



Market pulp supply and demand review

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HAWKINS WRIGHT



Contents

- Where we started...
- Demand review
- Supply review
- Fibre question
- Risks
- Impact from DP sector

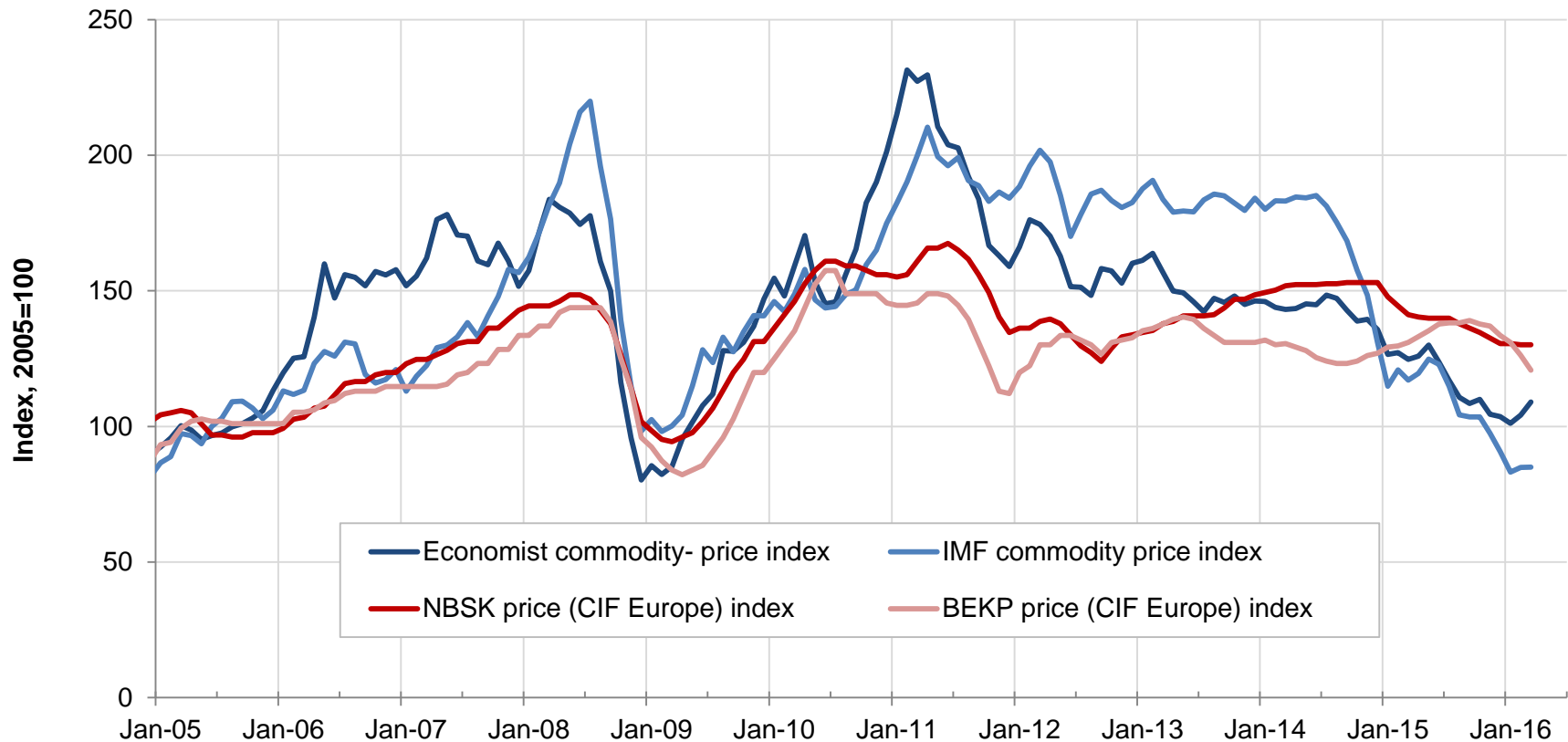


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Benchmark pulp prices vs. other commodities

(Indexed, 2005 = 100)



- 2015 was an exceptional year, especially for hardwood
- Recent BHKP price declines can be seen as a delayed correction

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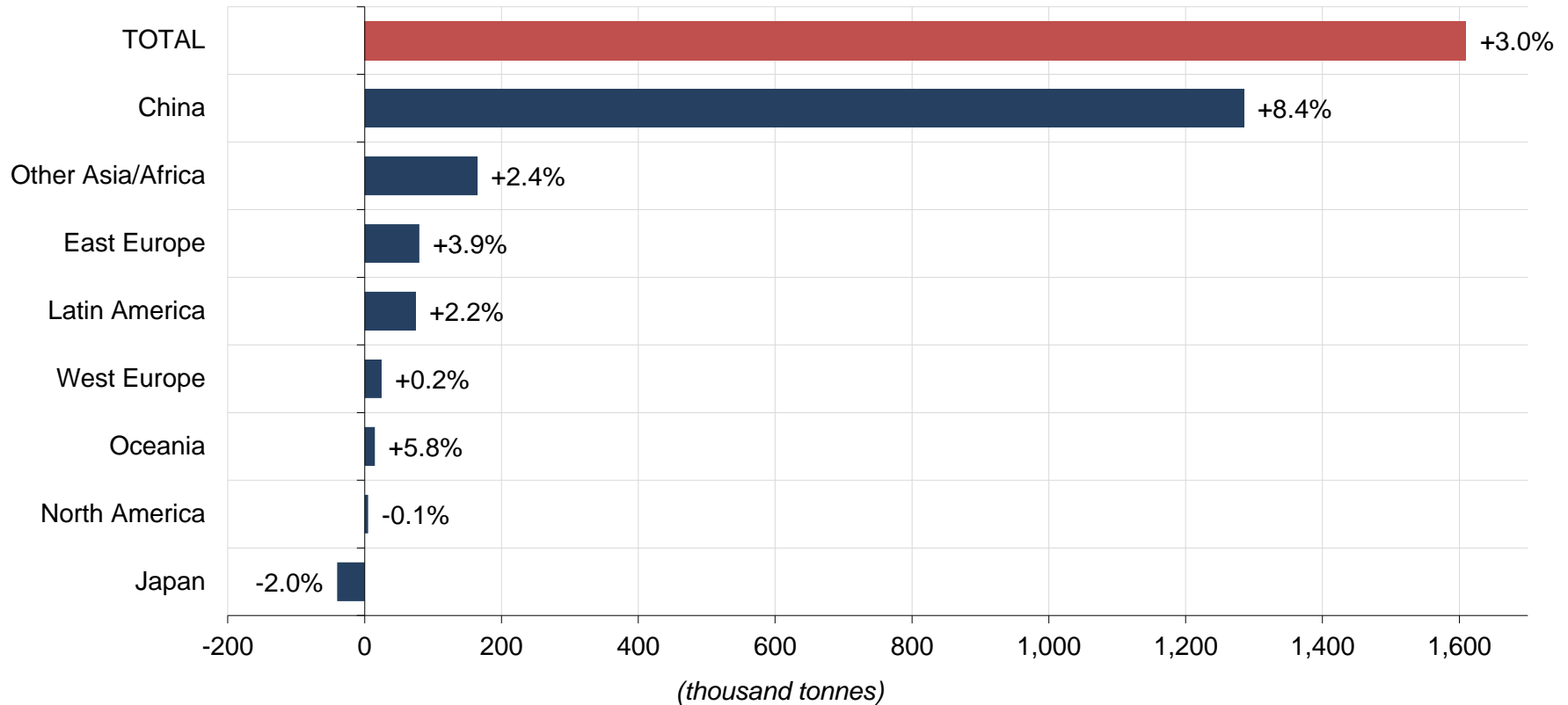


