



Market Review

AIAC

June 2012

HAWKINS WRIGHT

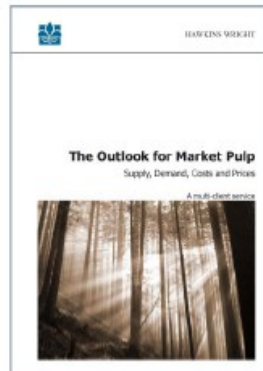
About Hawkins Wright



- Hawkins Wright is an independent consultancy providing a range of strategic, forecasting, market intelligence and business information services to the international forest products and bioenergy industries.
- Since 1982 Hawkins Wright has provided authoritative and cost-effective services based on in-depth research of the global forest, pulp & paper and bioenergy industries. These services include private consultancy assignments covering a full range of marketing and strategic subjects as well as regular multi-client reports and newsletters.
- Our consultancy services build on our global perspective of the macro- and micro-economic trends driving the international forest industry and downstream product markets. Assignments can range from advice on a client's business development or feedstock sourcing strategies to highly detailed market feasibility assessments of prospective projects.

Our regular and multi-client reports and services include:

- **Pulpwatch** a monthly analysis of developments in the global market pulp industry
- **The Outlook for Market Pulp**, providing forecasts of world market pulp demand, supply, costs and prices
- **Defining the China Market for Pulp, Paper and Board**, a uniquely detailed analysis of the Chinese pulp and paper industry
- **Forest Energy Monitor**, covering the factors driving the rapidly expanding biomass and wood pellet markets



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About Hawkins Wright



- As well as our regular multi-client reports, Hawkins Wright also publishes a range of onetime studies examining an array of topical issues within the forest products industry.

Recent reports include:

- Defining the Indian market for pulp, paper and board
- Energy from forests. Bio-energy and the forest products industries
- A strategic assessment of UK investment in biomass power
- Asian fine paper supply & demand: the global implications
- The economics of torrefaction and biomass pre-treatment processes
- Defining the Middle East market for pulp, paper and board



For more information, visit: www.hawkinswright.com

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Problems of developed countries threaten global growth (Roubini)



Europe

- **Base Case 45%** : Negotiated defaults and EZ exits
 - Greece (2013) +Portugal (2014) default and exit EZ
 - Italy +Spain get bail-out from EU/IMF . When it runs out,can't return to market and must restructure debts.(2015)
 - Italy+Spain exit 2018
- **Unhappy Marriage 30%**: Muddle through
- Core keeps EZ as it is and agrees fiscal union
- **Split gets ugly 25% : Disorderly defaults and Exits**
 - Greece (end 2012),Portugal+Ireland (end 2013)
 - Italy +Spain get bail-out from EU/IMF . When it runs out, default and exit end 2014; Belgium and France follow 2015

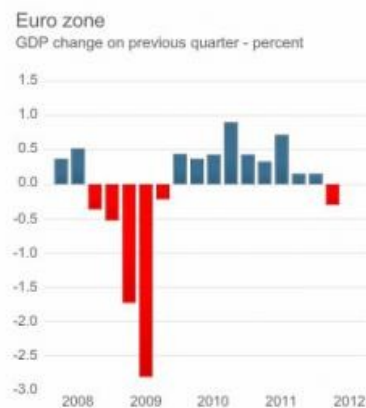
North America

Growth under 2%; possible recession 2013

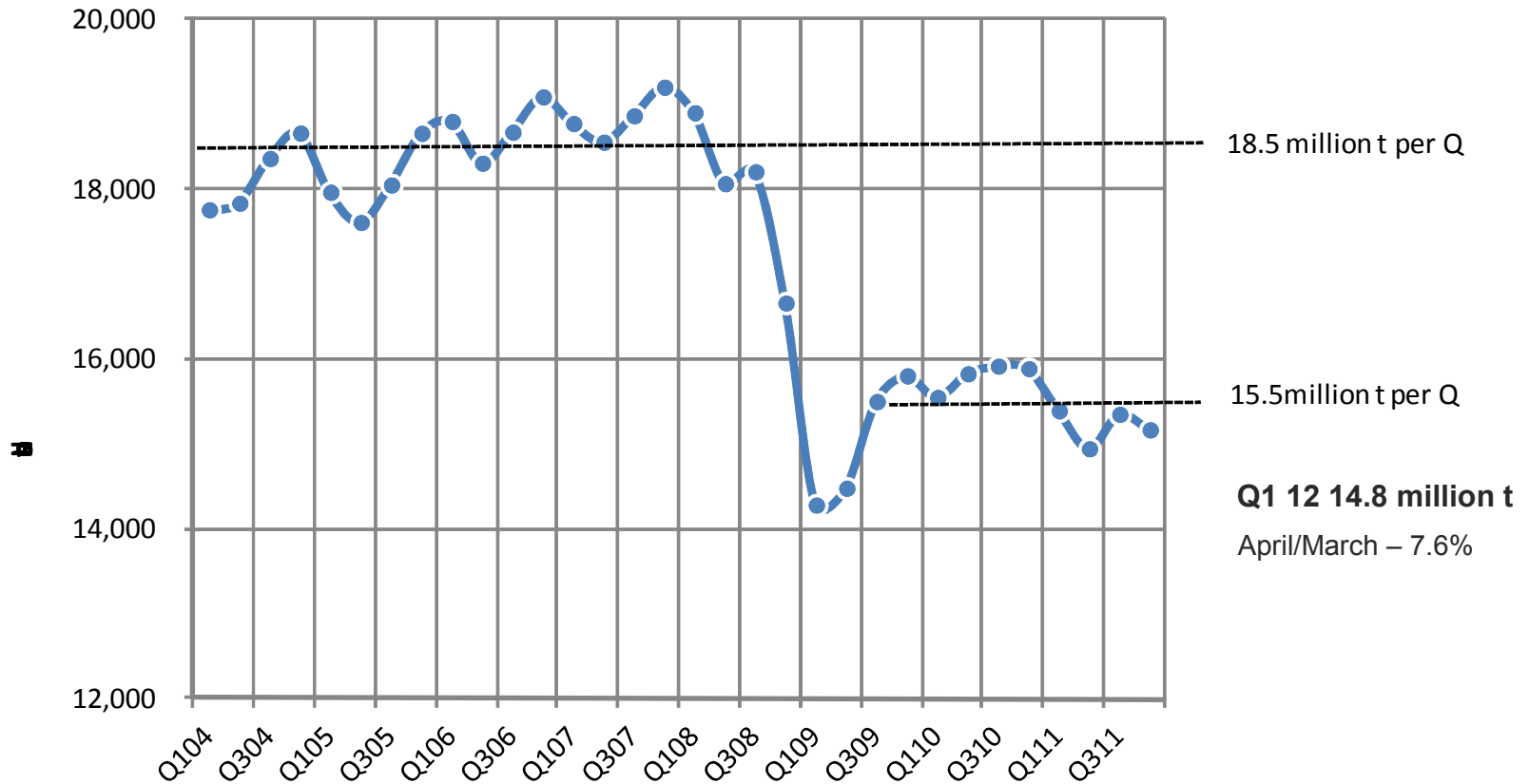
China

- Chinese growth model broken. Hard landing possible . NPL's and local govt debt rising. Private consumption not rising enough to compensate for investment bust
- Real Estate collapse.
- Slowdown inevitable and under way.

European Union recession map



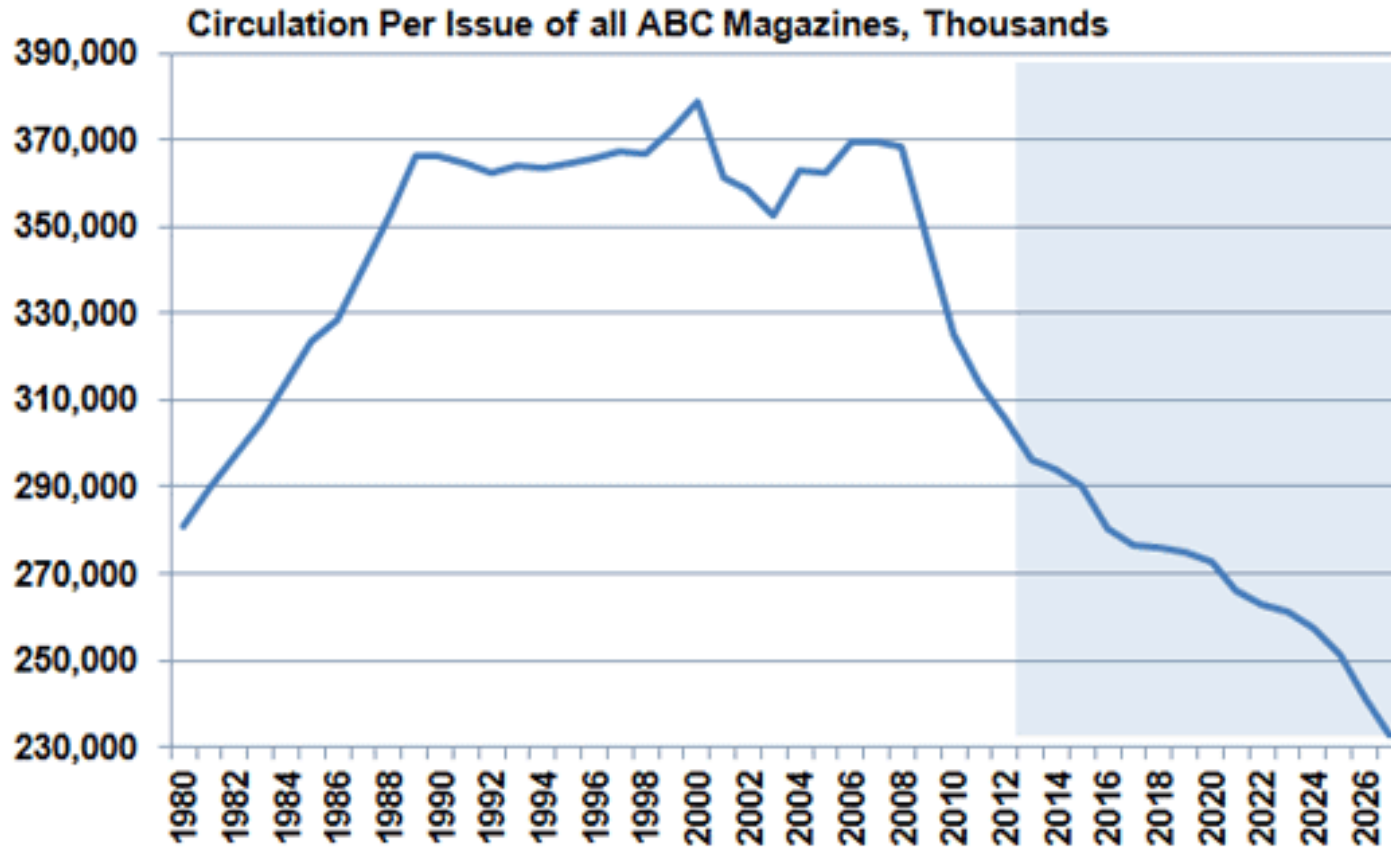
Global P&W shipments



Source: Hawkins Wright

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US Printed Magazine Circulation



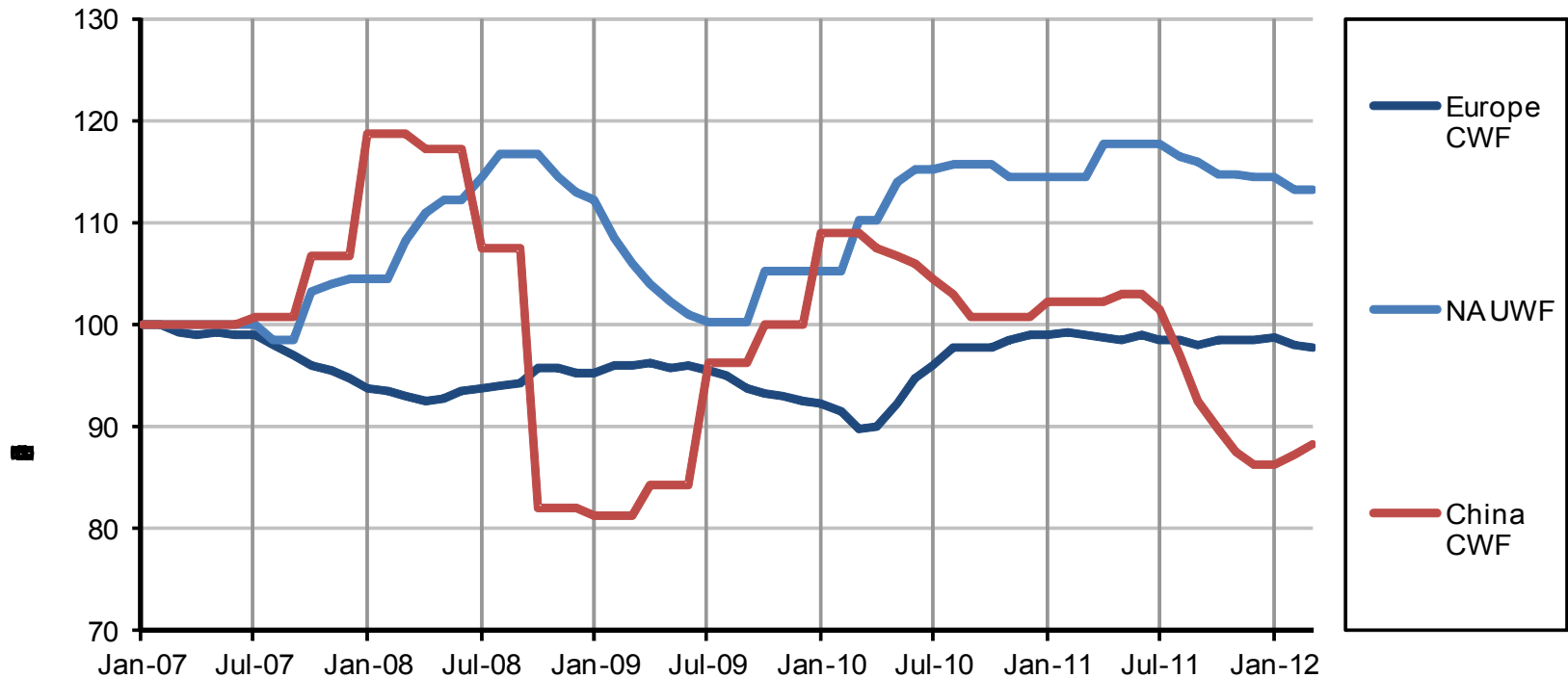
Source: MPA, Audit Bureau of Circulations, RISI

