Global Trends in Market Pulp

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AIAC

Milan, Italy

24 September 2015

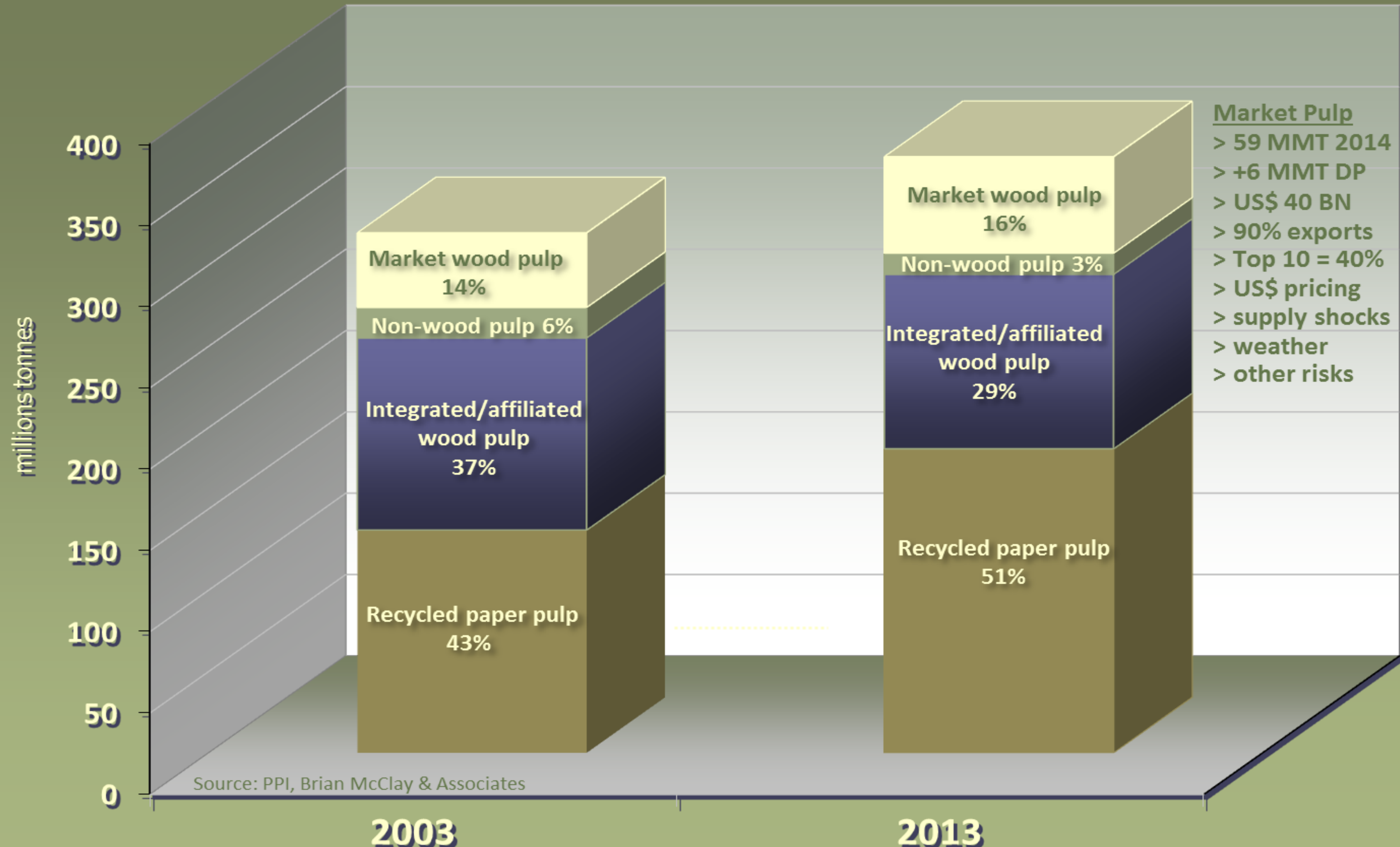
Presentation outline

Global pulp market pro

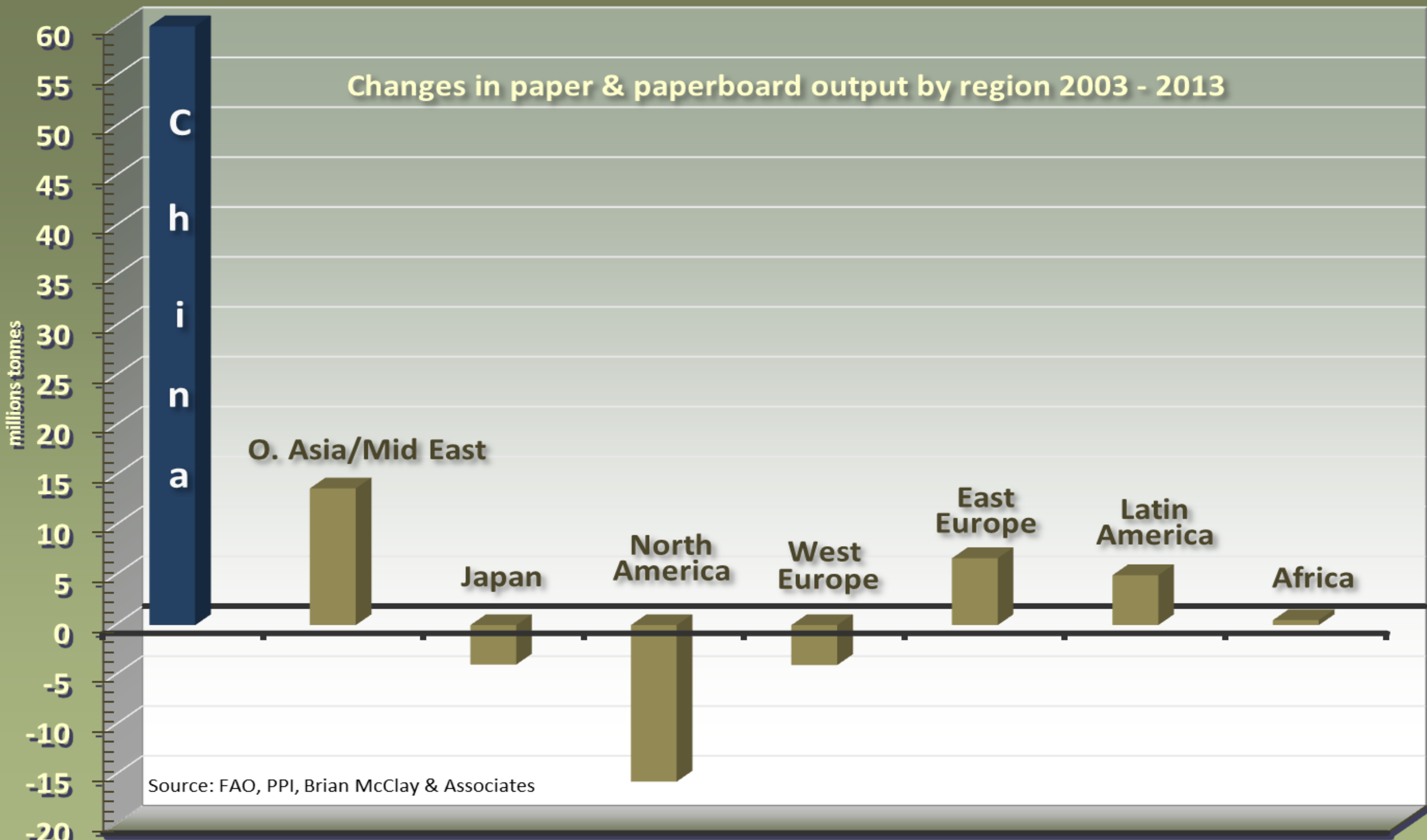
5-year demand/supply & pricing outlook