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Bleached chemical demand growth, 2015 v 2014

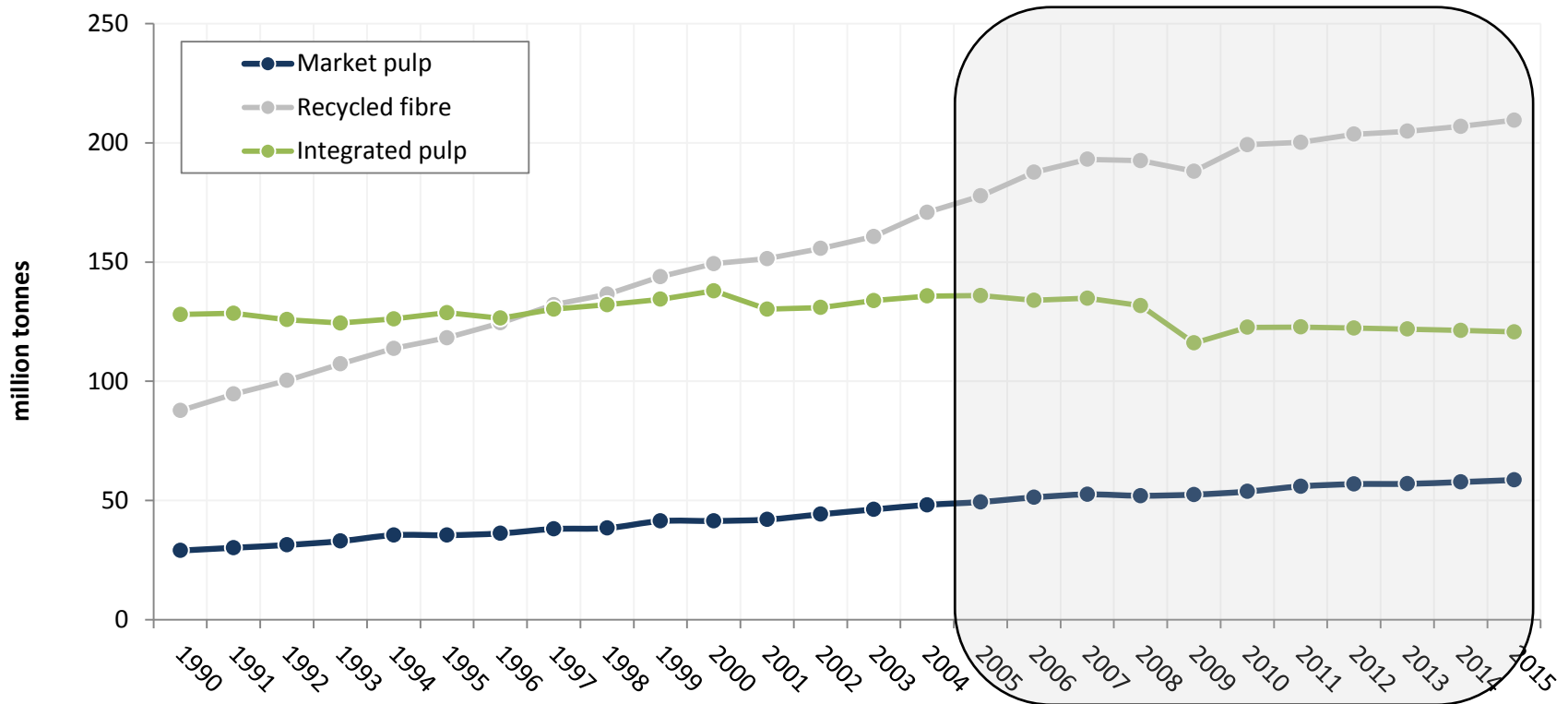
thousand tonnes and y-o-y%



- Global BCP demand reached 54.6 million t in 2015 – up 3.0% or 1.6 million t from 2014
- Driven by virgin fibre tissue capacity, the displacement of RCF, integrated pulps and Chinese domestic production

