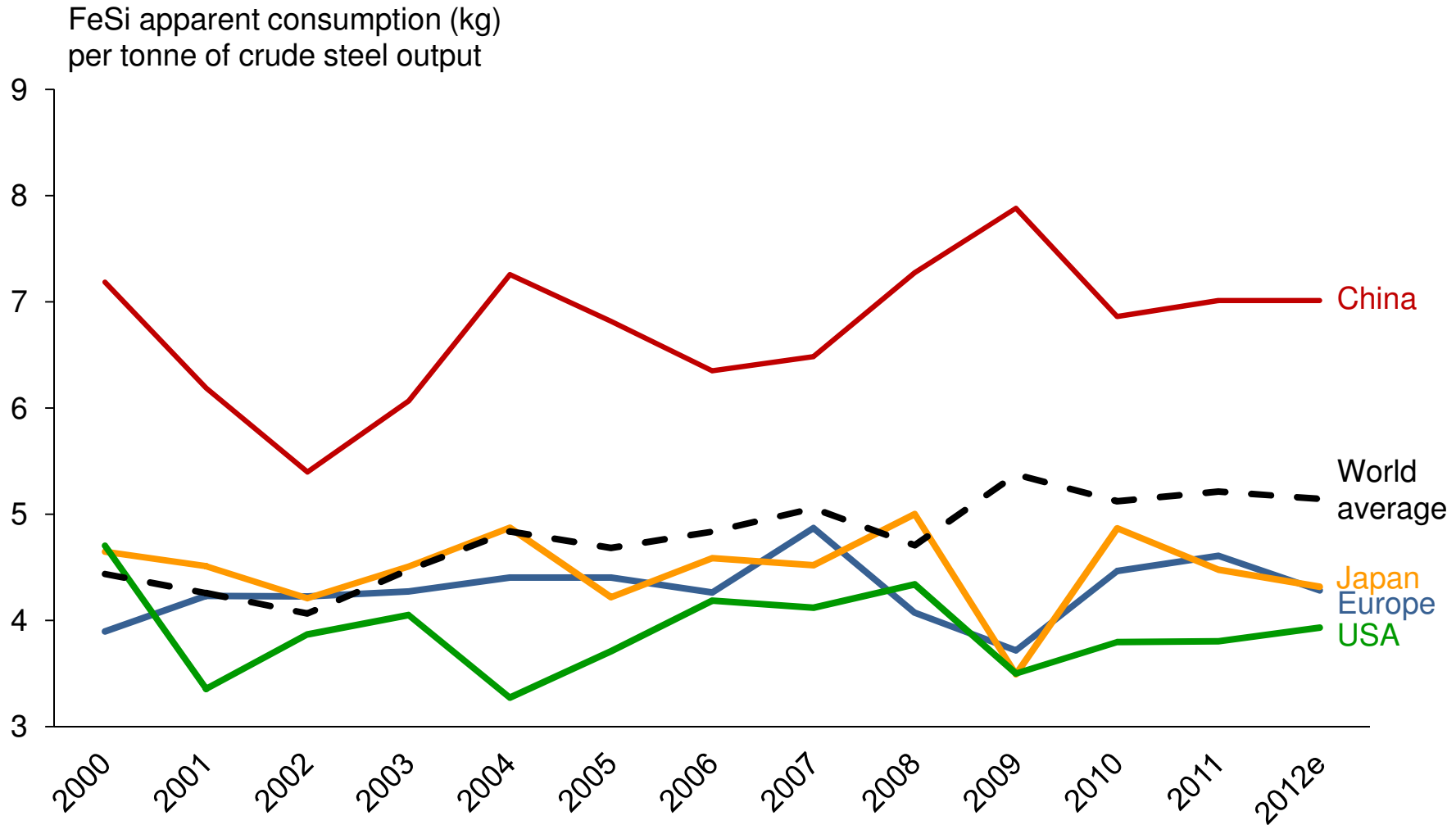
What is ferrosilicon?

- A ferroalloy of iron and silicon (FeSi), normally ~75% Si
- Used extensively in molten crude steel as a de-oxidising agent
- Also used to add electrical conductivity and corrosion-resistance properties to steel
- Average Si content of steel is 0.3%. Many individual grades are much higher in Si – stainless steel (up to 1% Si), electrical steels (up to 7% Si)
- Around 65% of global FeSi output is used in steel
- Other important applications are for de-carburising molten grey iron for the production of foundry castings and for producing magnesium metal in China

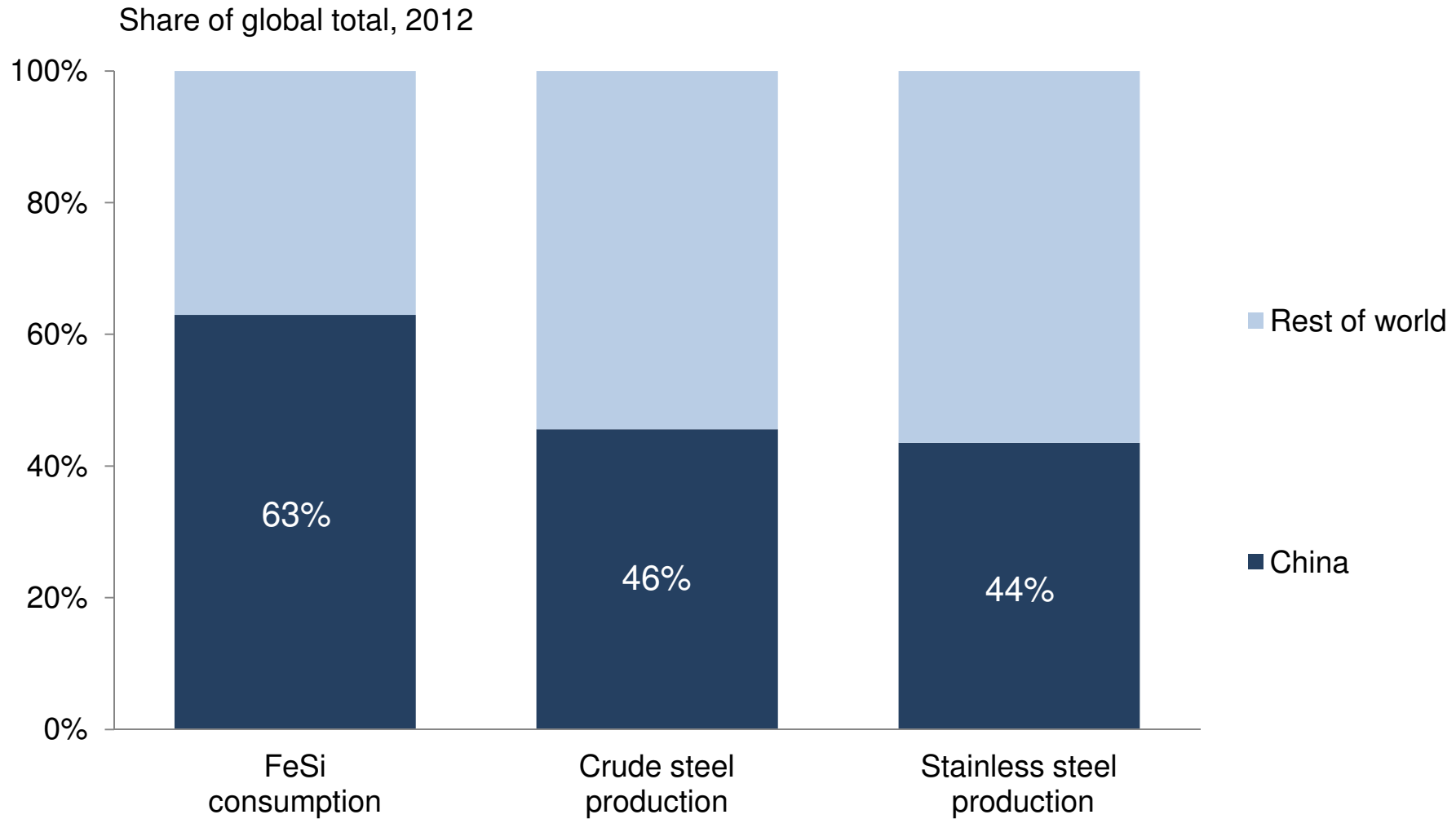
Global FeSi demand has doubled over the past decade. China's share has risen from 21% in 2000 to 63% in 2012



Consumption of FeSi per tonne of steel in China is 75% higher than in most other countries