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Paper prices remain under pressure



Printing and writing paper prices as an index *In domestic currencies*



Source: Hawkins Wright

In 2009-2012 , 5million t/y P&W capacity closed in WE,
4M t/y in N.America

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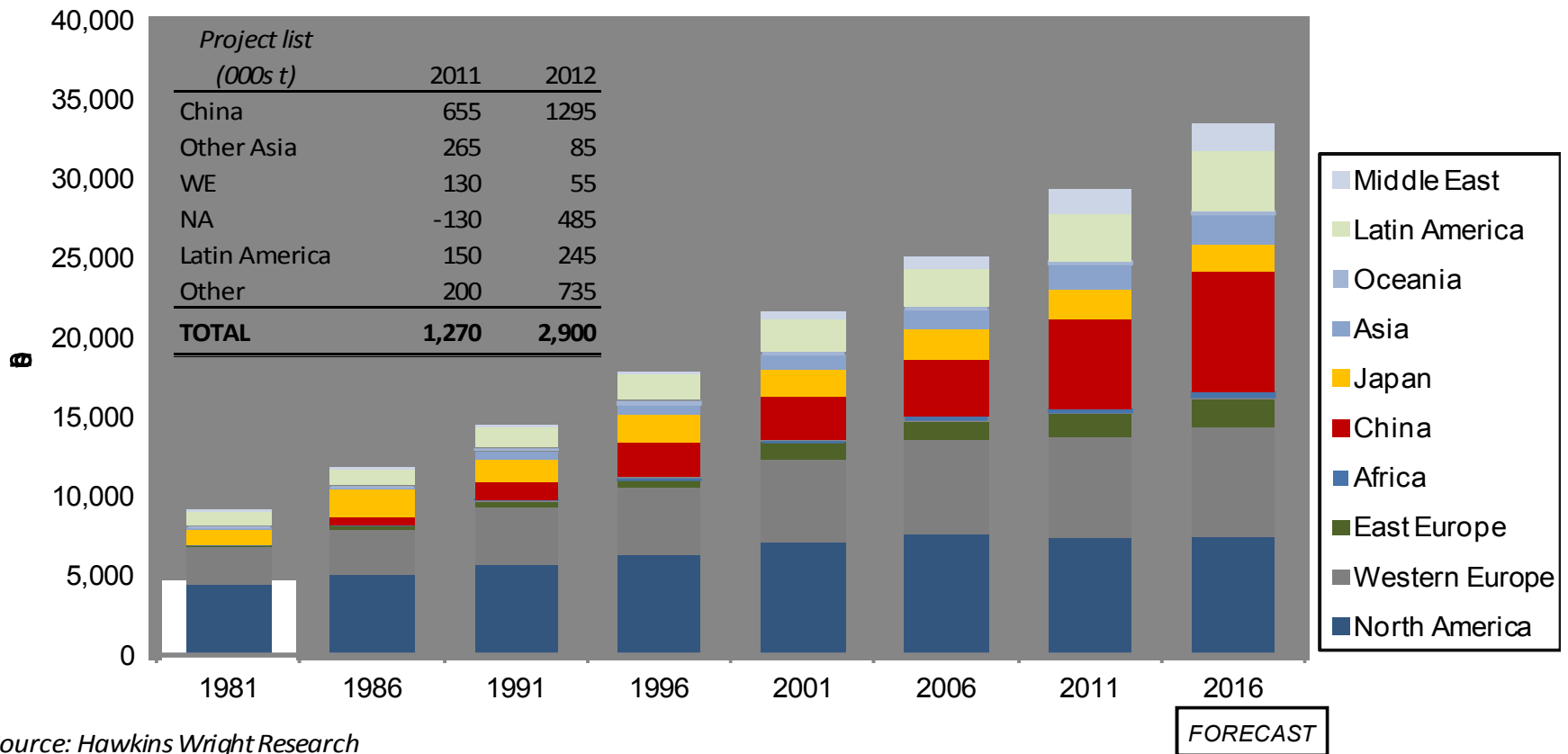
Asian P&W bubble



Country	Company	Mill	Start-up Comment	Capacity '000 t/y
China	APP Hainan	Hainan	Jun-10 PM2, CWF, integrated	1,200
China	Oji Nantong	Nantong	Jun-10 PM1, CWF, tied pulp	400
China	Sun Paper	Yanzhou	Jun-10 PM23, UWF, semi-integrated	350
China	Nanping	Fujian	Jun-10 PM6, UWF, integrated	200
China	Huatai Paper	Dongying	Feb-11 PM8, CWF, market	700
China	Zhumadian Baiyun	Zhumadian	Apr-11 PM8, UWF, market	250
China	Chenming	Shouguang	Jun-11 CWF, market & tied pulp	800
China	Jindaxing	Guangxi	Jun-11 PM1, (2nd hand), UWF, integrated	200
China	Nine Dragons	Dongguan	Jun-11 PM28, Unctd, DIP	250
China	Nine Dragons	Taicang	Jun-11 PM21 (conversion from board), Unctd, DIP	200
China	Sun Paper	Yanzhou	Jul-11 PM24, CWF, semi-integrated	400
China	Chenming	Zhanjiang	Oct-11 PM1, UWF, integrated	600
China	Anqing Huatai	Anhui	Dec-11 2nd hand (Europe), UWF, integrated	150
China	APRIL Fine Paper	Xinhui	Apr-12 PM1, UWF, tied pulp	450
China	APRIL Fine Paper	Xinhui	Dec-12 PM2, CWF, tied pulp	600
Total				6,750

Apparent Consumption 2011 – 9 MMt

Tissue production by region 1981-2016f

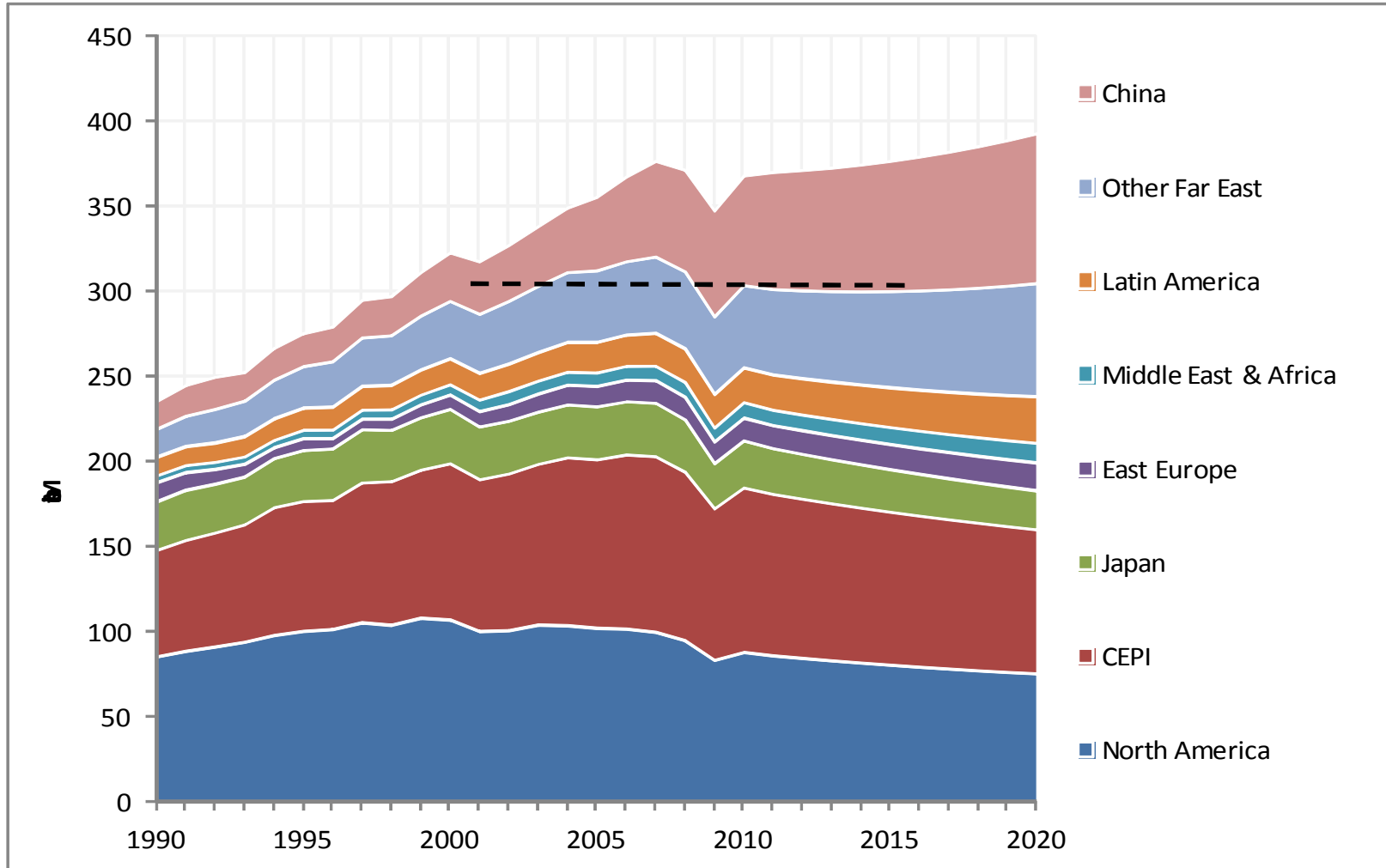


Overcapacity everywhere....

Key driver longer term: Peak Recovered Paper **Global P&B, consensus view**

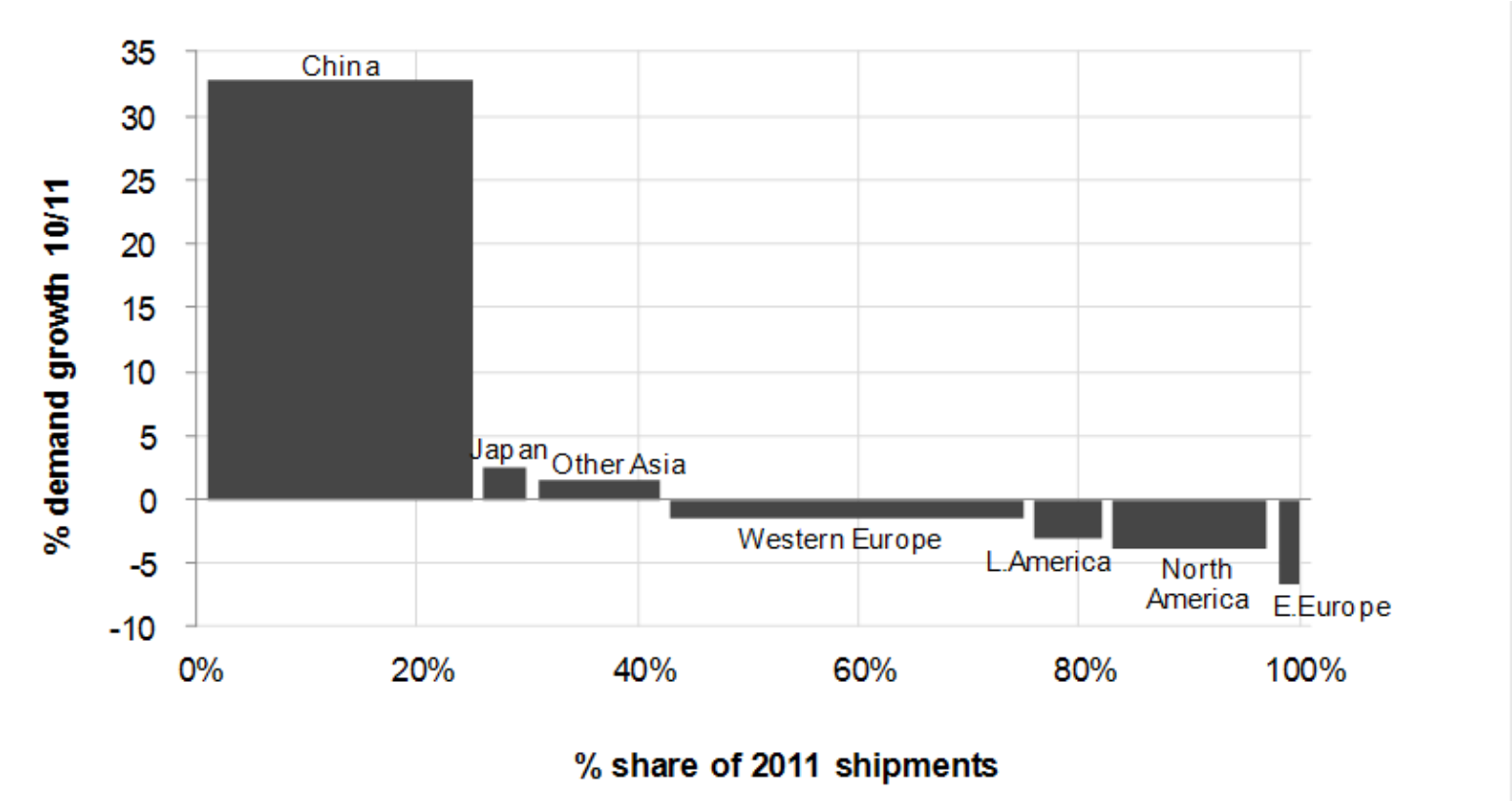
Virgin wood pulp will regain share of global paper & board fibre furnish

Global P&B production, a more realistic outlook?