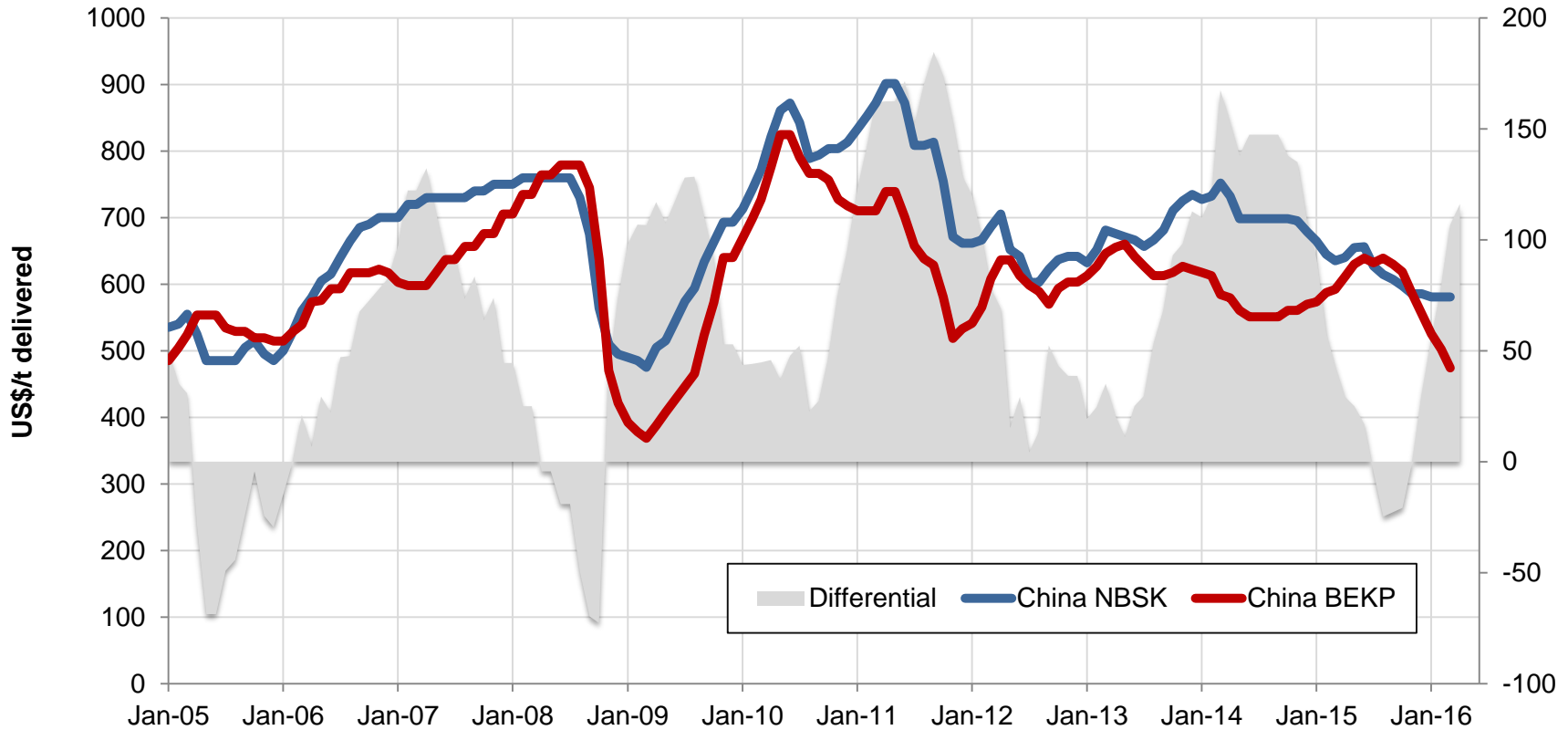
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Market pulp demand growth in context



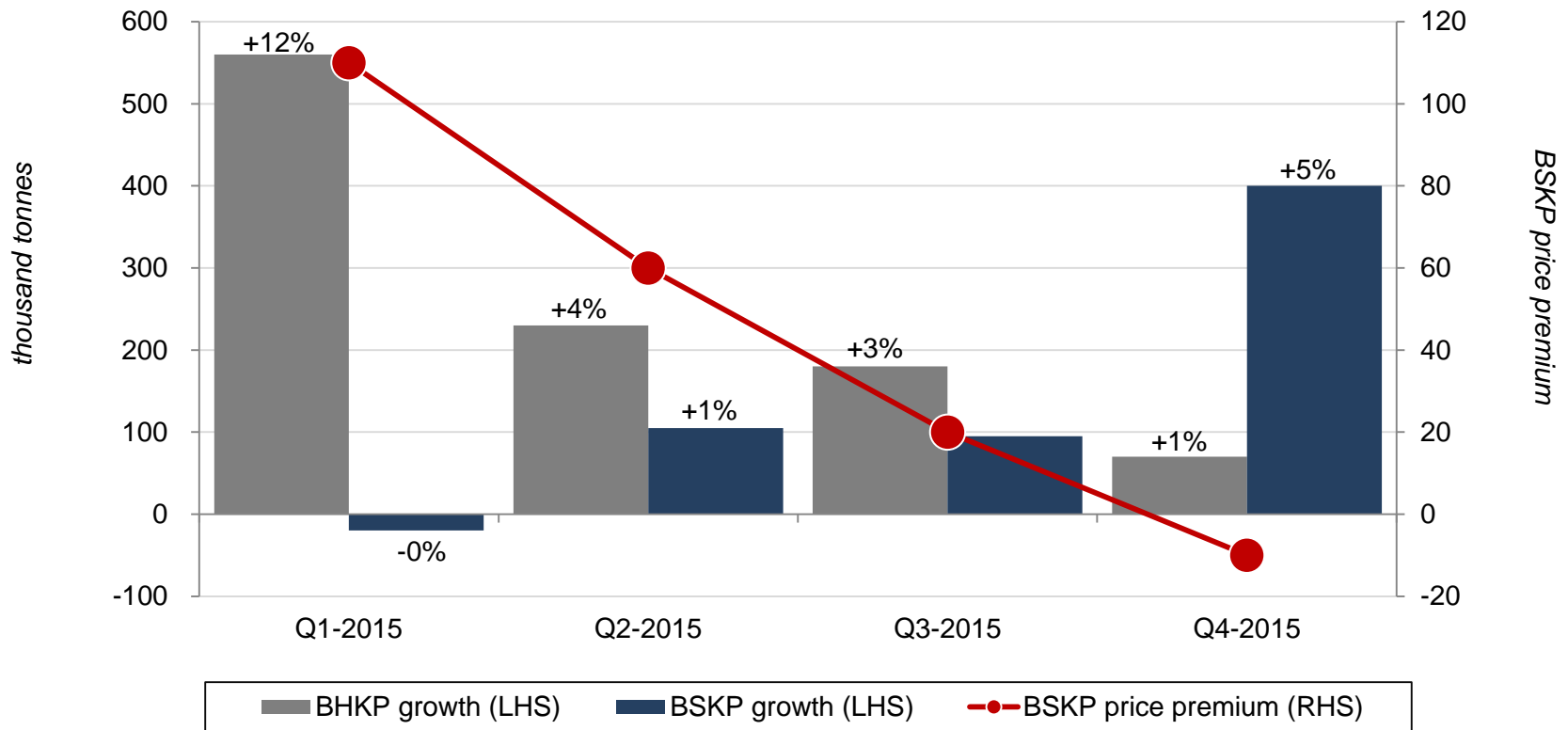
- Market pulp continues to displace RCF and integrated production (paper capacity rationalisation)