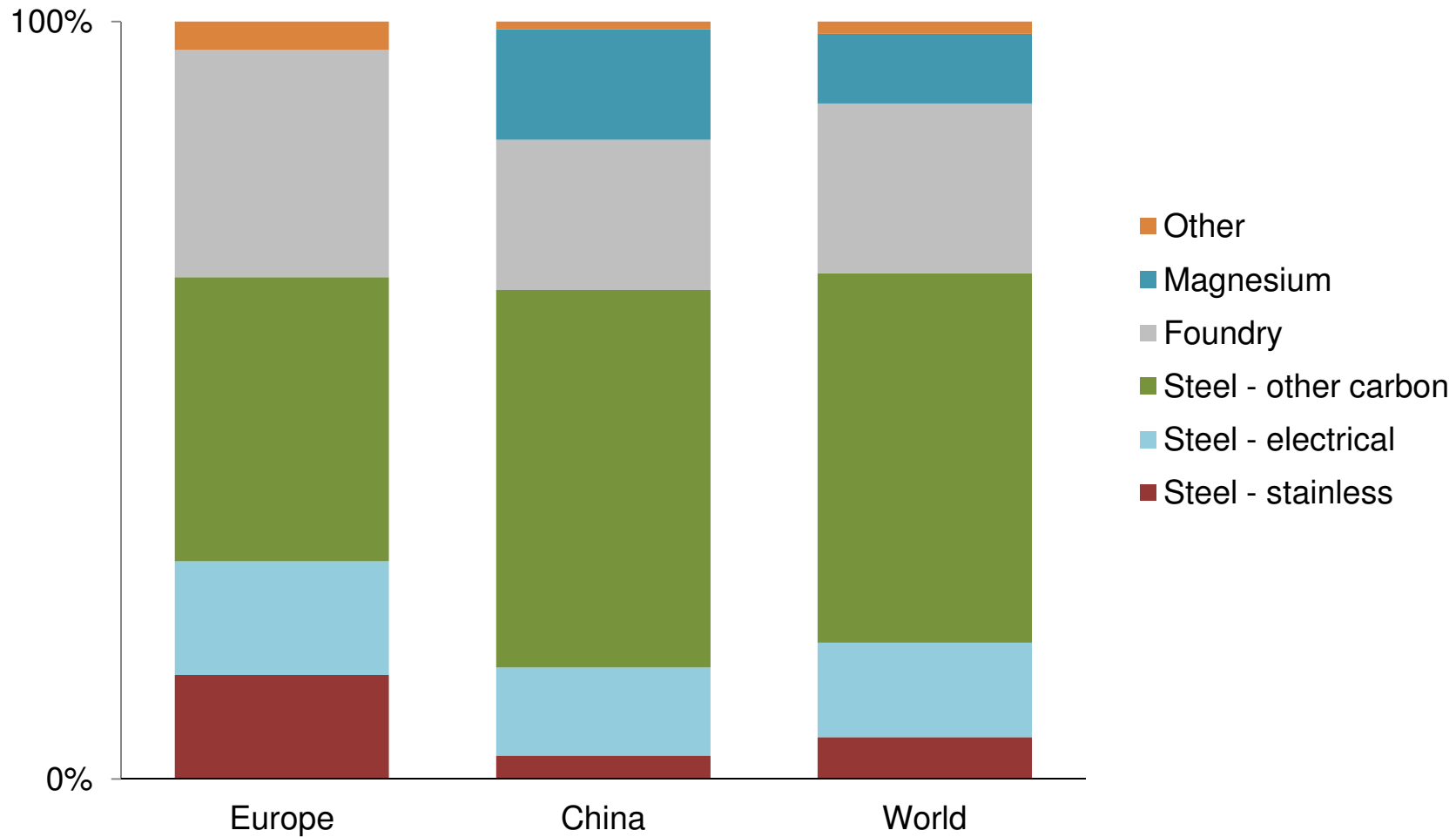


Hence Chinese share of global FeSi consumption is far higher than its share of global steel production



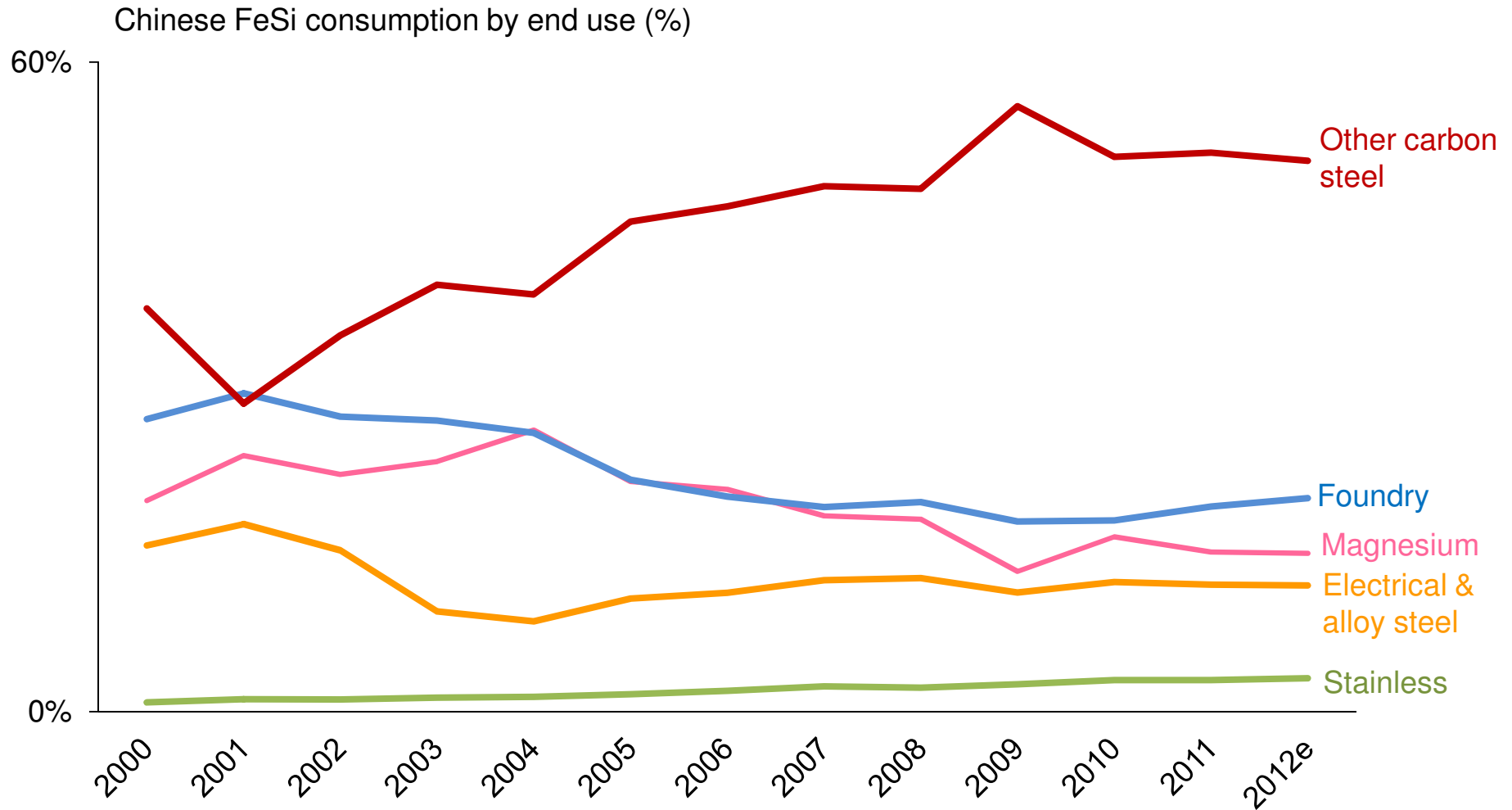
FeSi consumption by end-use sector, 2012