BCP demand growth 2011

% share of world demand



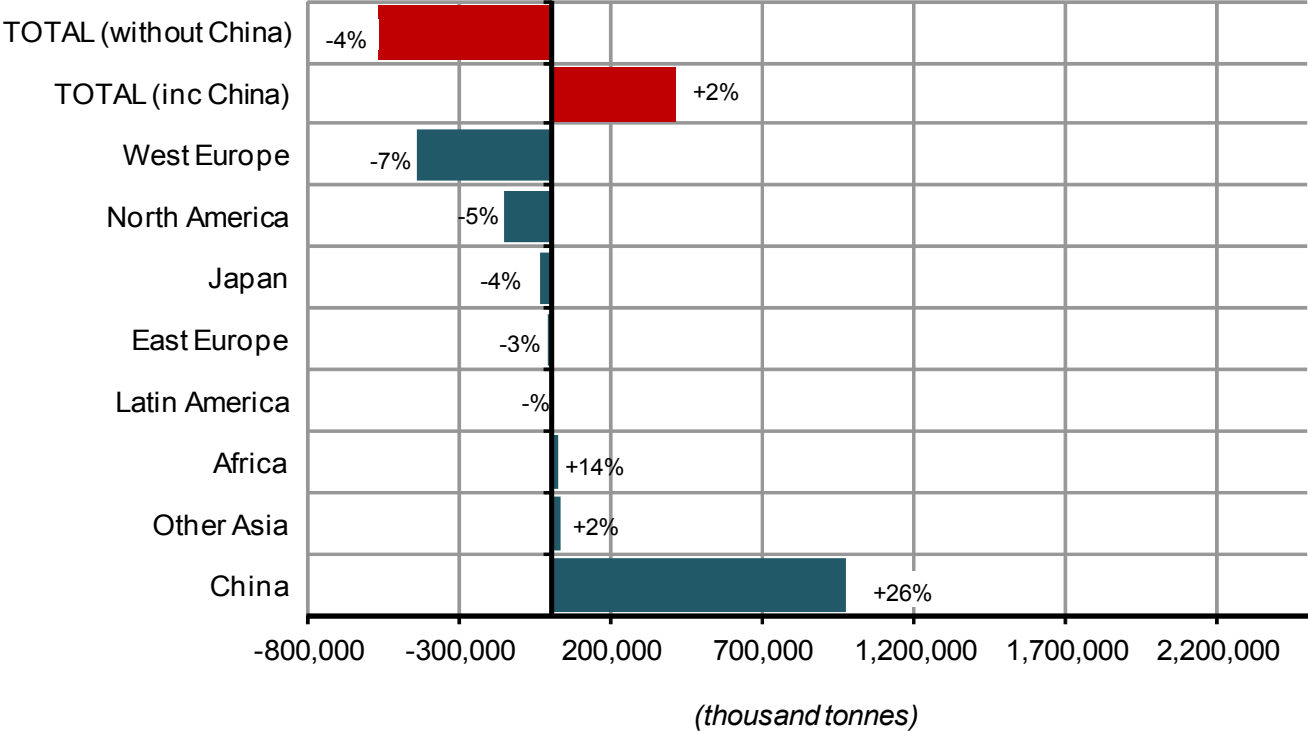
Source: Hawkins Wright,

World-20 BCP demand (Nov'11-March'12)

2% growth with China, 4% contraction without

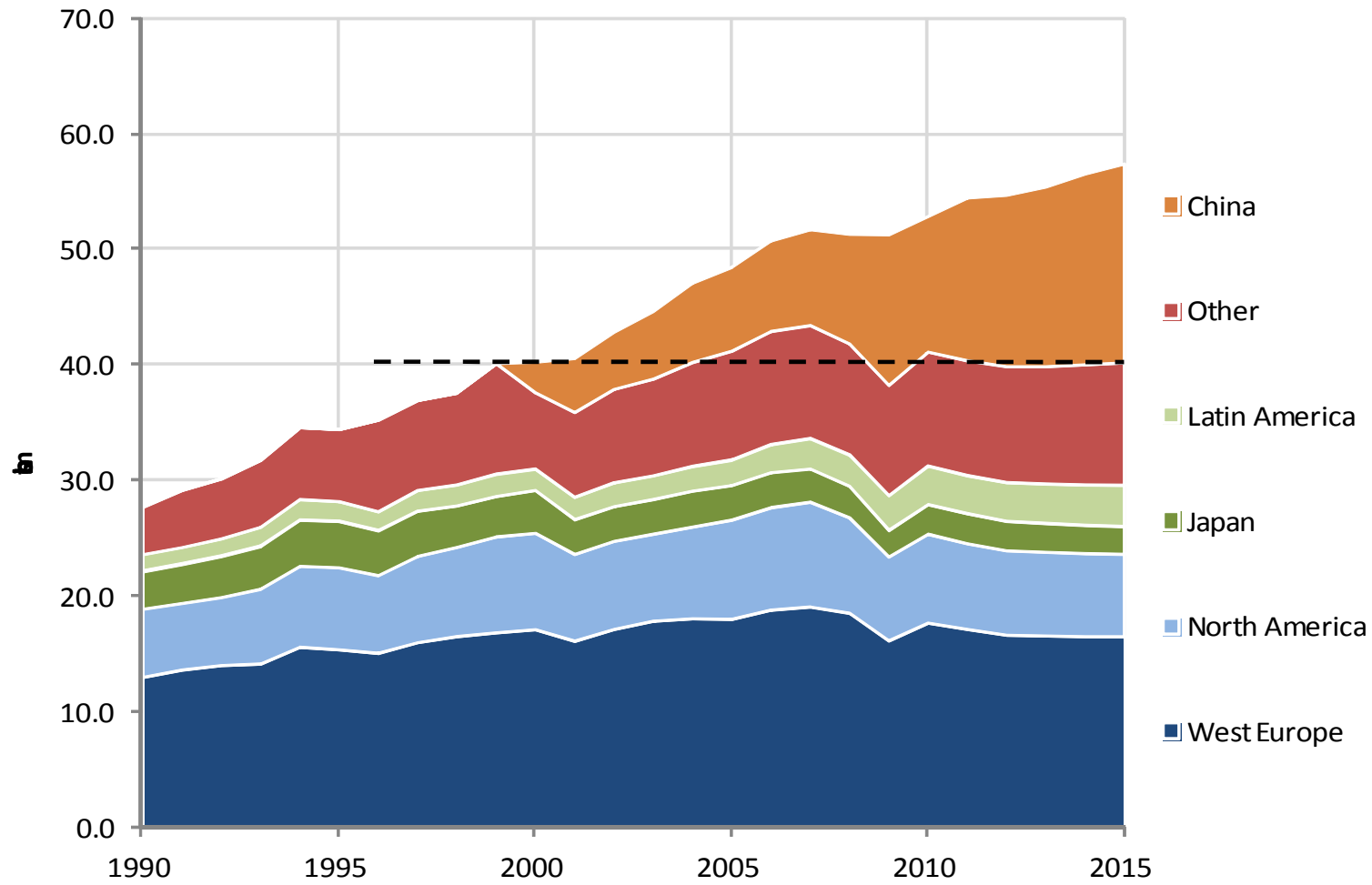


Growth in 000s t and y-o-y % change



Source: Hawkins Wright, PPPC

Little growth in market pulp demand outside China

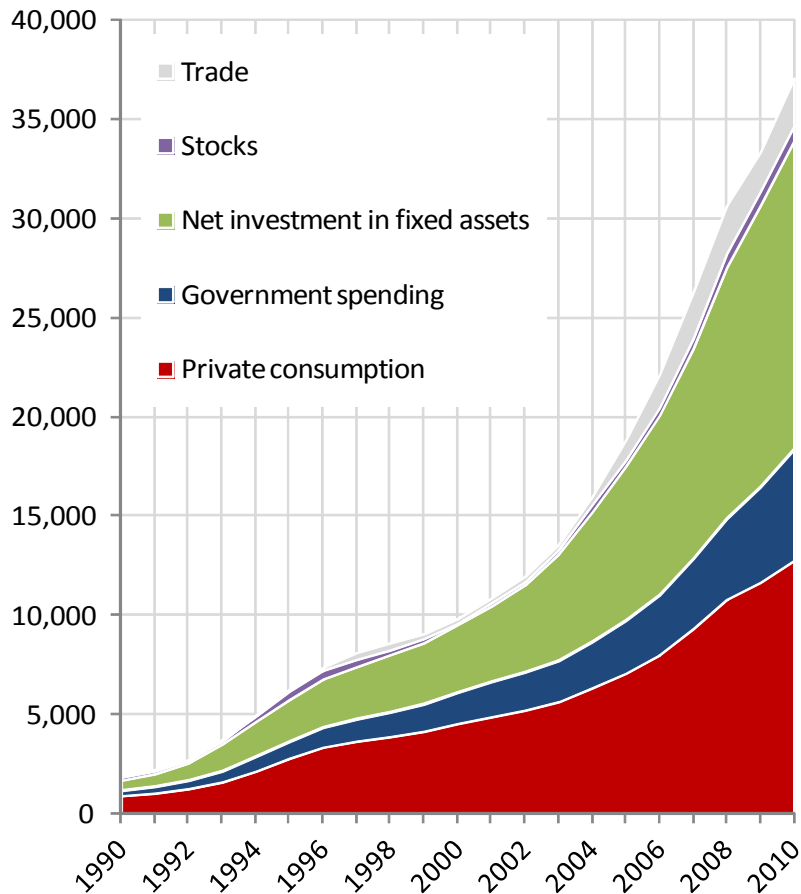


The Outlook for paper and board...