NBSK & BEKP prices, cif China



- Importance of substitution, as shown by demand statistics and cyclicity of BSKP/BHKP price gap
- "Natural premium" of roughly \$100/t

Effects of pricing differential on demand substitution



- Pricing premium has a measurable impact on demand substitution
- Substitution happens on the supply-side too!

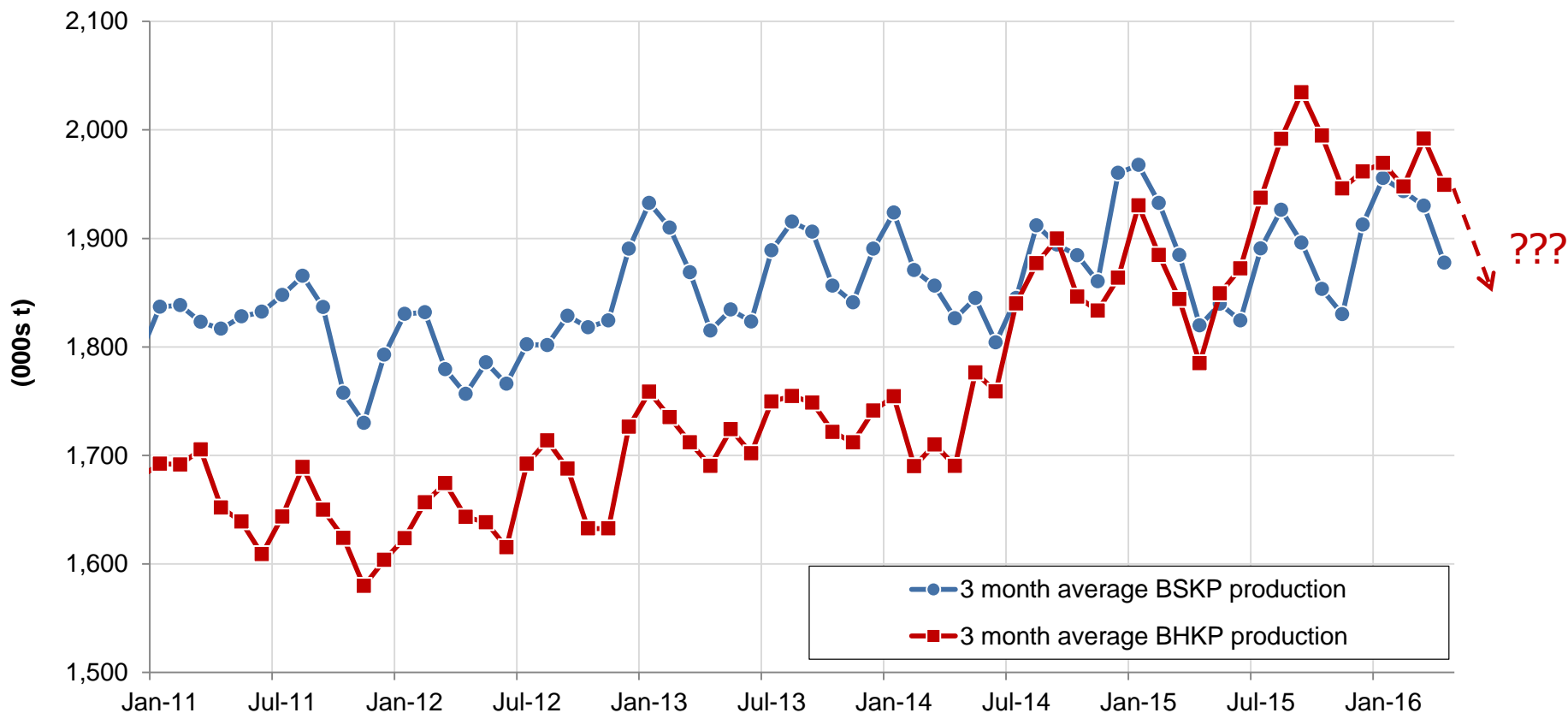