Around 65% consumed in steel

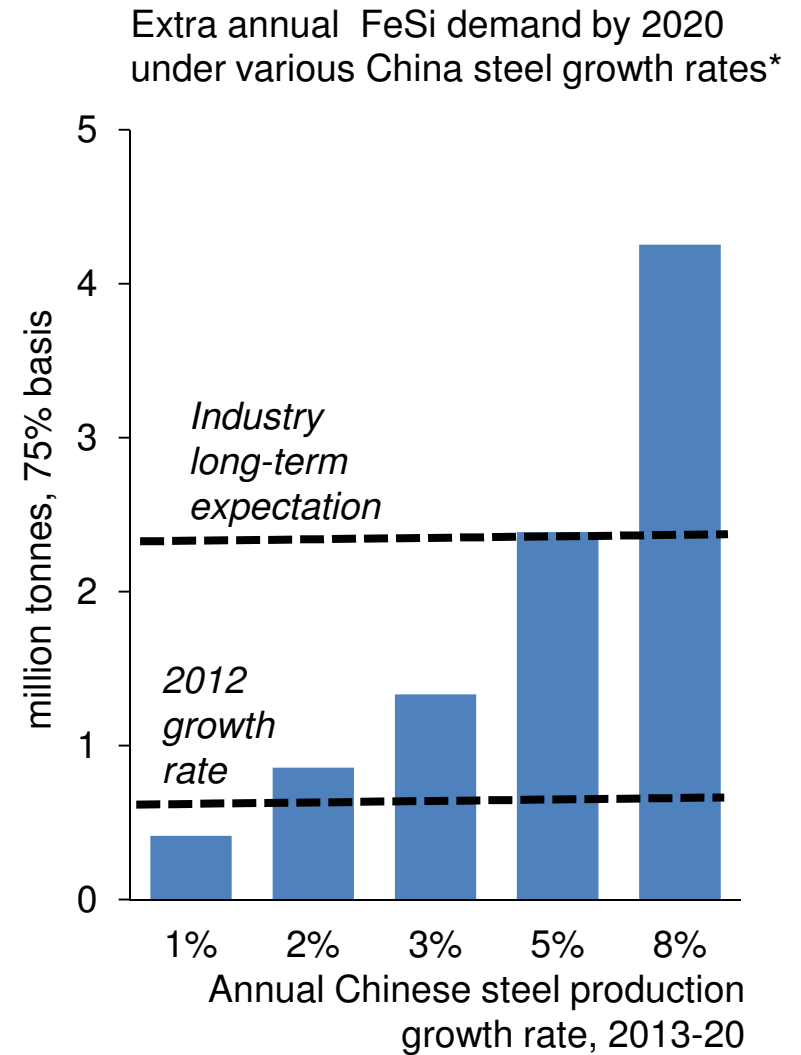
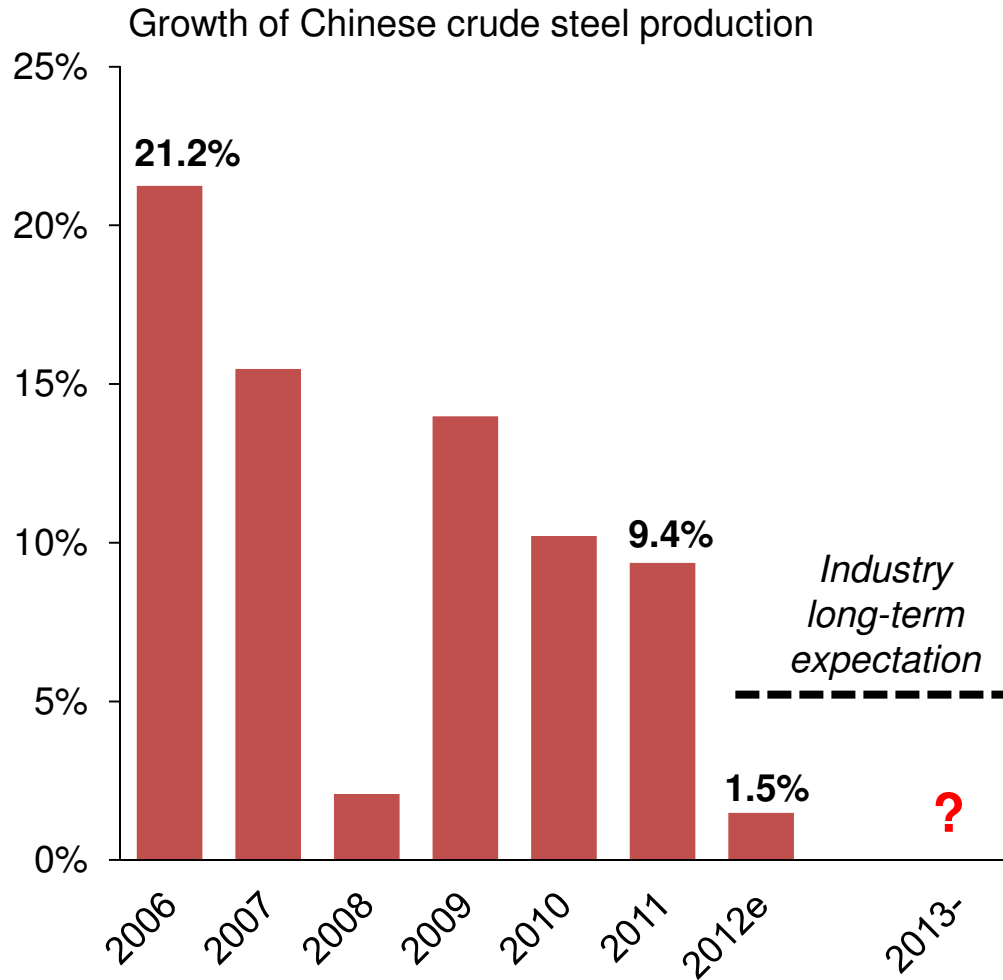


Chinese FeSi consumption by end-use sector

Further growth potential limited overall if carbon steel growth stays low

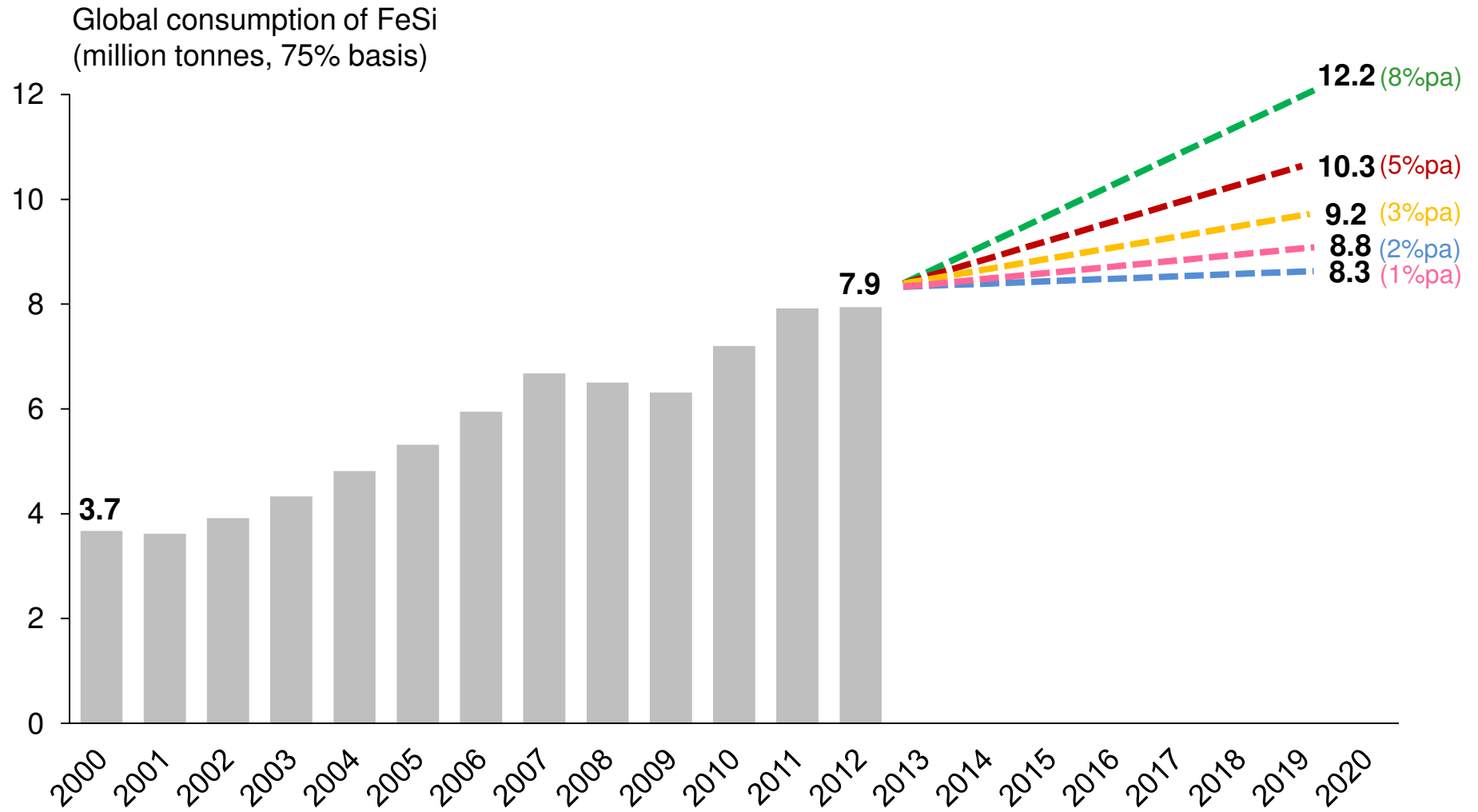


Demand level for FeSi over the next decade depends most on steel growth rate in China, which has fallen sharply in 2012



* assumes Chinese FeSi consumption per tonne of steel at 2012 level

Assumptions on Chinese steel consumption/production growth make a huge difference to FeSi demand forecast for 2020