- In the last five years the 'intensity' of paper and board demand – tonnes per dollar spent- has fallen significantly
- For example, in 2005 in the USA , one tonne of paper demand was generated by \$98,000 spending; in 2010 \$138,000 was needed.
- The principal reasons are
 - > Increased use of digital technologies for communication
 - > Since 2006 – ipods, Ipads, Facebook, Twitter, YouTube, Wikipedia, Google
 - > Relocation of manufacturing to lower cost countries – USA/Europe to Asia
- **China is just as much exposed to the impact of new technologies as the rest of the world**

Components of Chinese GDP



- GDP comprises
 - > Household Consumption / Expenditure
 - > Private domestic investment
 - > Government consumption and investment
 - > Net exports (exports – imports)
- Paper and board demand is driven by Household Spending and Exports, **not by investment.**
- In China, spending accounts for 35% of GDP, compared to 70% in USA

China GDP components

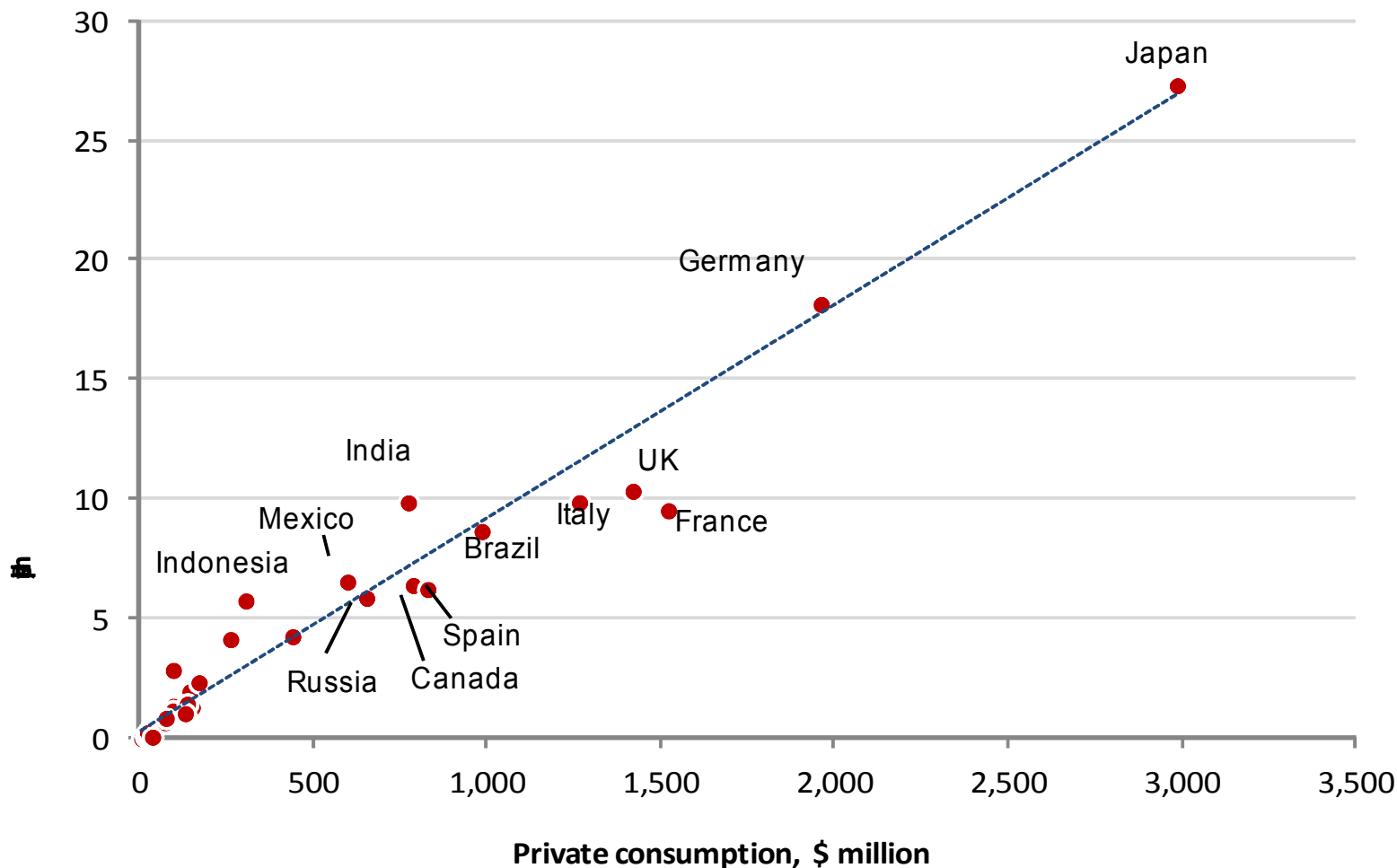


- In China, Household Expenditure 2010 was \$2.07 trillion
- On a PPP basis, \$3.2 trillion = 32 million t of P&B consumed in China
- Exports \$1.6 trillion (mainly packaged goods) = 16 million t P&B exported in converted form (mostly packaging board)
- Hawkins Wright estimates New China paper and board production 48 million t (32 + 16)

Industry has a tendency to focus on per capita comparisons which are of limited use.... **~\$100,000 expenditure stimulates 1 tonne of paper demand**



Relationship between Private Consumption and P&B Consumption, 2009

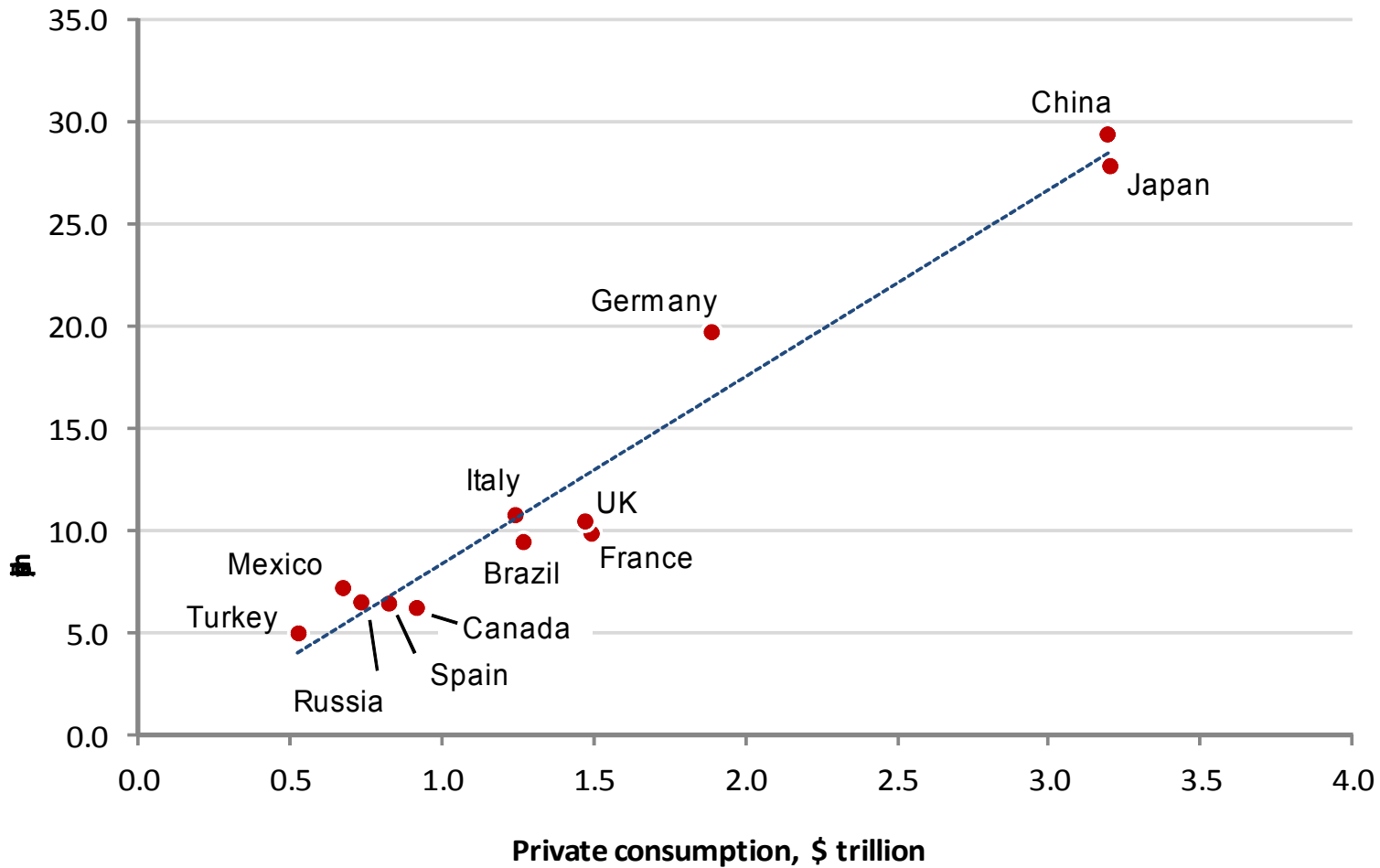


In 2010, Italy \$1.24 tr =10.8 Mt P&B need \$115,000

In 2007, \$1.242tr = 12 Mt P&B needed \$97,000



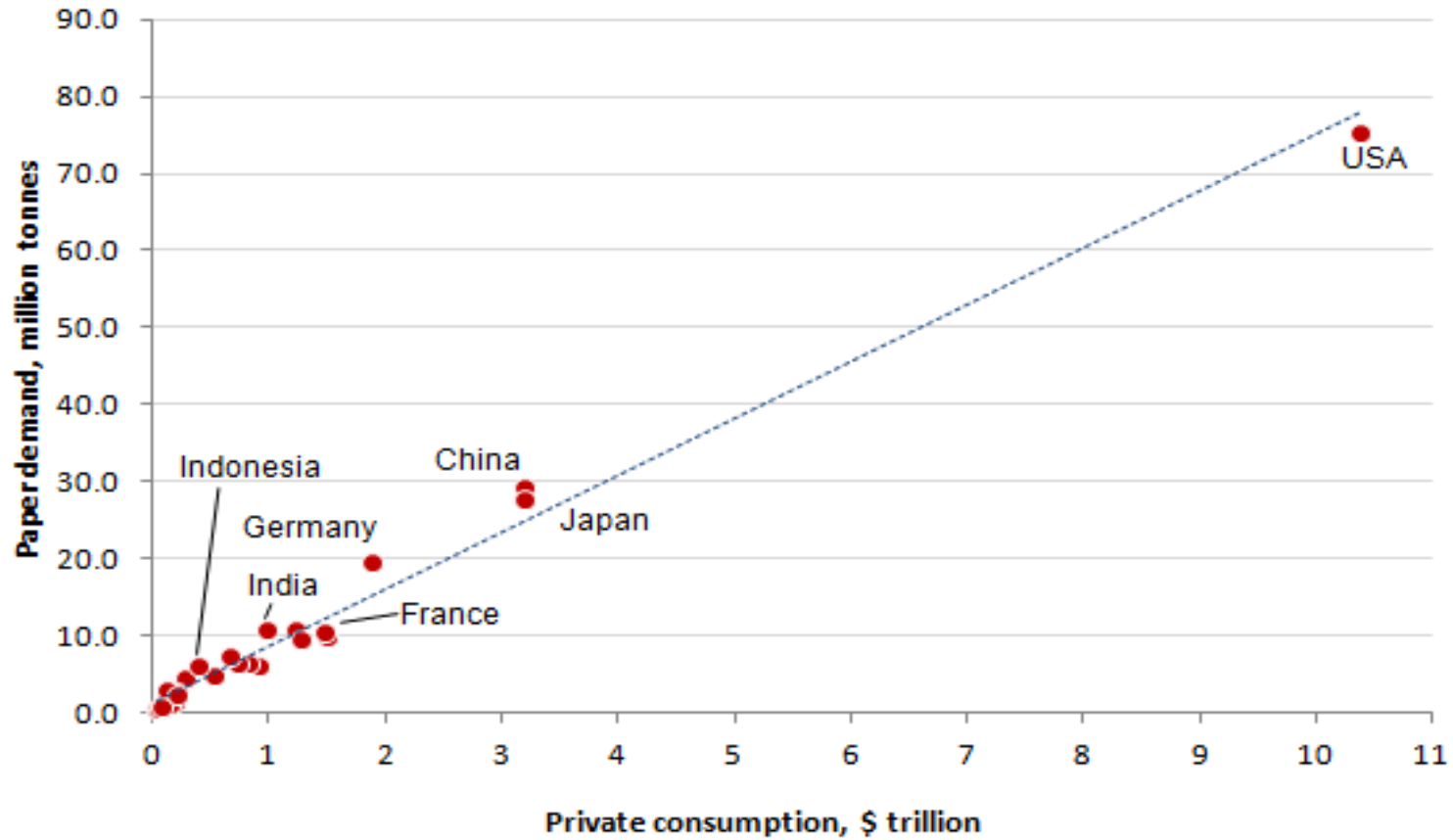
Relationship between Private Consumption and P&B Consumption, 2010



~\$100,000 expenditure stimulates 1 tonne of paper demand



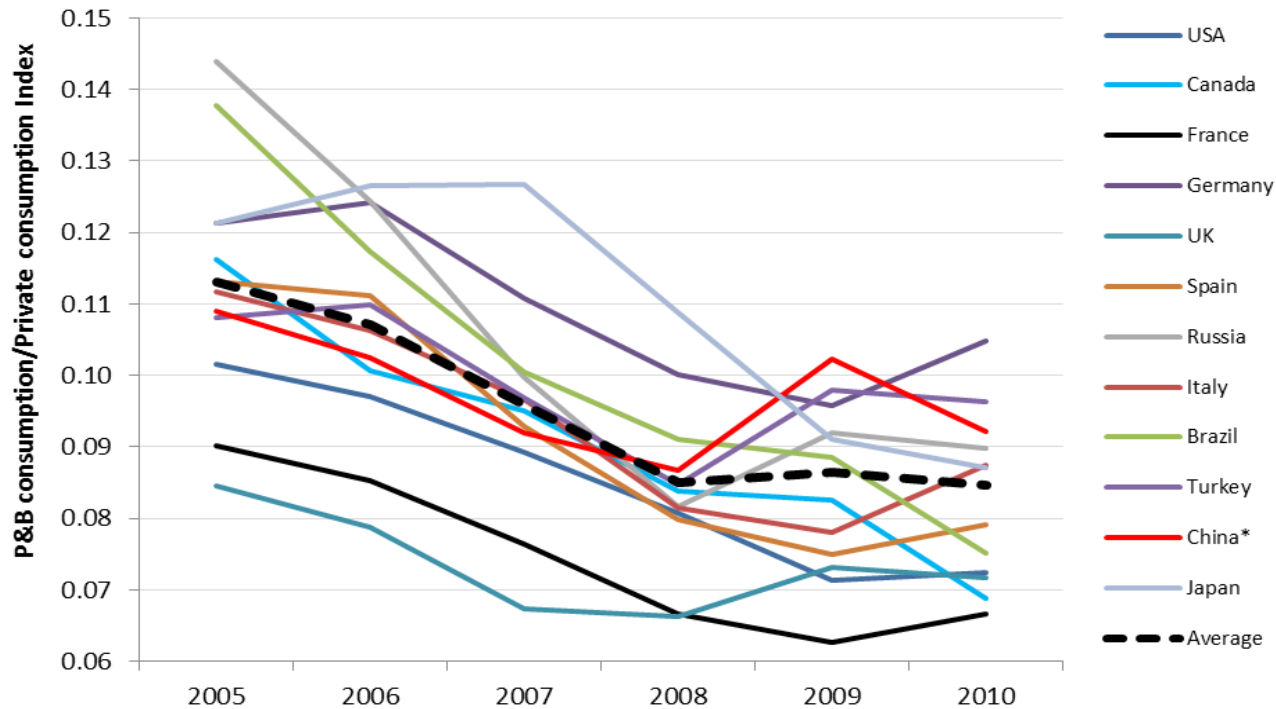
Relationship between Private Consumption and P&B Consumption, 2010



Intensity is falling..