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World-20 production

3-month moving average

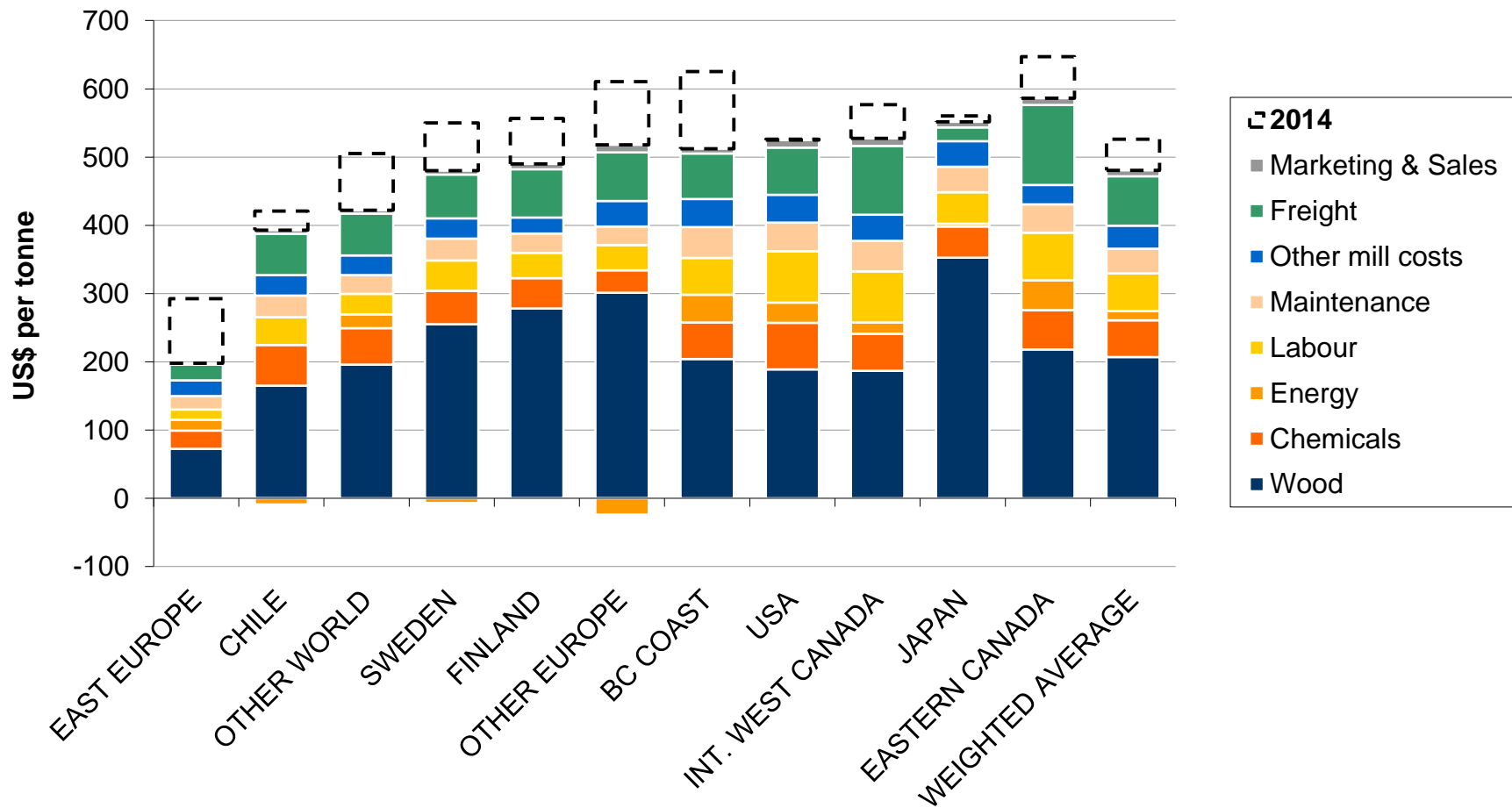


- Unexpected H1 drop due to planned and unplanned outages & slower ramp-ups
- Followed by record level of production
- April 2016 World-20 BHKP production estimated at 84% of capacity only

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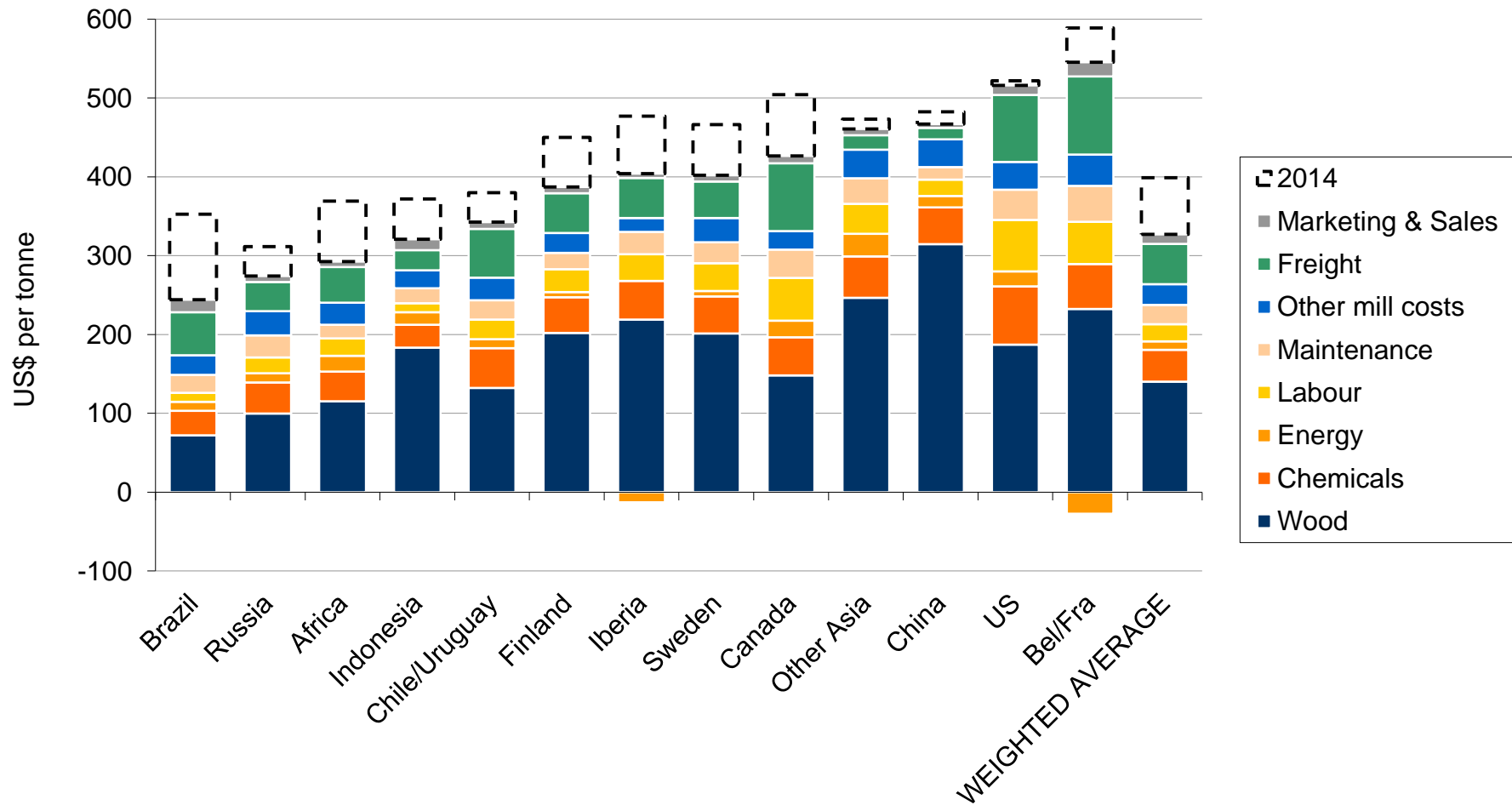
Exchange rates and costs...