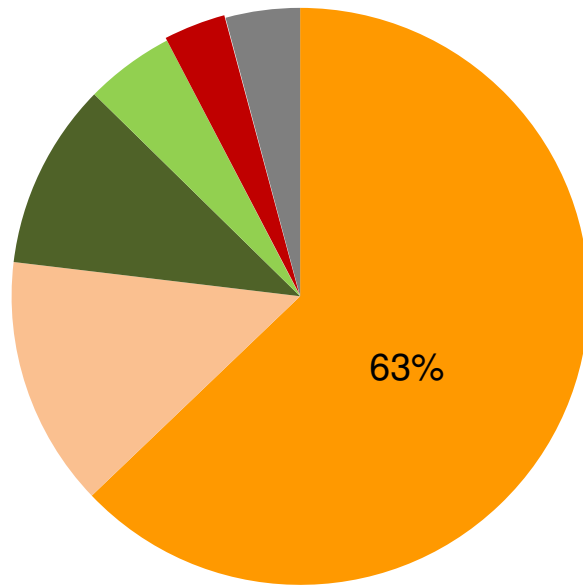


Forecasts assume Chinese FeSi consumption per tonne of steel at 2012 level

World FeSi consumption and production

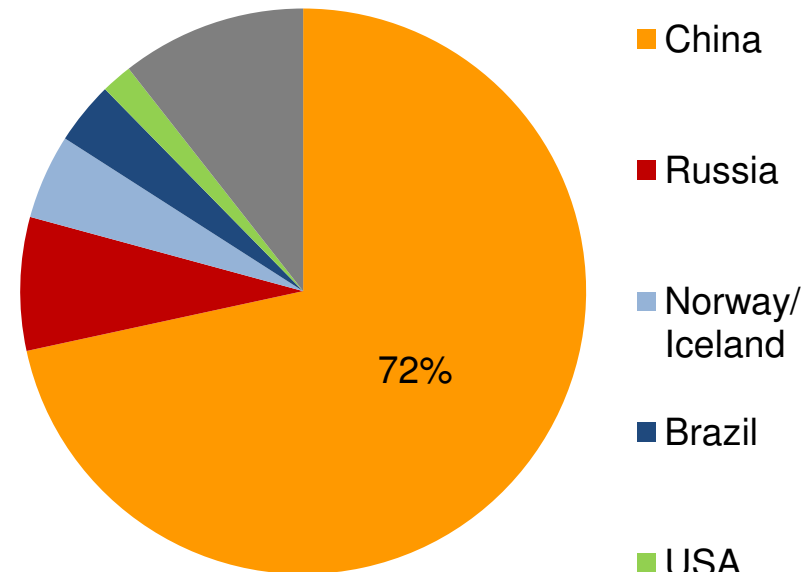
Both completely dominated by China

Global FeSi consumption,
2012



total
7.9 million tonnes

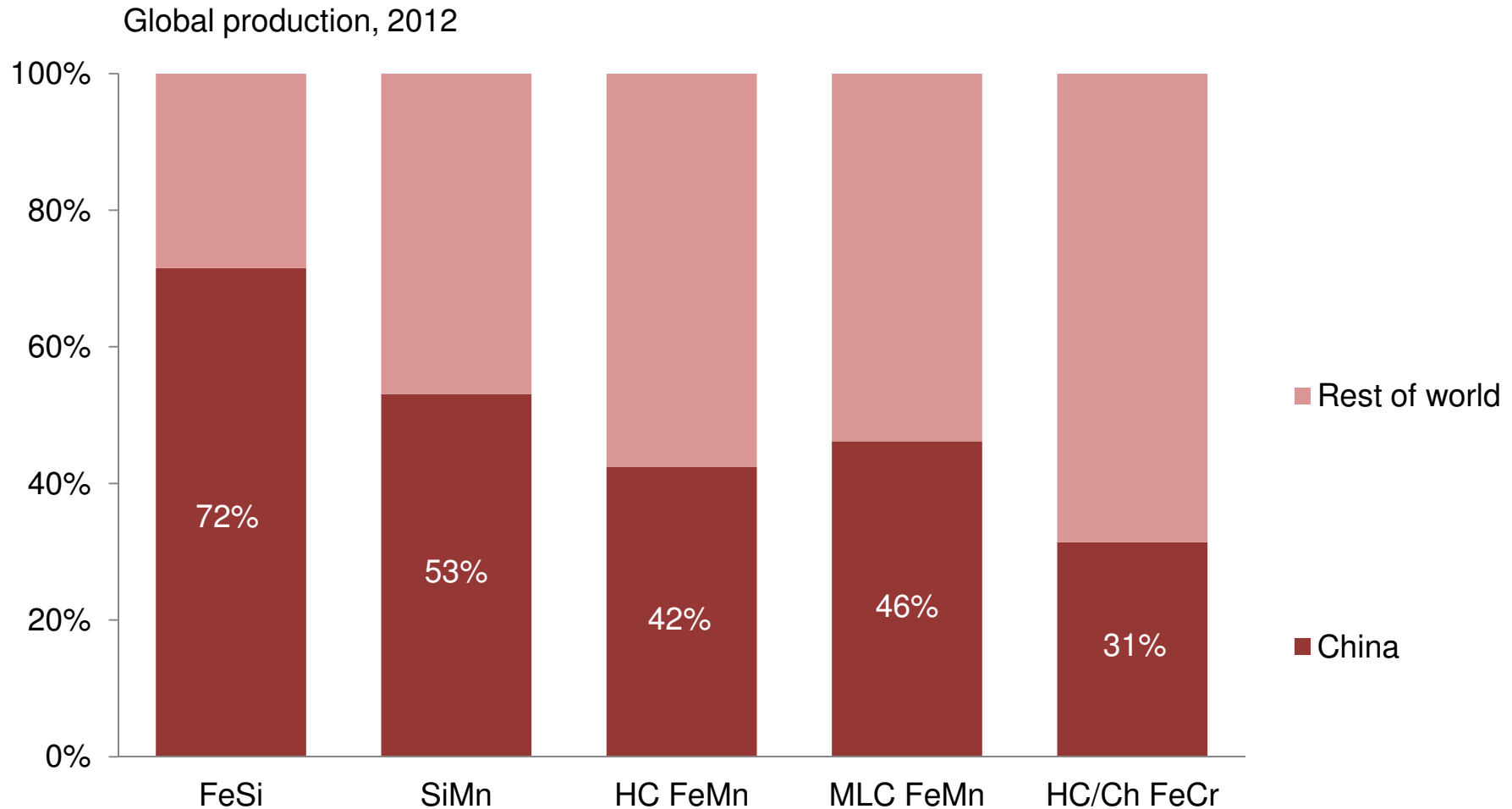