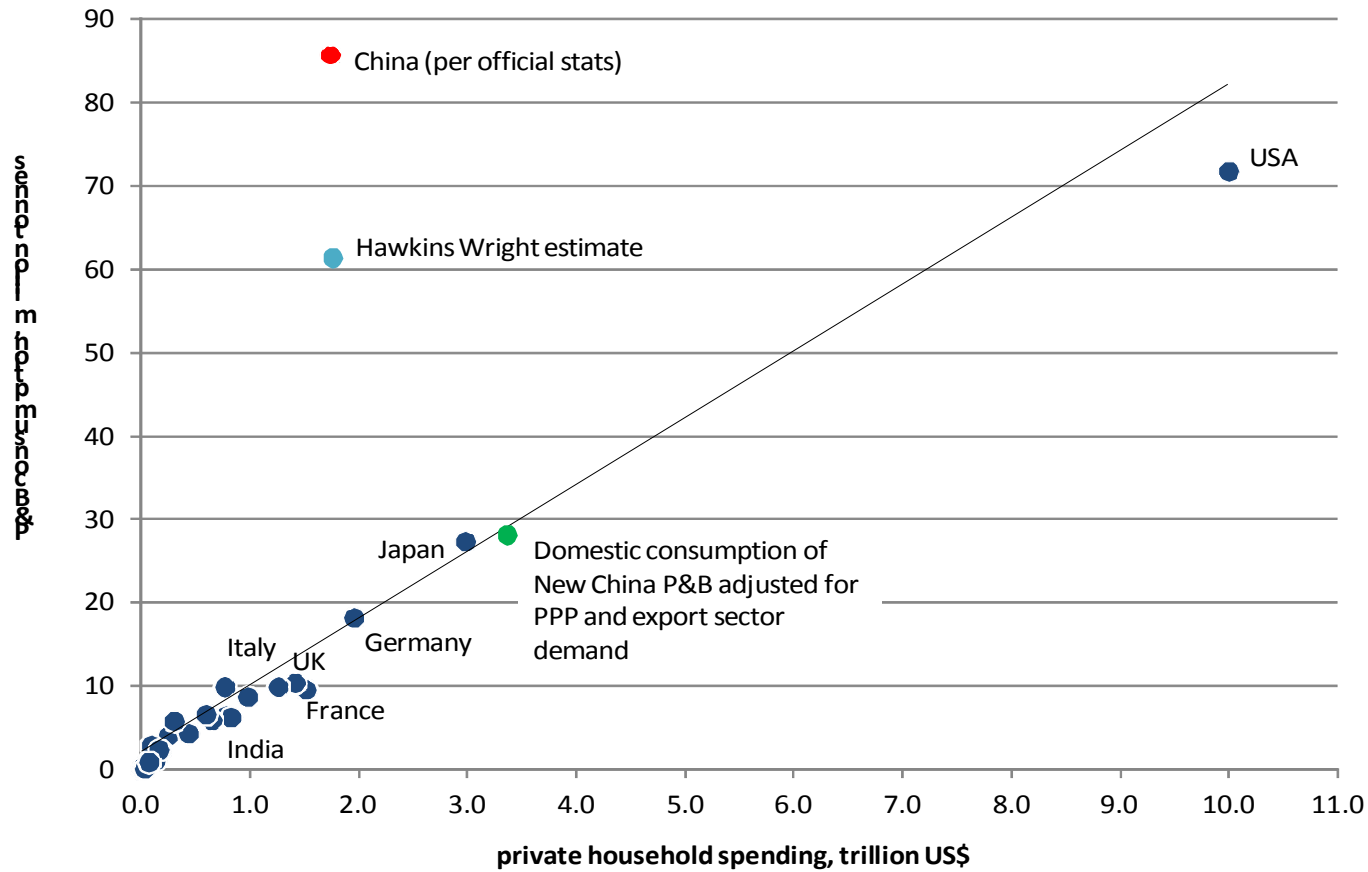
P&B Consumption/Private Consumption as an Index, 2005-2010



Source: Hawkins Wright Estimates

In 2010, Italy \$1.24 tr = 10.8 Mt P&B need \$115,000

In 2007, \$1.242tr = 12 Mt P&B needed \$97,000



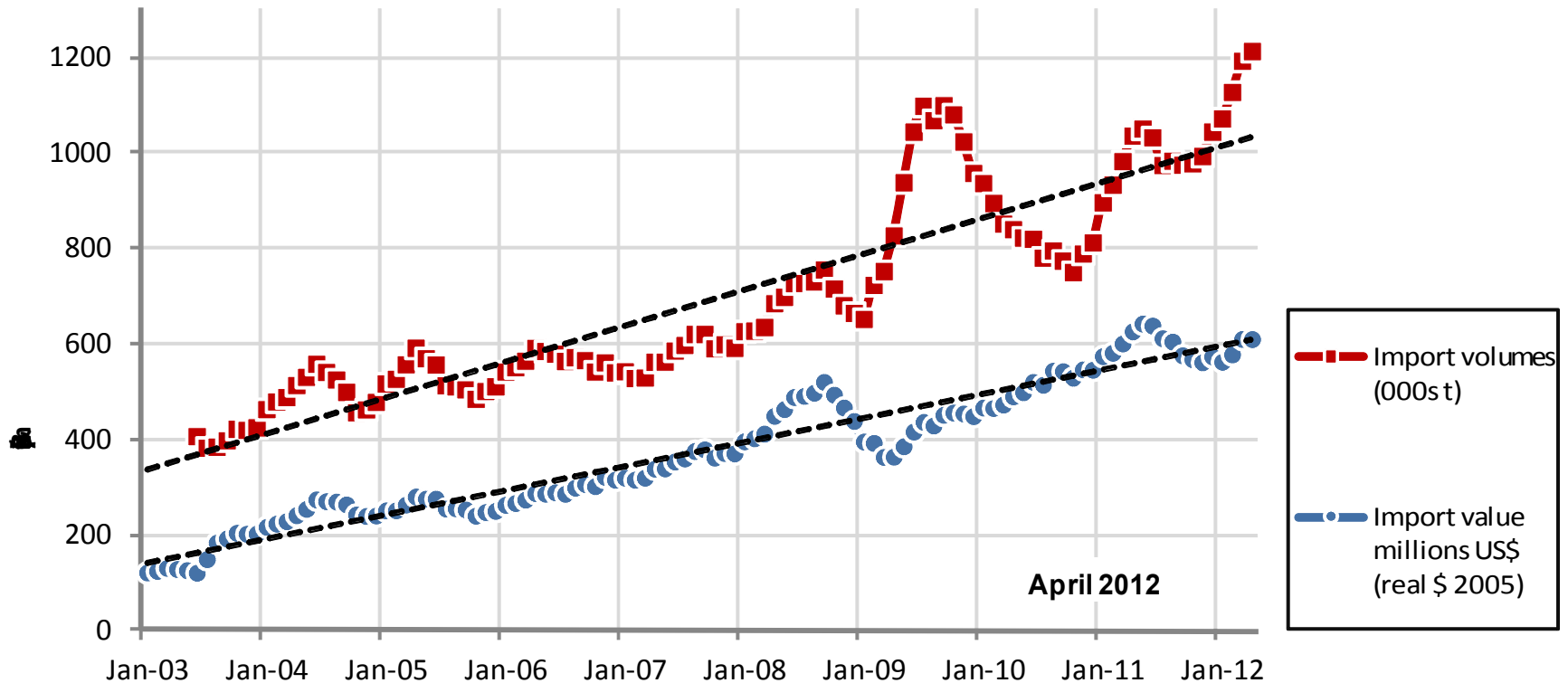
Source: Hawkins Wright Estimates

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Chinese imports by value and volume

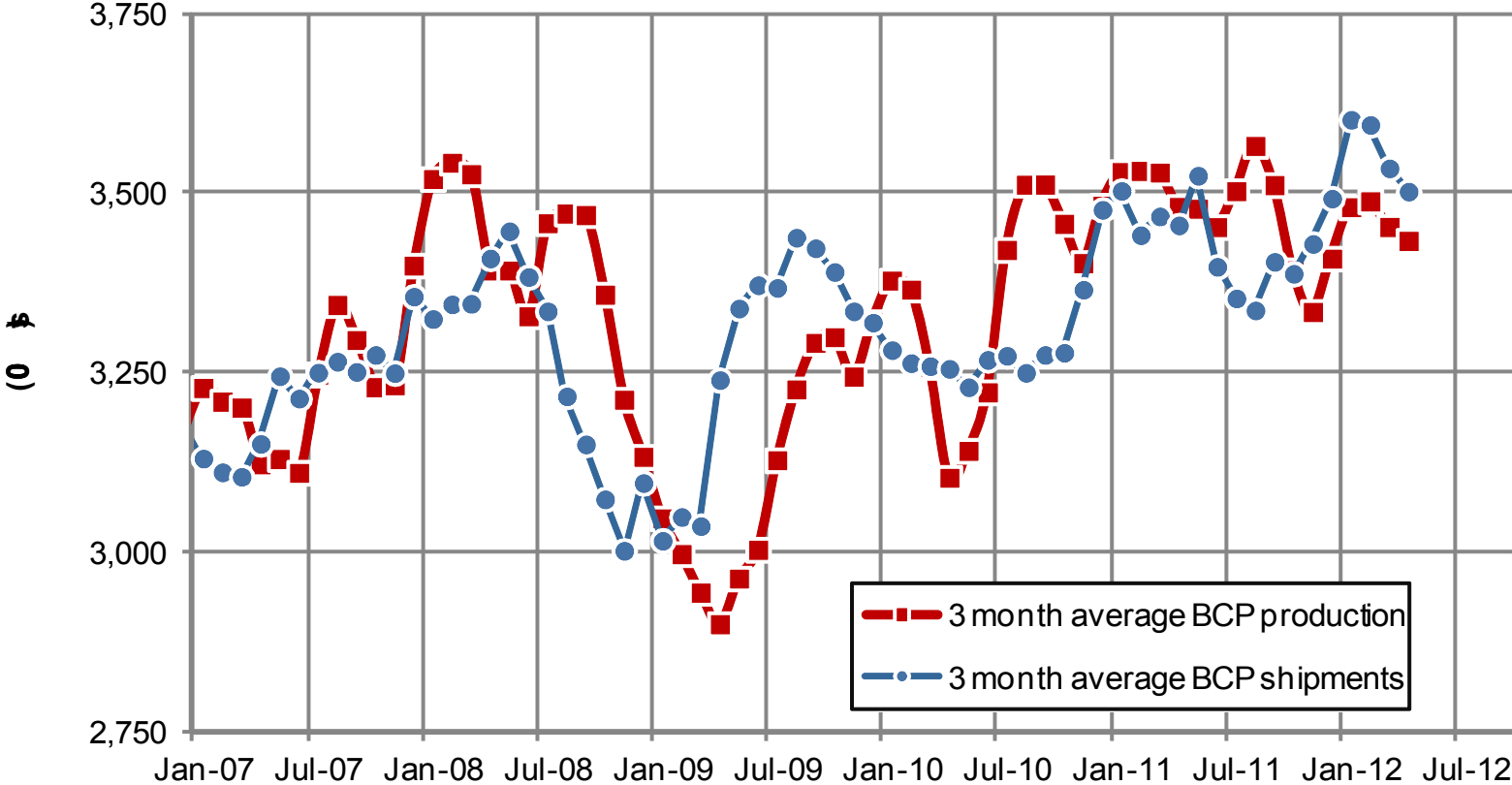


China BCP import volumes and market values (6 month moving average, real prices)