on BSKP cash costs CIF China (Dec 2015)

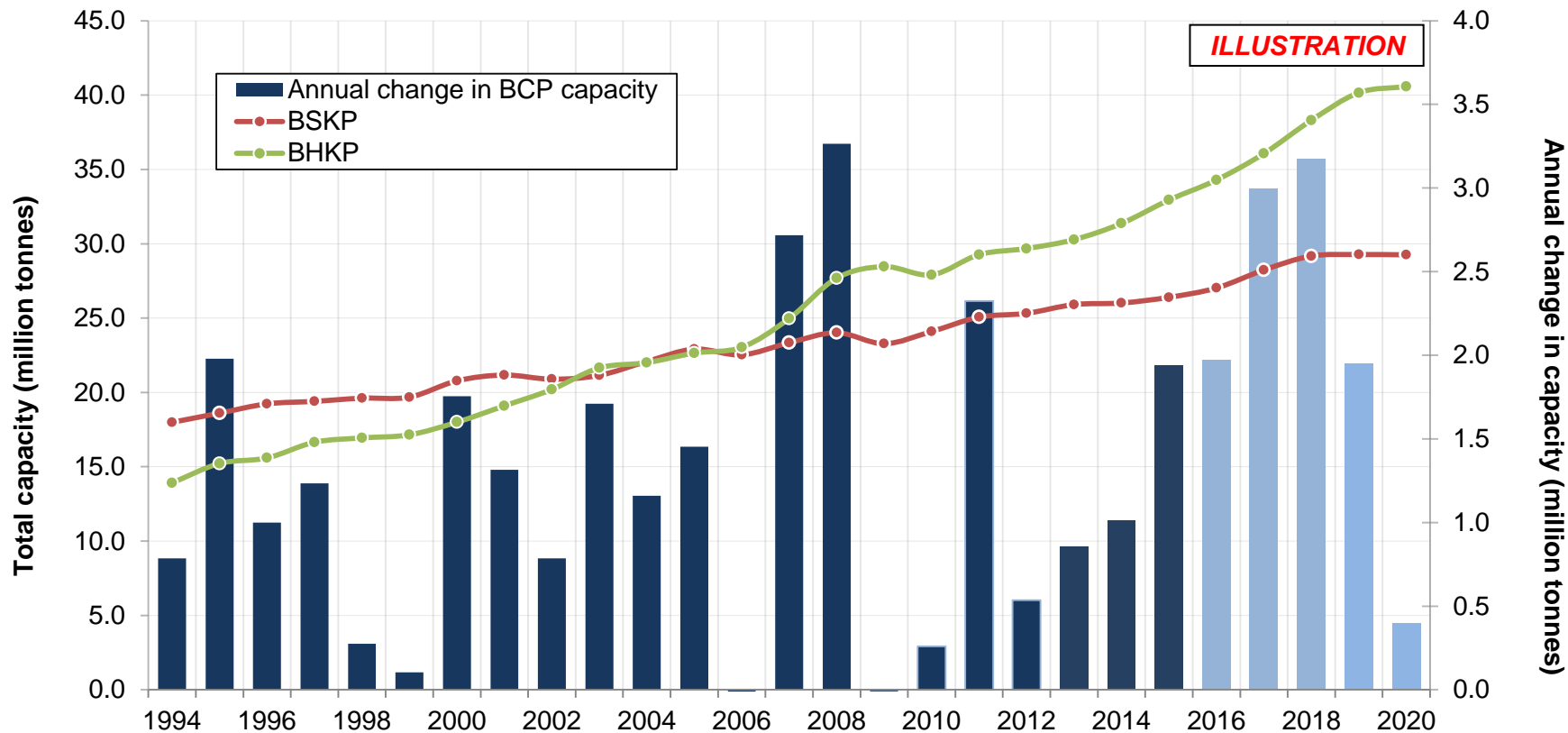


Exchange rates and costs...

on BHKP cash costs CIF China (Dec 2015)



Capacity developments



- Over 10mt/y of extra capacity in next 5 years vs. 6.5mt of forecasted demand!
- Guaiba/Klabin ramp-up + IP Riegelwood, Domtar Ashdown, Södra Varo, Svetlogorsk, **APP OKI**, MF Aankoski, Fibria & Eldorado TL2, SCA Ostrand, Ilim, Suzano Mucuri & Imperatriz, and others...