Longer-term issues and trends

Market pulp gaining share of global fiber furnish

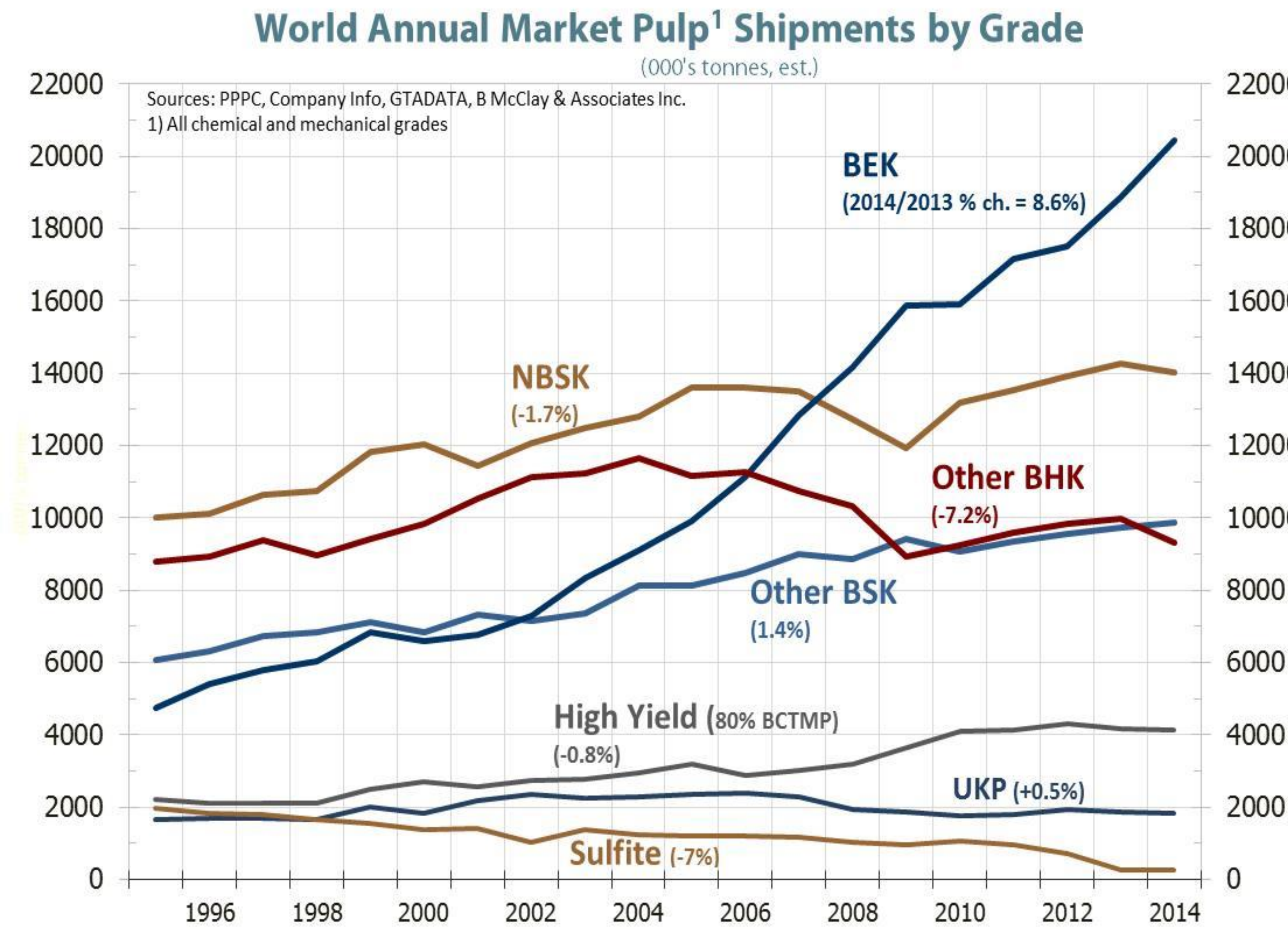