Global FeSi production,
2012



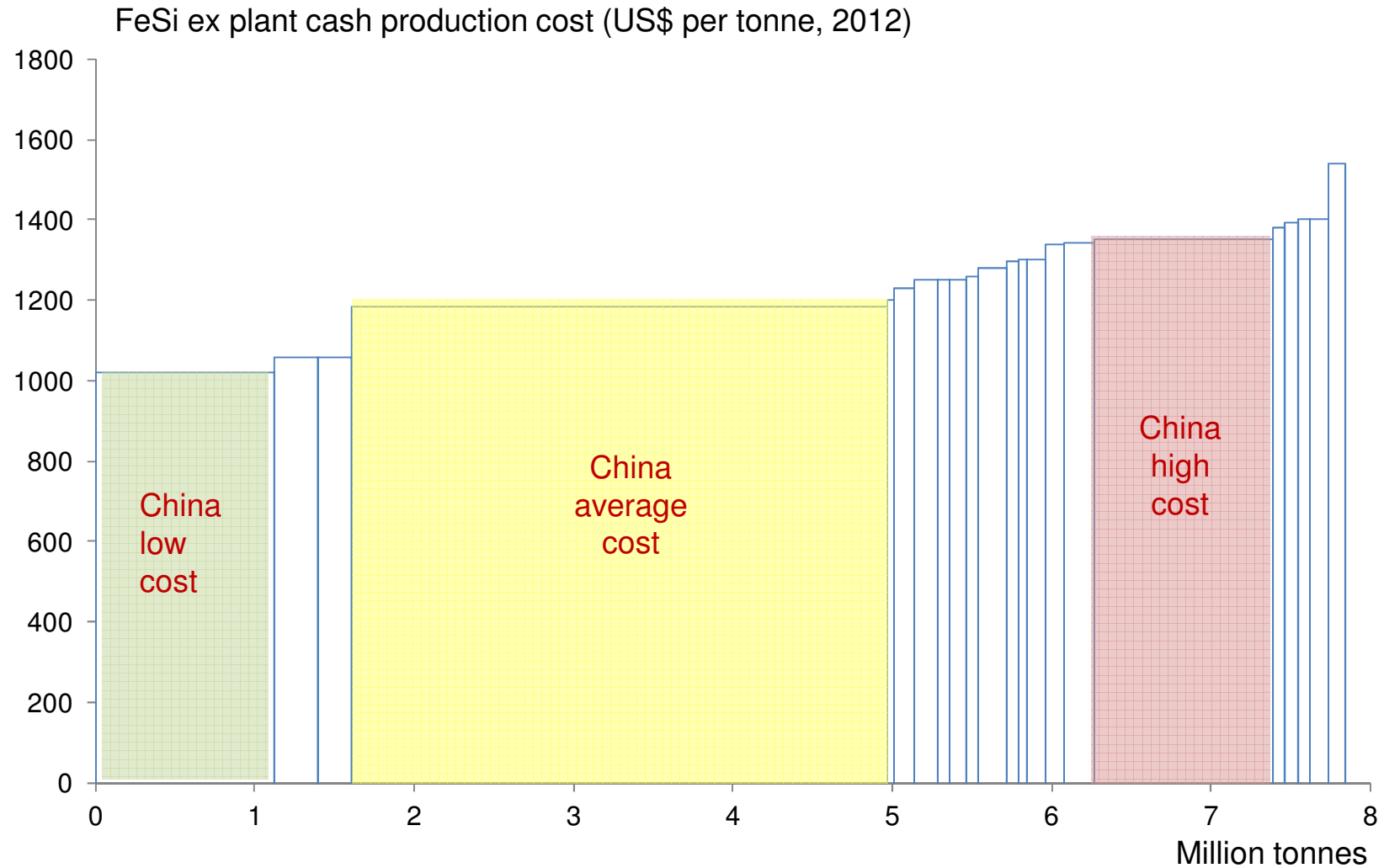
total
7.8 million tonnes

(total FeSi production capacity in China is ~10 million tonnes)

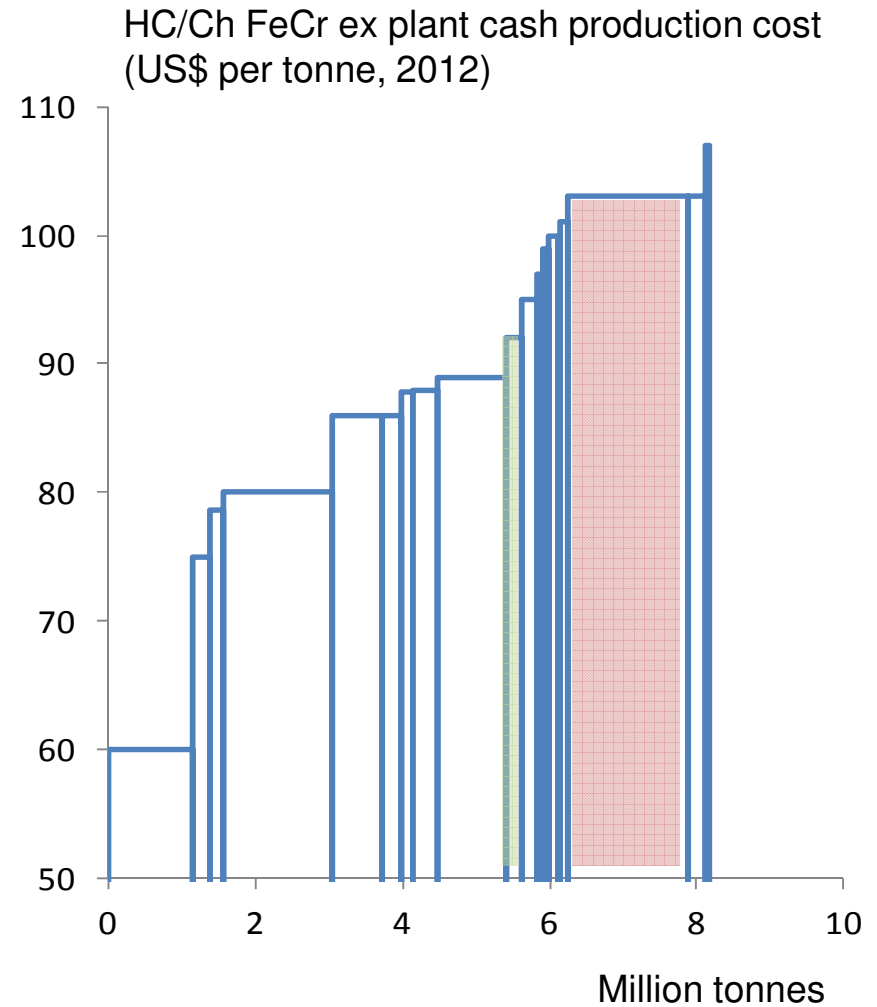
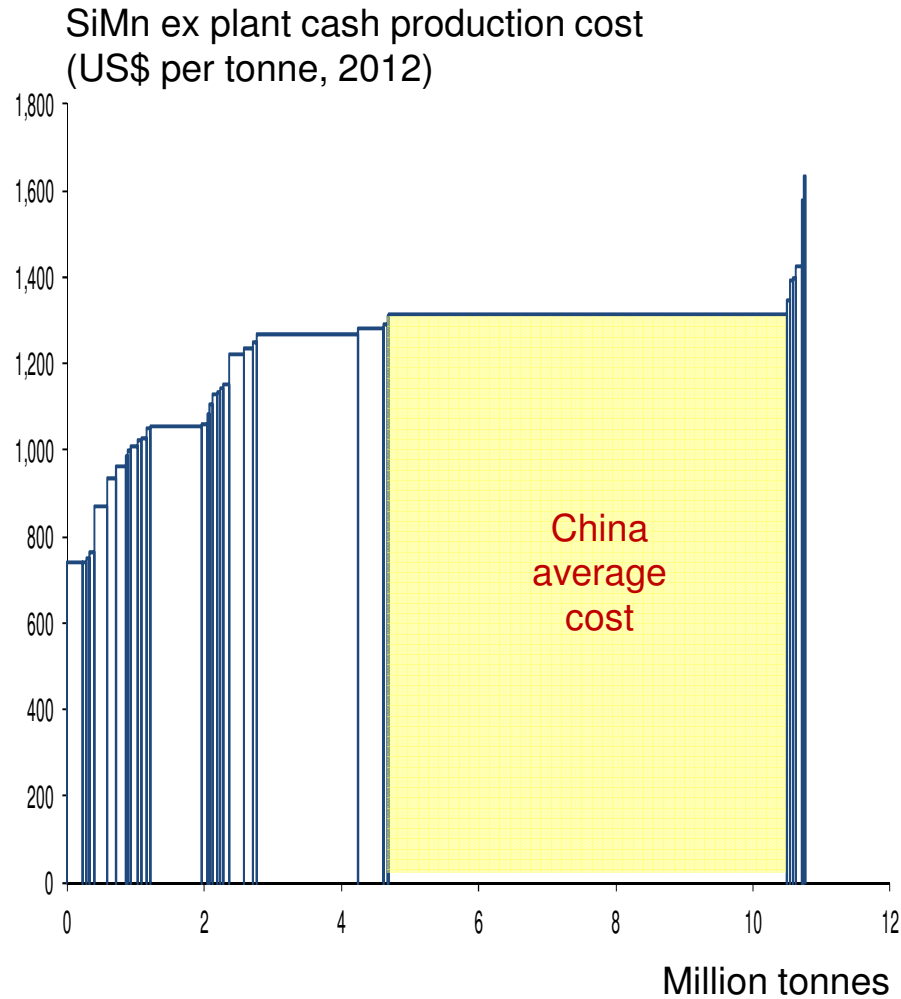
Of all the main steel-related ferroalloys, FeSi output is by far the most dominated by Chinese producers