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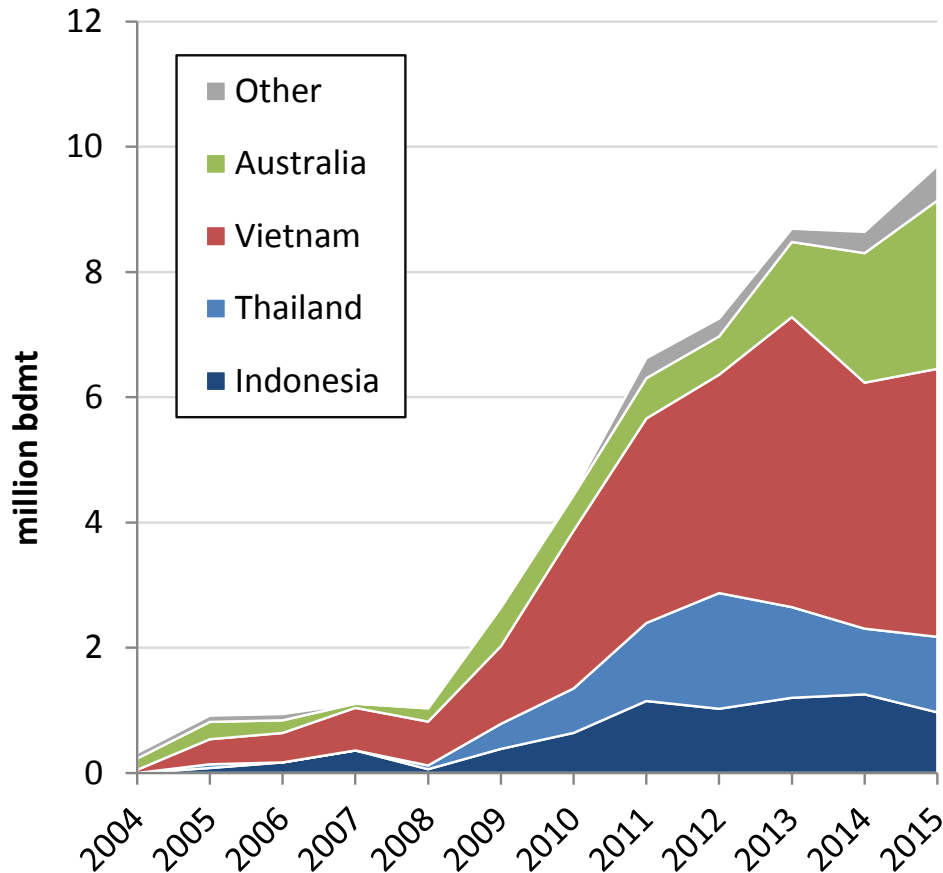


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Fibre

Chinese woodchip imports by country of origin



- In 2015, China imported approx. 10 million BDMT of hardwood chips. More than 95% were used in the manufacture of pulp.

Source: Customs data

Fibre

Cost inflation likely



- The weighted average import price of Chinese hardwood chips during 2015 was \$173/BDMT CIF.
- Assuming inland freight costs of \$20/t, a Chinese pulp mill 100% dependent on imported woodchips has a weighted average fibre cost per tonne of pulp produced of approximately \$340-400/t.
- We observe that woodchip supply from Indonesia and Vietnam may have peaked (policy driven + Australian competition).
- APP OKI = 13 million m³ of wood, i.e. 6 million t of chips (> half of China!)
- Fires have destroyed 300,000 ha of concession land owned by APP, of which 90,000 ha were planted with Acacia – what is the fibre deficit???
- How APP runs OKI will have significant implications for SE Asian fibre basket.
- Multiple possible scenarios, big unknown...



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Risks



- China's macroeconomy
- Asian pulp wood resource and export availability
- Currencies (Fed interest rates, RMB devaluation...)
- Differentials & substitution
- Supply-side...new projects, mill closures, conversions & dissolving pulp dynamics