Source: HW estimates, China Customs Data

World-20 BCP monthly shipments and production (3 month moving average)



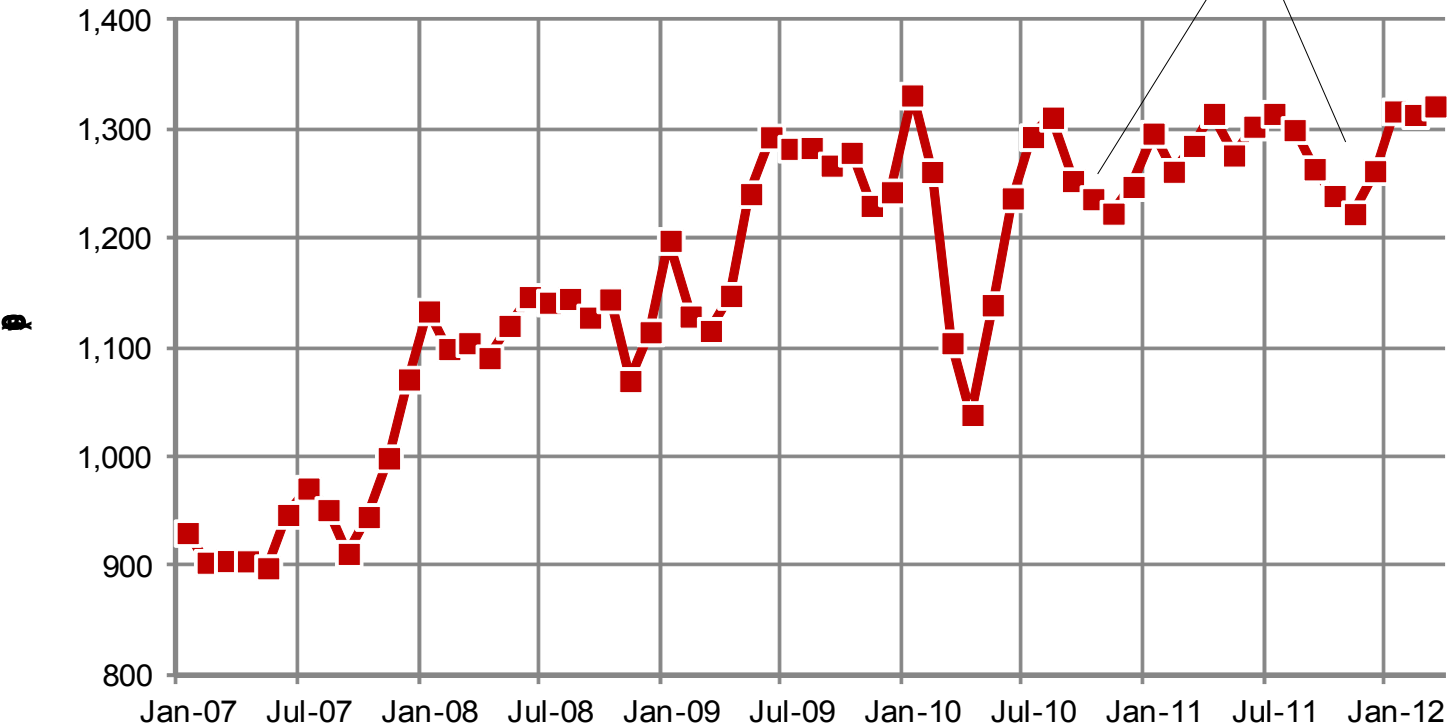
Source: PPC, Hawkins Wright

Latin American BCP production - no increase in last 3 years

(2 month moving average)



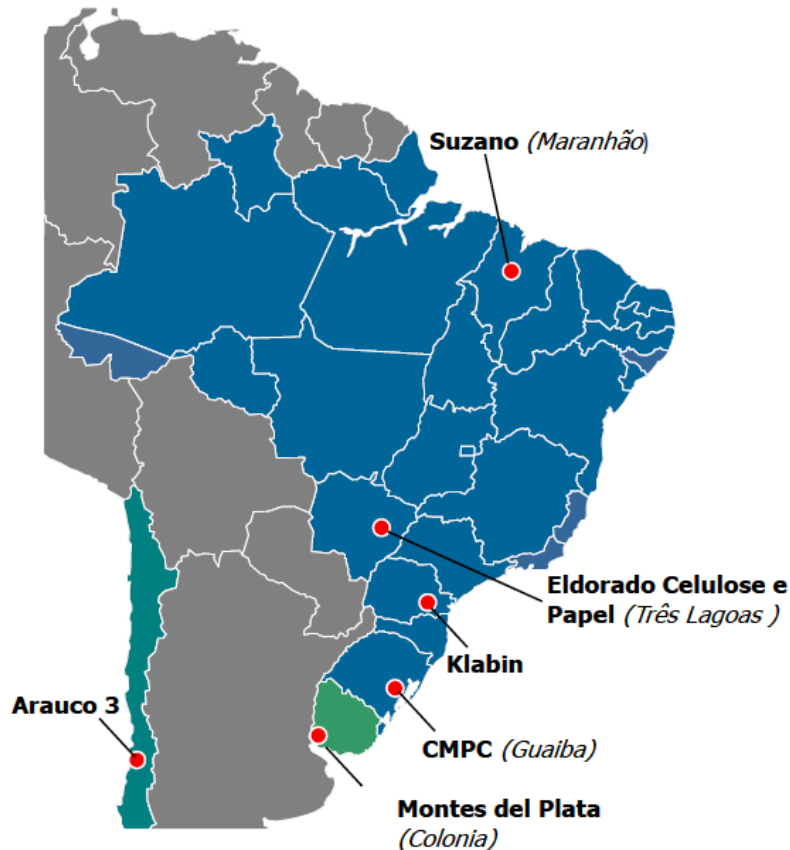
2 consecutive years that LA production has been weak through Q4, coinciding with weak pricing. Market downtime or genuine production outages?



Source: HAWKINS WRIGHT RESEARCH, BRACELPA

Source: Hawkins Wright estimates, Bracelpa, Industry Contacts

Latin American pulp projects 2013-2016



Confirmed

- **Eldorado Celulose e Papel:** Três Lagoas, 1.5 million t/y, Q4 2012
- **Montes Del Plata:** 1.3 million t/y, Q2 2013
- **Suzano:** Maranhão, +1.3-1.5 million t/y, Q4 2013

Highly likely

- **Klabin:** Parana state, +1.5 million t/y BEKP, Fluff, BSKP in 2014 (*finalising financing*)
 - **CMPC:** Guaiba, +1.3-1.5 million t/y BEKP, in 2014/2015 (*final decision expected 2H-2012*)
 - **Arauco 3:** net addition of 0.9 million t/y BEKP in 2015 (*conducting feasibility study*)
 - **UPM, Fray Bentos** +200,000t/y
-
- **Over 8 million t/y**



Pre-2016

Company	Mill	Country	Capacity	Grade	Start-up
Ilim	Bratsk	Russia	490	BSKP	Confirmed 2012
Eldorado	Tres Lagoas	Brazil	1500	BHKP	Confirmed 2012
Montes des Plata	Colonia	Uruguay	1300	BHKP	Confirmed 2013
Suzano	Maranhao	Brazil	1500	BHKP	Confirmed 2013
CMPC	Guaiba	Brazil	1,350	BEKP	Targets 2014
Klabin	Parana state	Brazil	1,500	BEKP/Radiata	Targets 2014
Stora Enso	Beihai	China	400	BEKP	Targets 2014
Arauco	Arauco 3	Chile	915	BEKP	Targets 2015
Svetlogorsky	Svetlogorsky	Belarus	400	BSKP	2015
Fibria	Tres Lagoas II	Brazil	1,500	BEKP	Start-up date not confirmed
APP	South Sumatra	Indonesia	1,800	BHKP	2015/2016
Suzano	Piaui	Brazil	1,500	BEKP	Targets 2016
Lwarcel	São Paulo	Brazil	750	BEKP	Targets 2016
SUB-TOTAL			14,905		

Post-2016

Acacell	Sarawak	Malaysia	800	BAKP	Start-up date not confirmed
Bohui	Yancheng	China	1,000	BHKP	Start-up date not confirmed
Braxcel	Peixes	Brazil	1,500	BEKP	Targets 2018
Braxcel	Peixes II	Brazil	1,500	BEKP	Targets 2023
Cenibra	Belo Oriente	Brazil	800	BEKP	Project postponed
Eldorado Brazil	Tres Lagoas II	Brazil	1,500	BEKP	Start up by 2017
Eldorado Brazil	Tres Lagoas III	Brazil	1,500	BEKP	Start up by 2021
Fibria	Losango 1	Brazil	1,500	BEKP	Start-up date not confirmed
Fibria	Barro Do Riacho IV	Brazil	1,500	BEKP	Start-up date not confirmed
Gunns	Bell Bay	Australia	1,100	BEKP	Start-up date not confirmed
Jari	Pará	Brazil	1,300	BEKP	Start-up in 2017-2018
Portucel	N/A	Uruguay	1,300	BEKP	Start-up date not confirmed
Protavia Pty Ltd	Penola	Australia	750	BCTMP	Start-up date not confirmed
Segezha Pulp & Paper	Karelia	Russia	845	BSKP/BHKP	Start-up date not confirmed
Sodra/VEB/Angara Paper	Krasnojarsk	Russia	1,100	BSKP	Start-up date not confirmed
Suzano	Mucuri	Brazil	400	BEKP	Debottleneck project
Suzano	TBC	Brazil	1,500	BEKP	Start-up date not confirmed
UPM/Sveza	Vologda	Russia	800	BSKP	Start-up date not confirmed
Veracel (Fibria/Stora)	Veracel II	Brazil	1,500	BEKP	Start-up date not confirmed
SUB-TOTAL			22,195		

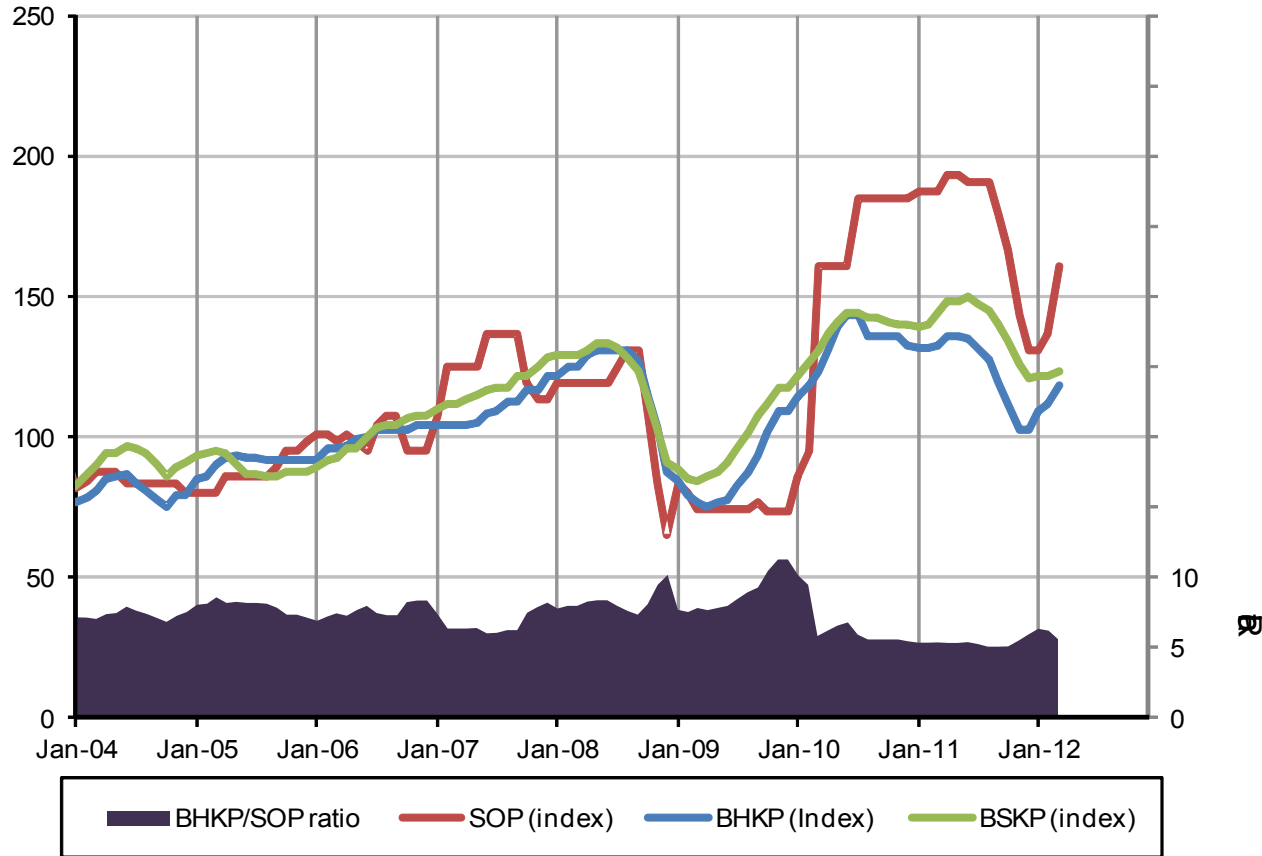
Note: the list is not exhaustive

TOTAL 37,100

China alone will not be able to absorb all of this new supply and as such the displacement of some high cost pulping capacity will follow. In previous cycles, any displacement has been confined to virgin fibre grades, but now substitution of high quality RCF is possible