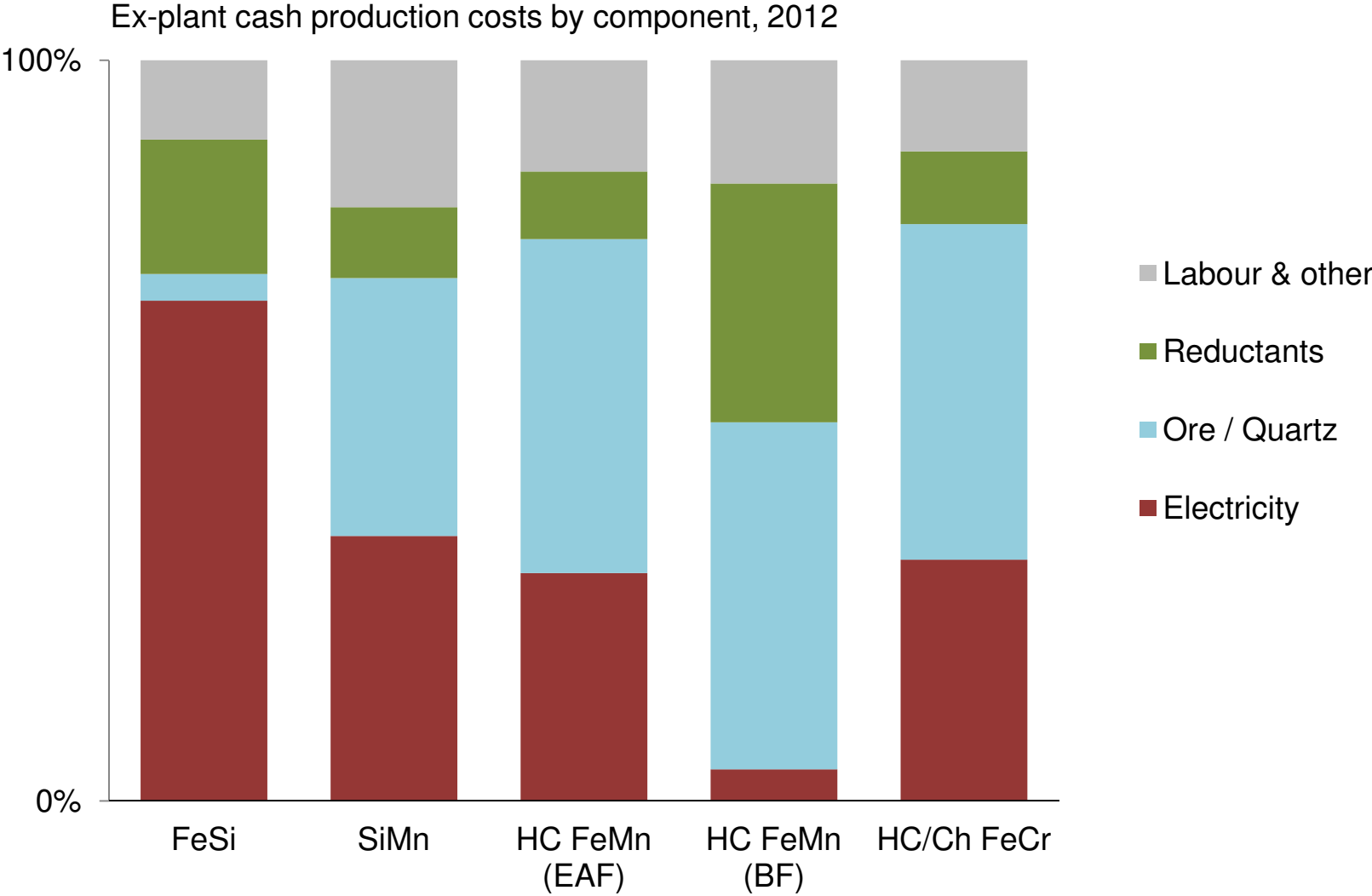
Chinese FeSi producers are mostly quite low on the cost curve, before export taxes or anti-dumping duties are added



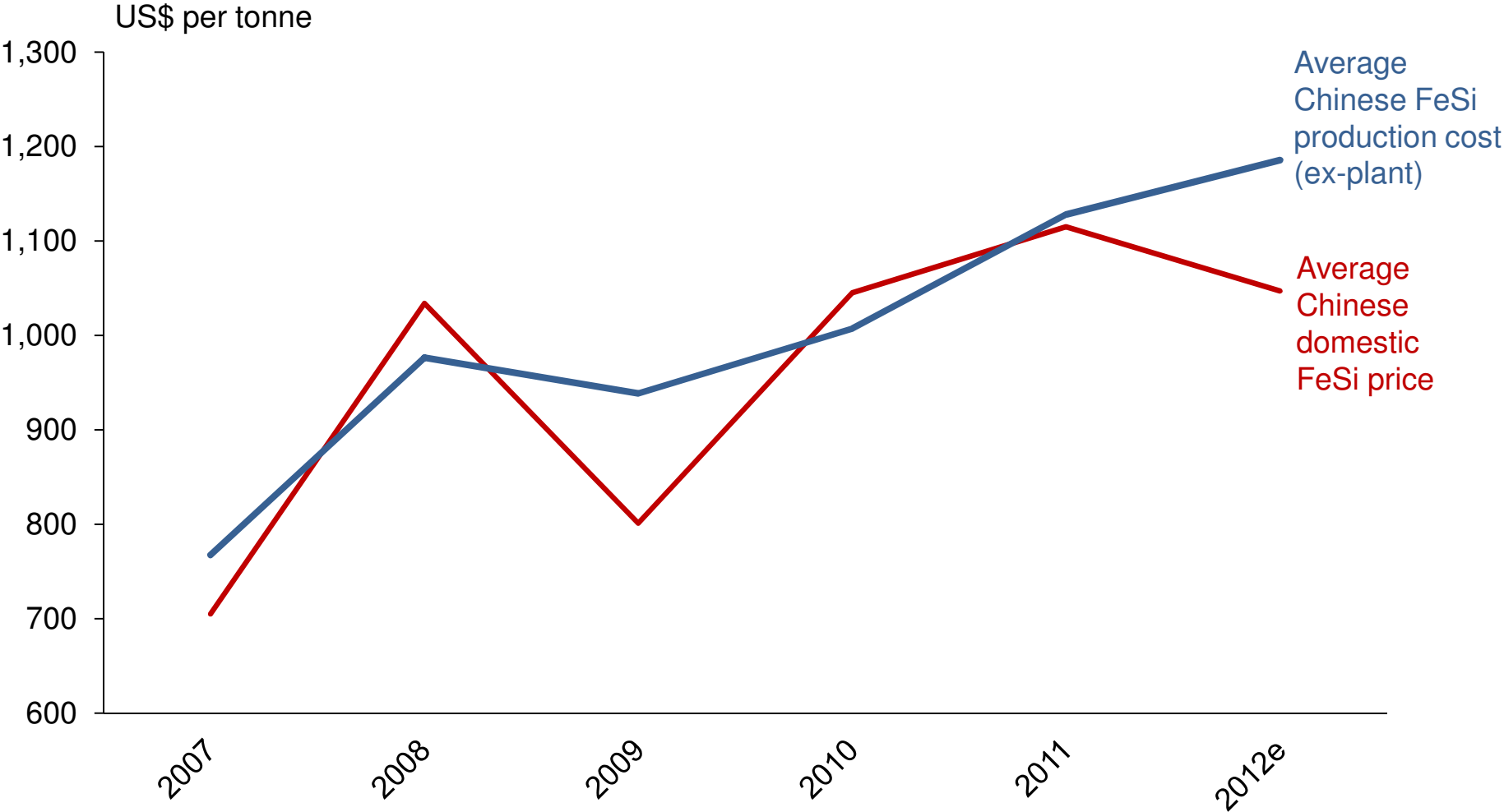
This contrasts with Mn alloys and FeCr, where Chinese are the high-cost marginal producers even before export taxes



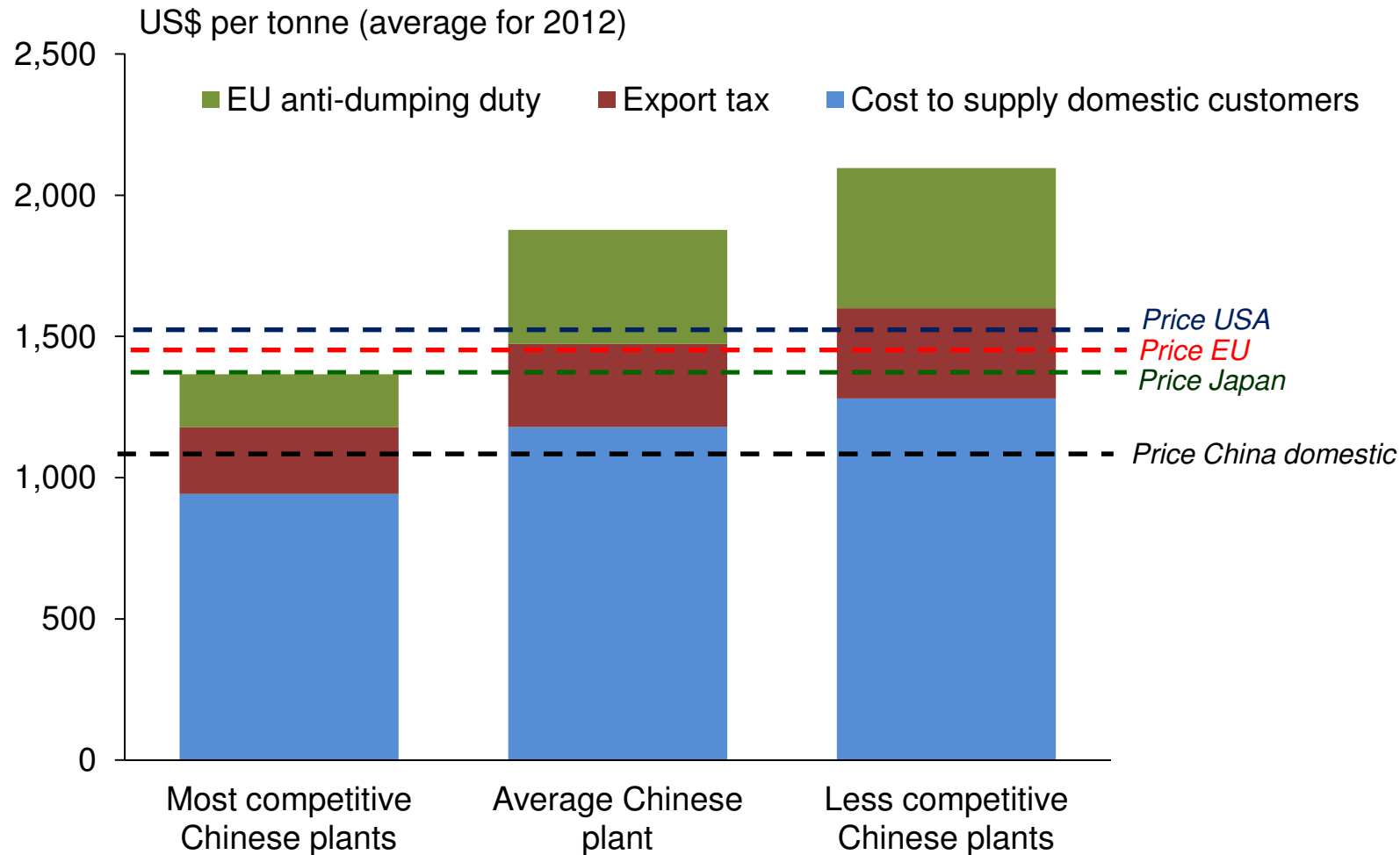
The key difference in FeSi is the composition of the cost structure in China, with ore (quartz) being of little importance