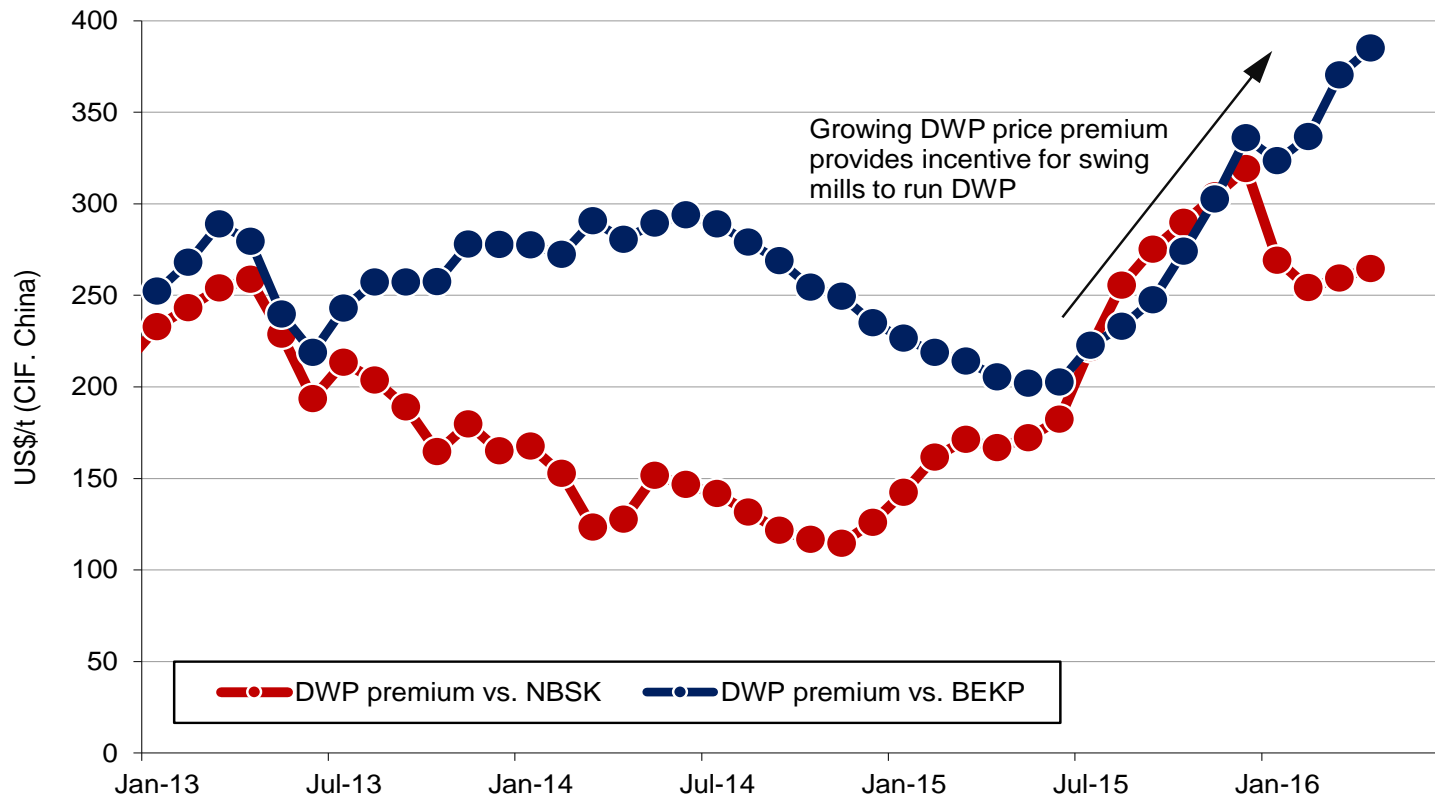


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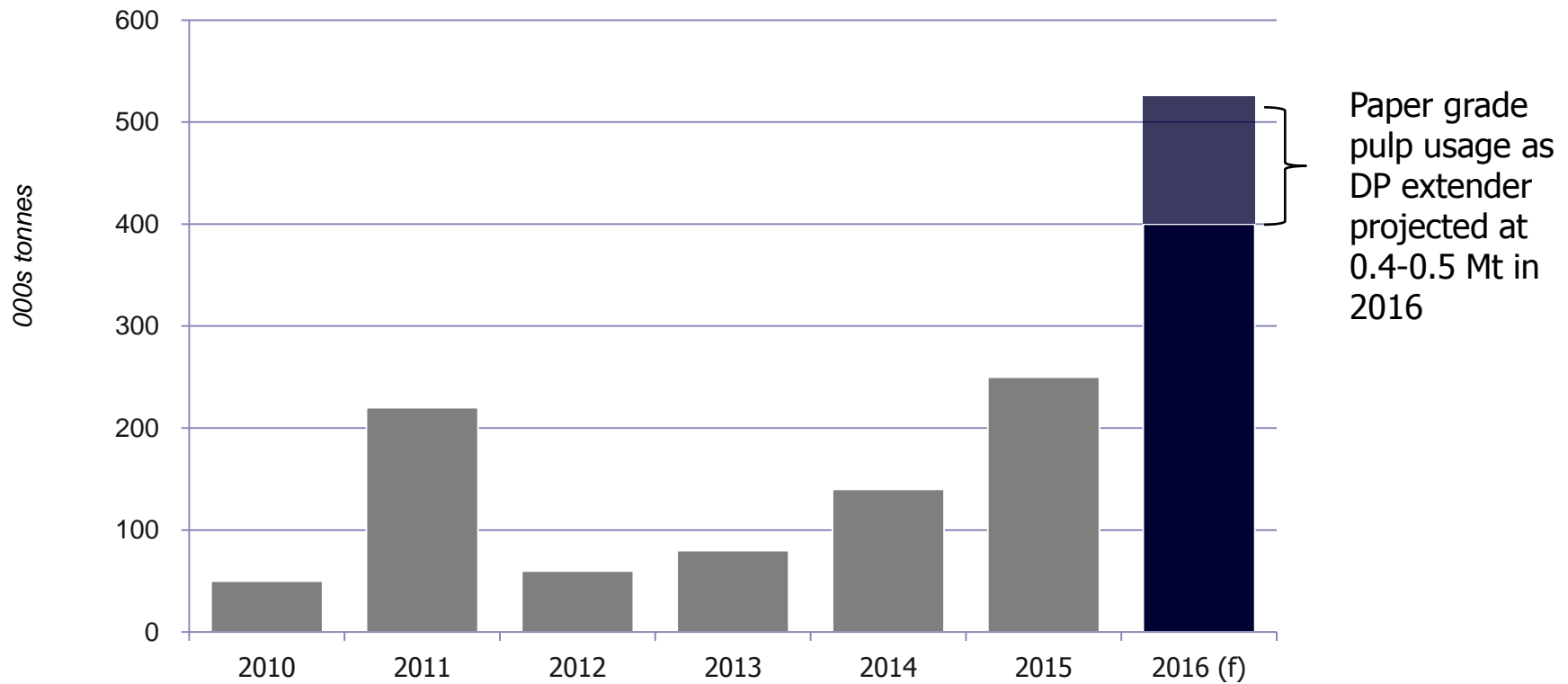
Swing capacity incentivised to run DP

DWP vs. BEKP/NBSK price differentials (net)



- Supply-side impact as price differential drives swing decisions
- All but 2 mills (Cloquet & Kerinci) currently running DP – BHKP swing cap

Paper grade pulp demand for use as a dissolving pulp extender, China market, 2010-2016 (f)



- Demand-side impact as low PG pulp prices increase its use as a DP extender
- Declines in cotton harvest in China = less linter for CLP producers, creating demand for PG pulp, which they can refine to increase purity

Key findings



- 2015 was an exceptional year, especially for hardwood
 - Macro drivers temporarily (!) overpowered by fundamentals in 2015
 - Structural factors, tissue investments and lower Chinese pulp production spurred spectacular BHKP demand growth, just as production fell through H1
- 2016 on track for strong growth again
 - Declining BHKP prices seen as a correction in light of what happened last year
 - Over 10 million t of annual capacity coming online in next 5 years, compared with estimated demand growth of 6.5 million t over the same period
- APP OKI (Q4-2016) has the potential to upset the SE Asian fibre basket and prompt production curtailments or permanent closures
 - Where and when closures will happen first remains unclear
- Swing DP capacity acts to implement a price-floor for paper grade pulp (supply-side impact) and to create additional paper grade pulp demand (demand-side impact)