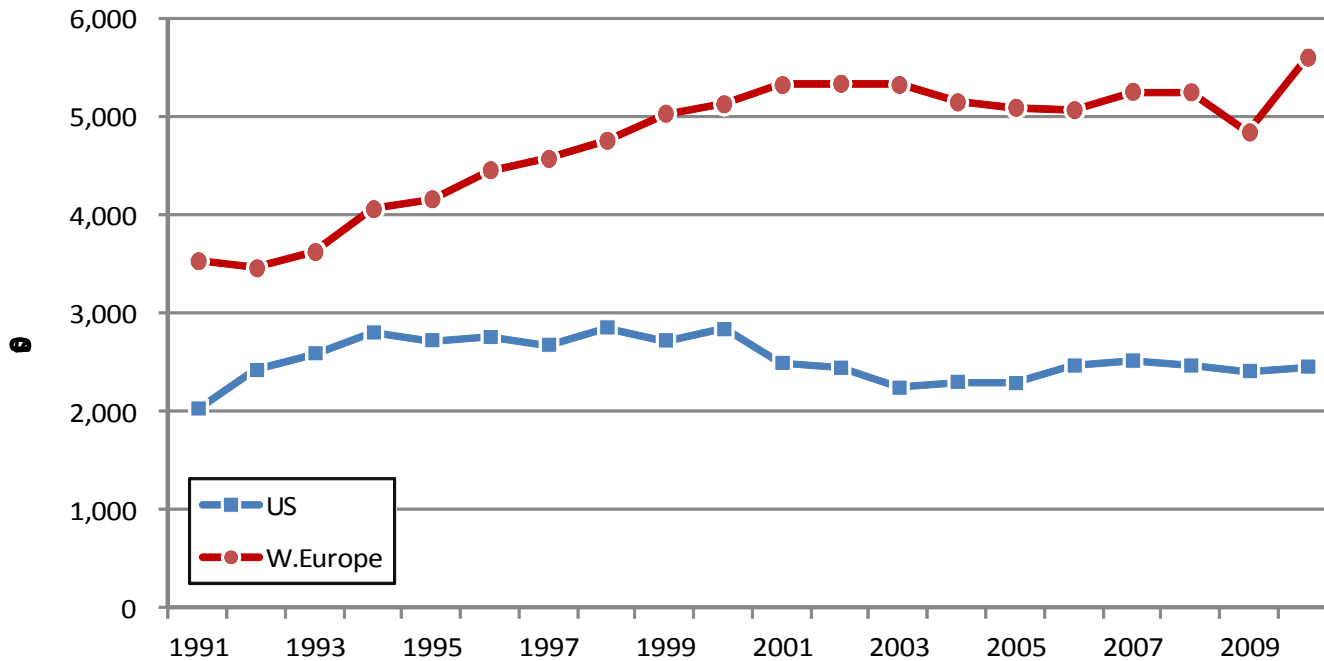
Pulp prices cif WE vs. SOP prices (Germany)

As an index (2006=100)



The ratio of BHKP prices to SOP averaged 8X during the period 2004-2009; the ratio since January 2010 has averaged 6X

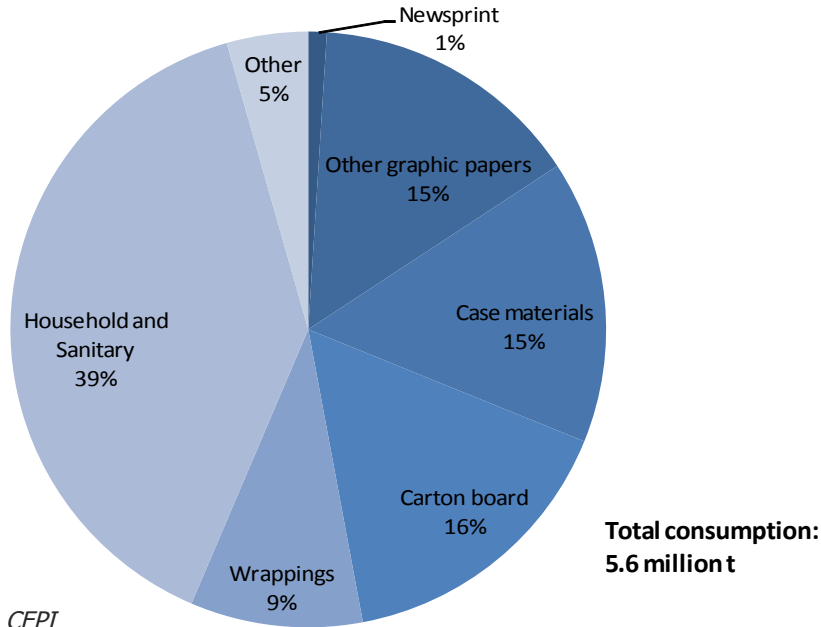
High grade recovered paper consumption US and WE, 1991-2010



Source: CEPI, AFPA

Large potential for displacement of SOP by BEKP in both Europe and NA, particularly in tissue sector

WE high grade RCF paper utilisation by sector 2010



Source: CEPI

Tissue production in NA and WE totalled approx. 14 million t in 2011, consuming an estimated 6.5 million t of recovered fibre and 7.5 million t of market pulp.

Virgin fibre to become preferential on both a quality and cost basis?

Key considerations

Importing pulp vs. local sourcing of recovered fibre



Capital considerations where installing virgin fibre refining capacity or revamping ageing deinking assets



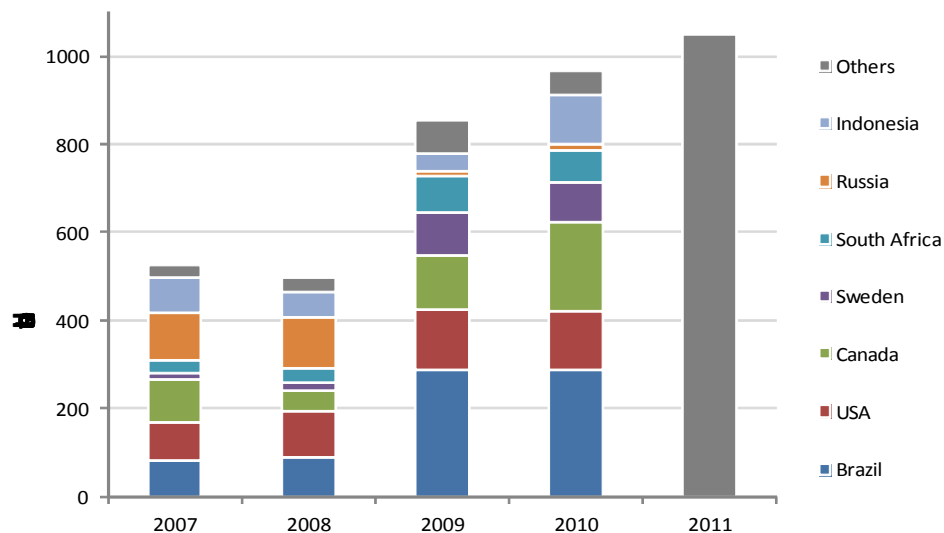
Procurement policy: ecological benefits of RCF vs. virgin fibre?

Dissolving pulp



Company	Province	Grade	Capacity	Start
Sun Paper	Shandong	BHKP/DP	200	2011 BHKP line has been upgraded to allow DP in Sep '11
Qingshan	Fujian	BSKP/DP	120	2011 New Metso line will use softwood chips. Sep '11
Lee & Man	Sichuan	BHKP/DP	140	2011 BHKP/Bamboo line upgraded for DP in Q4 '11
Yueyang	Hunan	BKP/DP	300	2012 BSKP/BHKP line upgraded for DP in Q1 '12
Huatai	Anhui	BSKP/DP	120	2012 New BSKP line may convert to DP by May '12
Nanping	Fujian	DP	150	n/a New line planned without schedule
Sun Paper	Guangxi	DP	200	n/a New swing line, awaiting approvals
Total			1230	

DP Imports



EU wood pellets 2011 v 2010

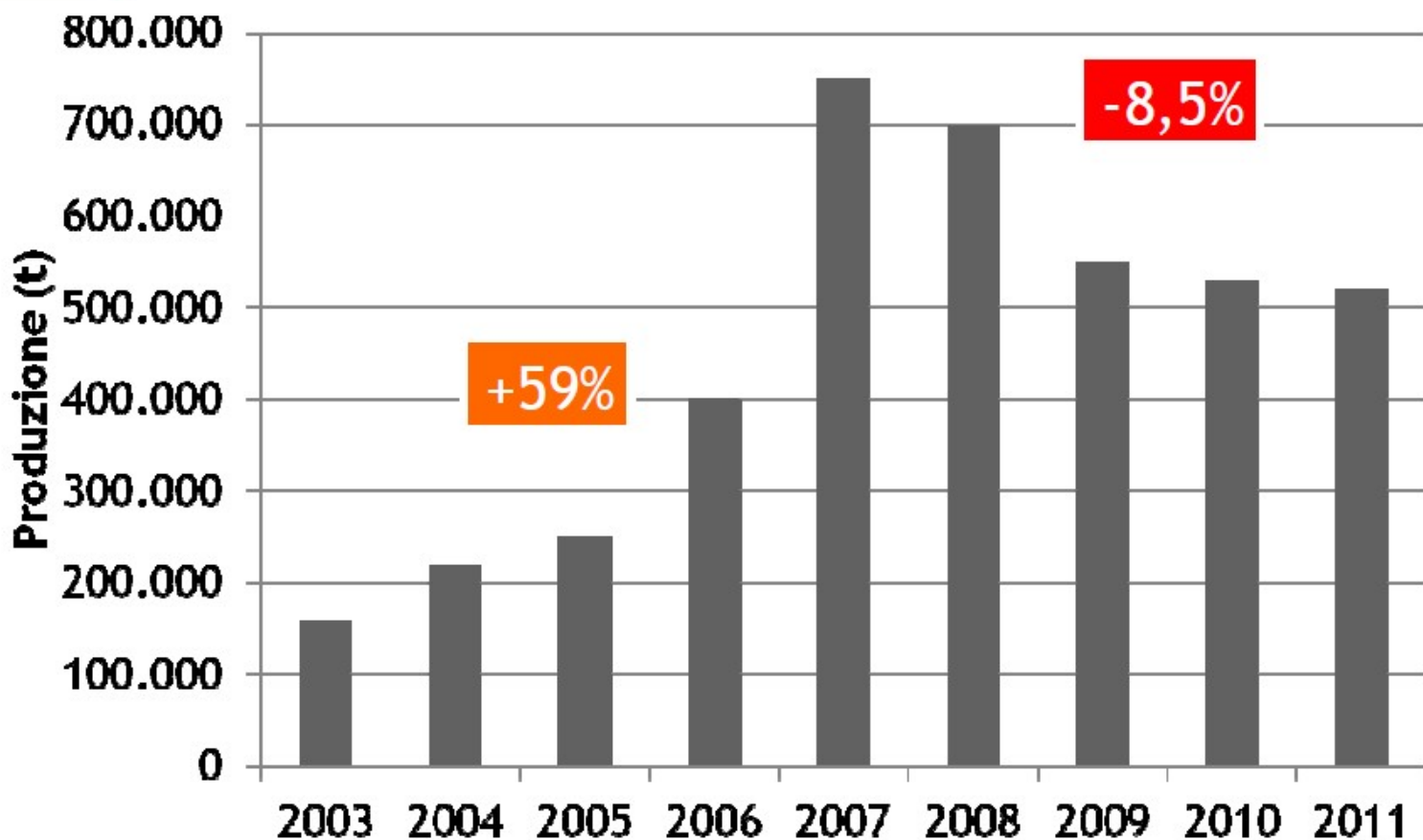


- Total trade increased by 29% from 5.9 to 7.6 million tonnes
- EU imports from outside EU 3.2 million t; Intra-EU 4.4 Mt
- UK, Netherlands, Belgium biggest from outside EU
- Canada, US exports 2.2 Mt to EU; Russia 0.5 Mt and rising
- Denmark, Italy most from EU
- Latvia, Estonia, Germany and Portugal are largest net exporters

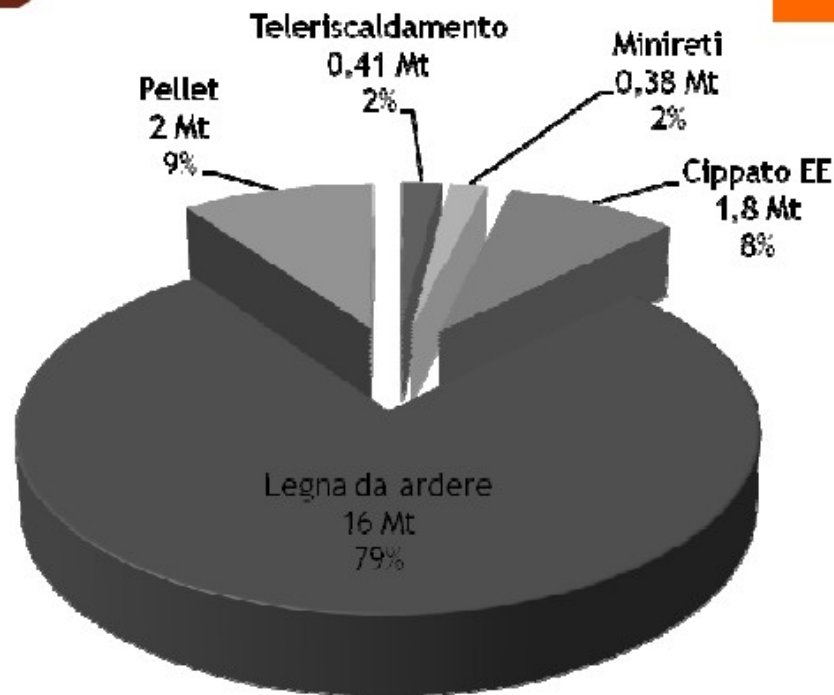
IL MERCATO ITALIANO DEL PELLET: OLTRE UN MILIONE DI TONNELLATE IMPORTATE.