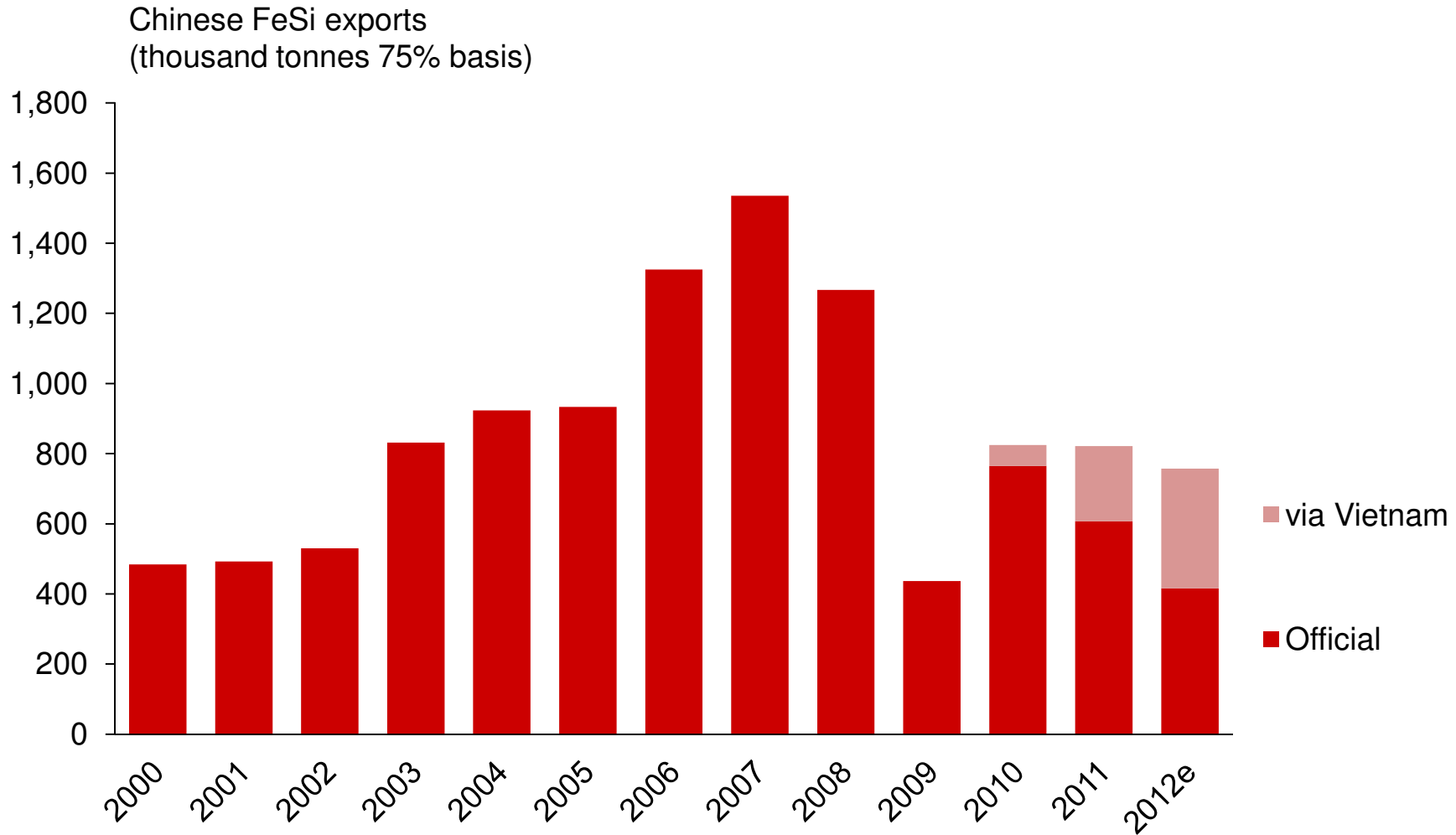
In the long term, Chinese FeSi prices track production costs closely....but plants making a loss in 2012



Sales to most export markets are also currently unprofitable for the average Chinese FeSi producer, if exported legally

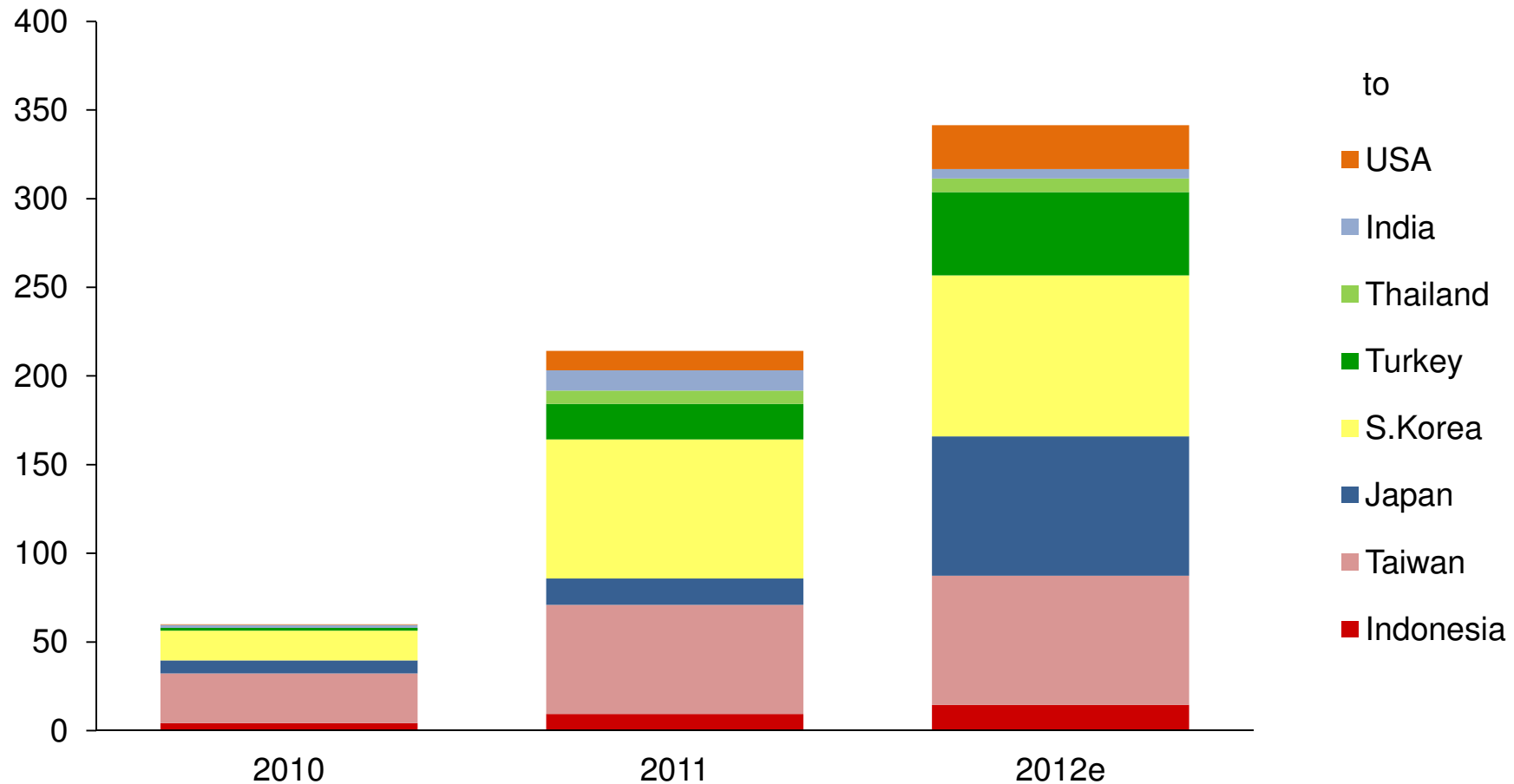


This has provoked an epidemic of smuggling. Smuggled material via Vietnam accounts for almost 50% of total Chinese FeSi exports

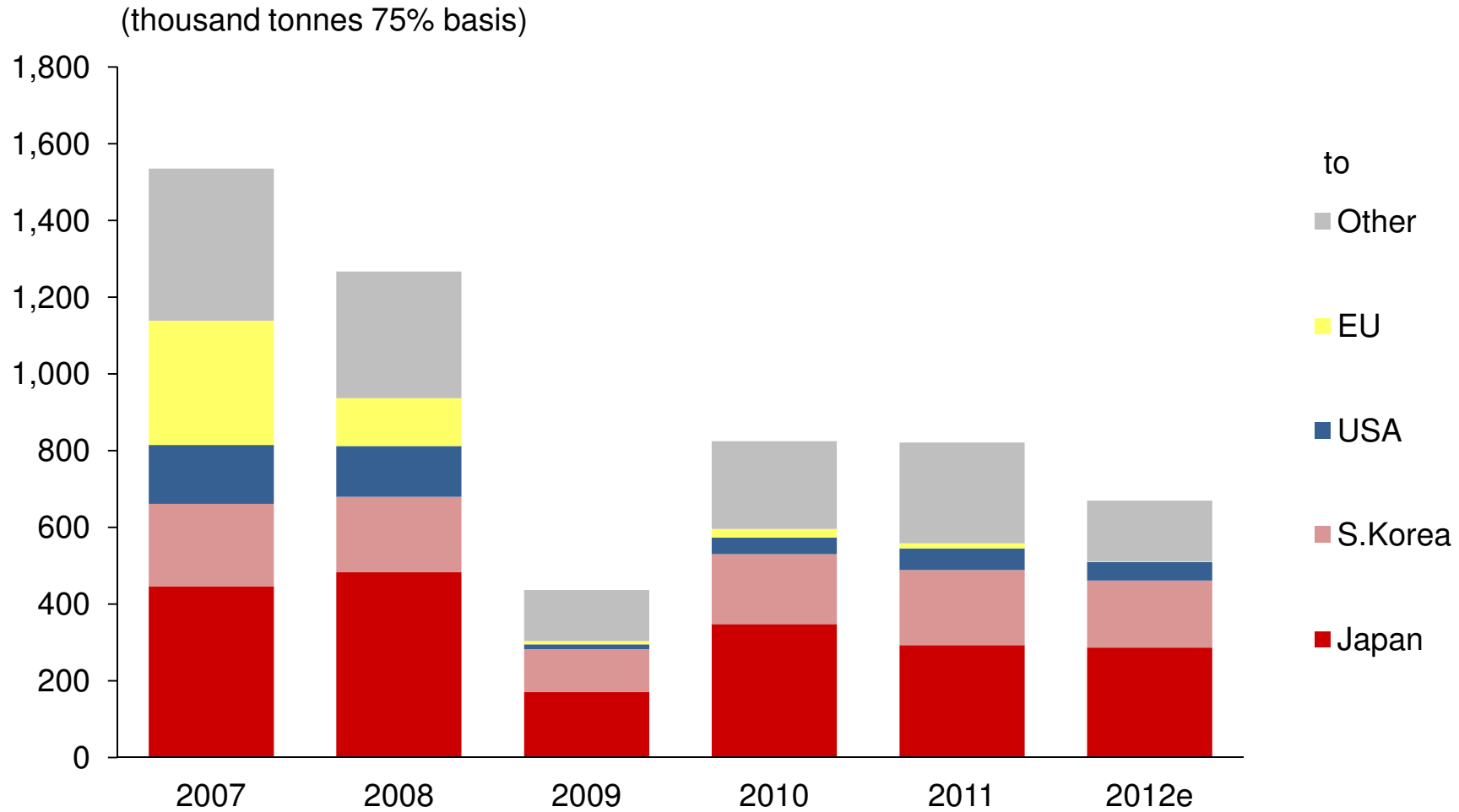


For 2012, around 350,000mt of Chinese FeSi is being smuggled through Vietnam to avoid export tax

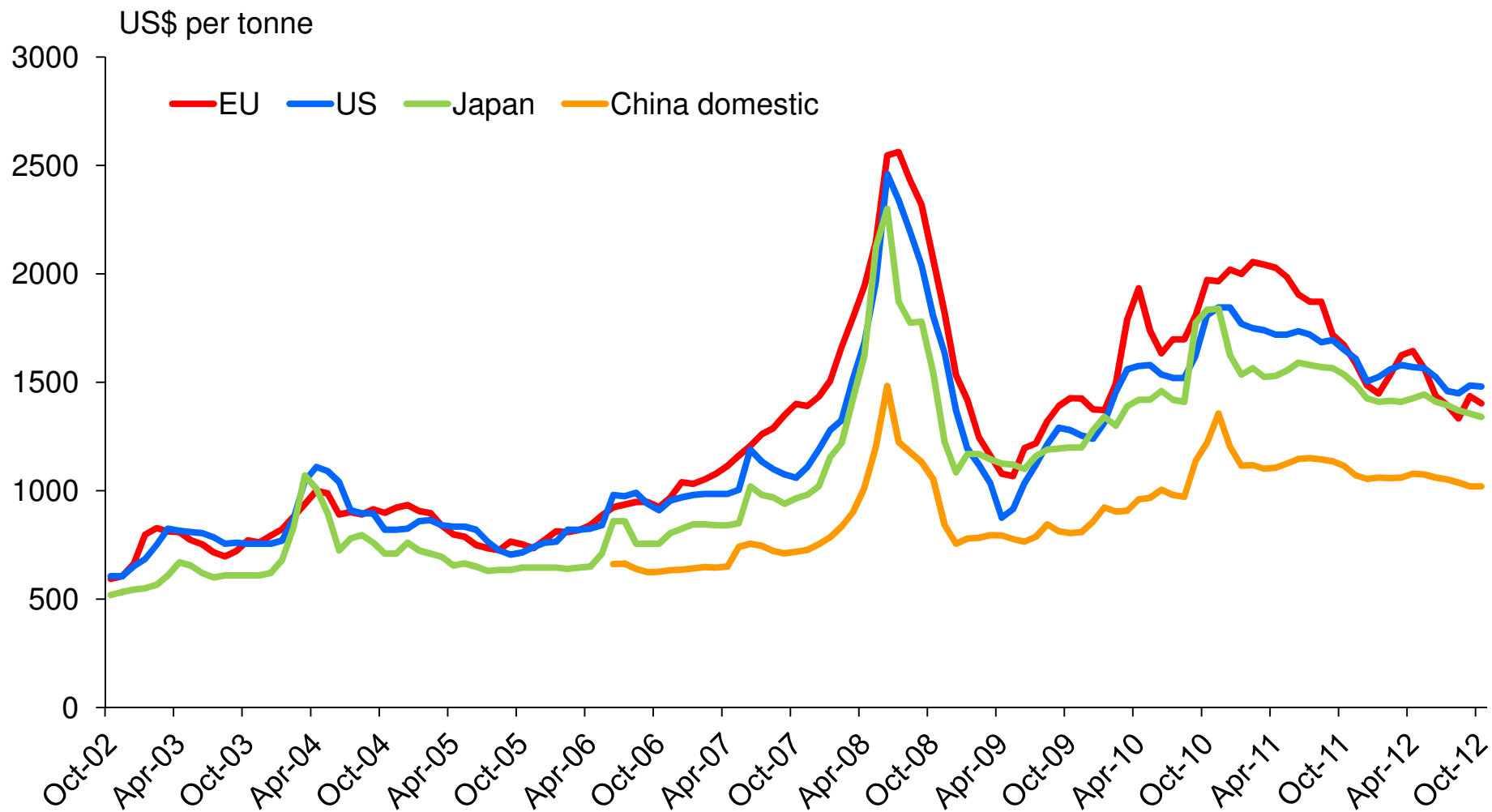
Estimated Chinese FeSi export via Vietnam
(thousand tonnes 75% basis)



Chinese FeSi exports by destination, including smuggled material



Poor demand and oversupply have resulted in falling FeSi prices globally through 2012



Points to watch

- Extent of recovery in Chinese domestic consumption
- Potential lowering / removal of export taxes due to weak domestic market and WTO pressure
- Epidemic smuggling through Vietnam
- Anti-dumping duty expiry in EU
- Potential for increase in Chinese exports if domestic demand remains weak and export taxes / duties are lowered