SFIDE FUTURE E PROSPETTIVE





2,4 Miliardi di Euro

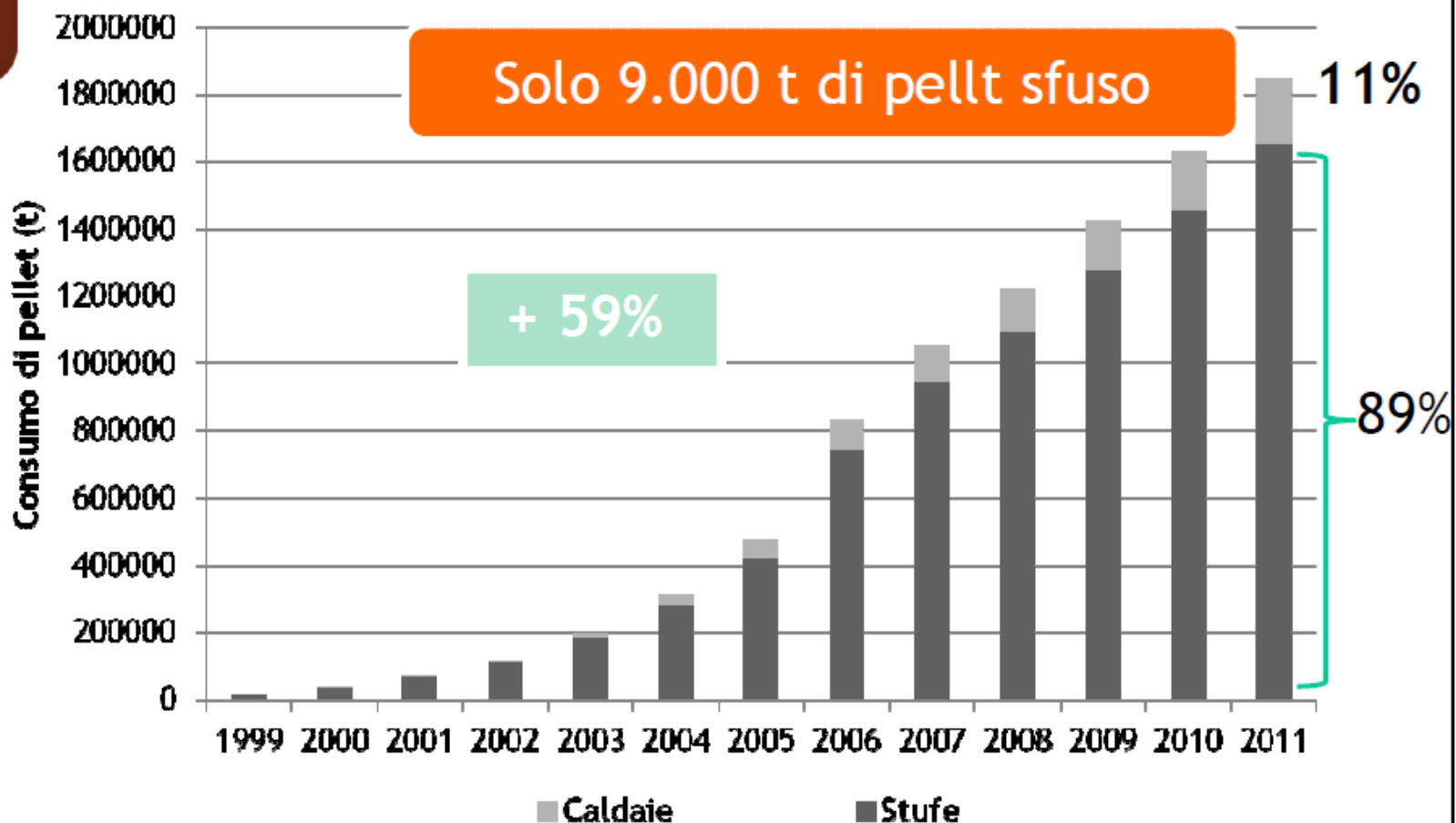


- Teleriscaldamento
- Minireti
- Cippato per energia elettrica
- Legna da ardere
- Pellet

Dati: AIEL su dati Pettenella (2012)

6,7 Mtep = 20,59 Mt = 78,1 TWh

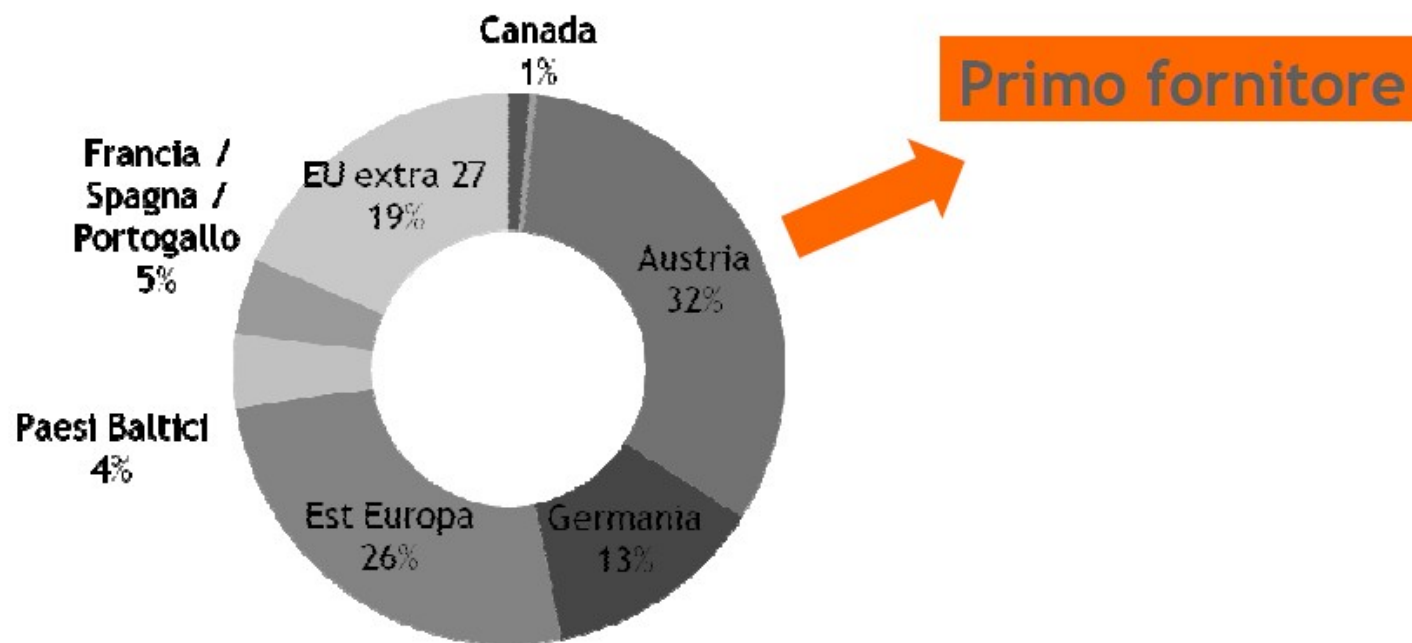
QUANTO PELLT CONSUMIAMO?



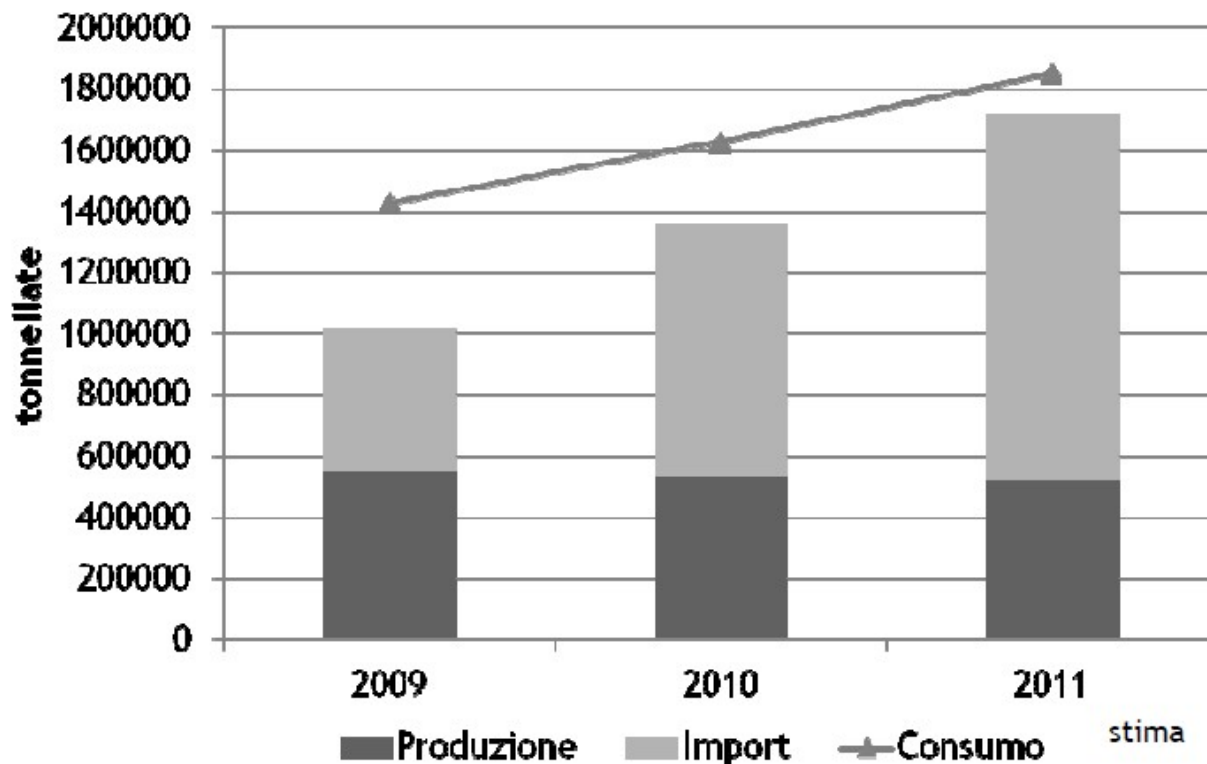
PRIMO PAESE EUROPEO PER CONSUMO DOMESTICO

- 2009: **471.600 t**
- 2010: **827.200 t**

EUROSTAT



2011 oltre 1,2 Milioni di t importate



- Alcune quote di importazione **sfuggono alle statistiche ufficiali**

Most Pellets imported from other Europe



Pellet Imports; 2011 ; tonnes		
UNITED STATES	20,783	2%
AUSTRIA	244,534	24%
BOSNIA AND HERZEGOVINA	21,823	2%
CANADA	66,052	7%
CZECH REPUBLIC	20,411	2%
GERMANY	108,437	11%
FRANCE	38,792	4%
CROATIA	92,331	9%
LITHUANIA	71,653	7%
ROMANIA	68,412	7%
SLOVENIA	104,144	10%
SLOVAKIA	21,430	2%
sub total	878,800	87%
OTHERS	130,447	13%
TOTAL	1,009,247	100%

ITALIA: primo importatore europeo per pellet ad uso domestico

UNICO paese in cui il consumo supera di quasi quattro volte la produzione nazionale

MERCATO SEMPRE PIU' INTERNAZIONALE

- Oltre **1,5 milioni di famiglie** utilizzano il pellet per il riscaldamento
- **Primo consumatore europeo per il settore domestico**
- Consumo **1,9 milioni di t** di cui sono il **28% prodotto nazionale** (domanda 4 volte l'offerta interna)
- **3,6 milioni di apparecchi per un consumo superiore a 4 milioni di t (2020).**