Capacity surge in China, 85% non-integrated to fibre

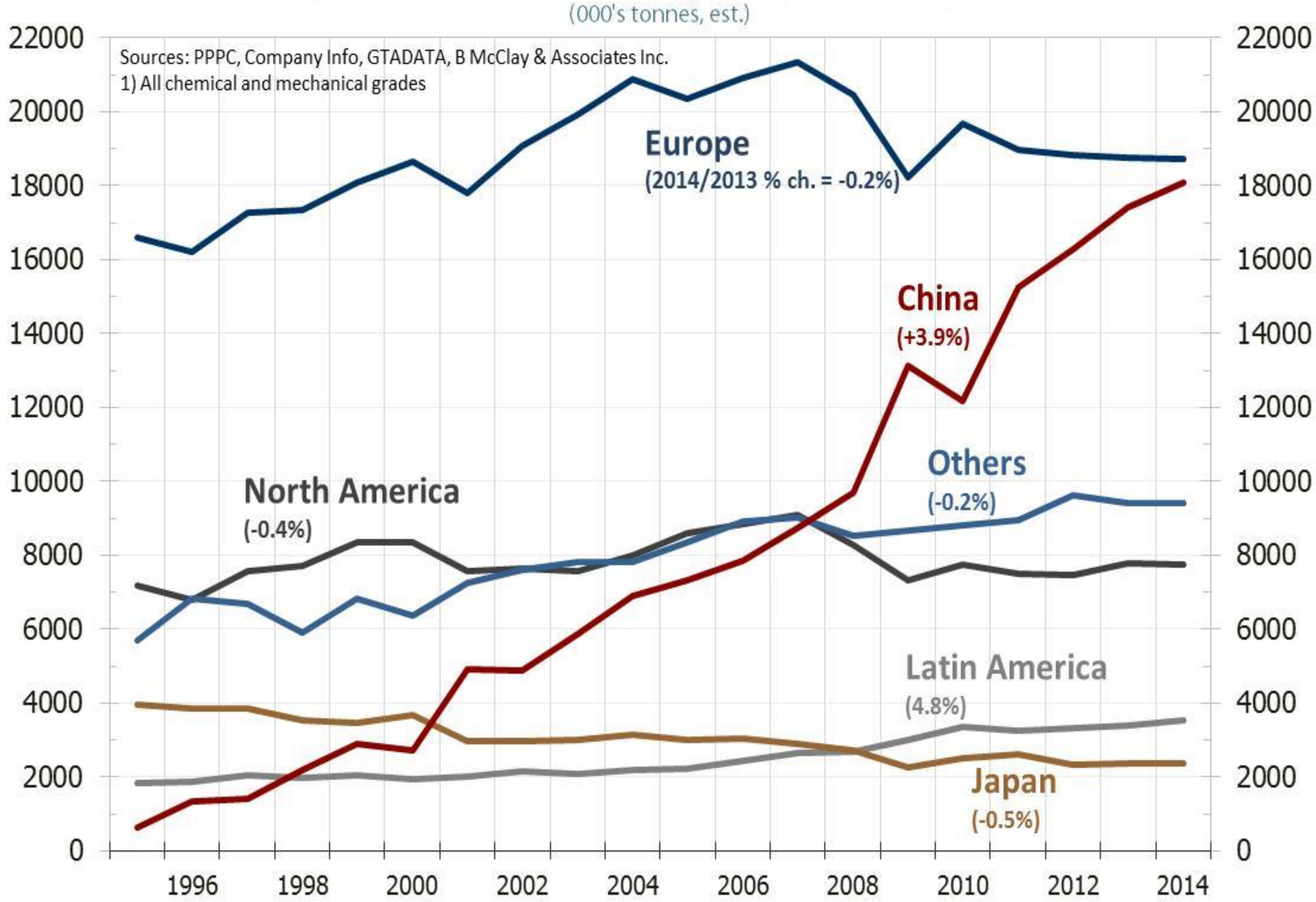


Paper still a growth business, China now 26% of total

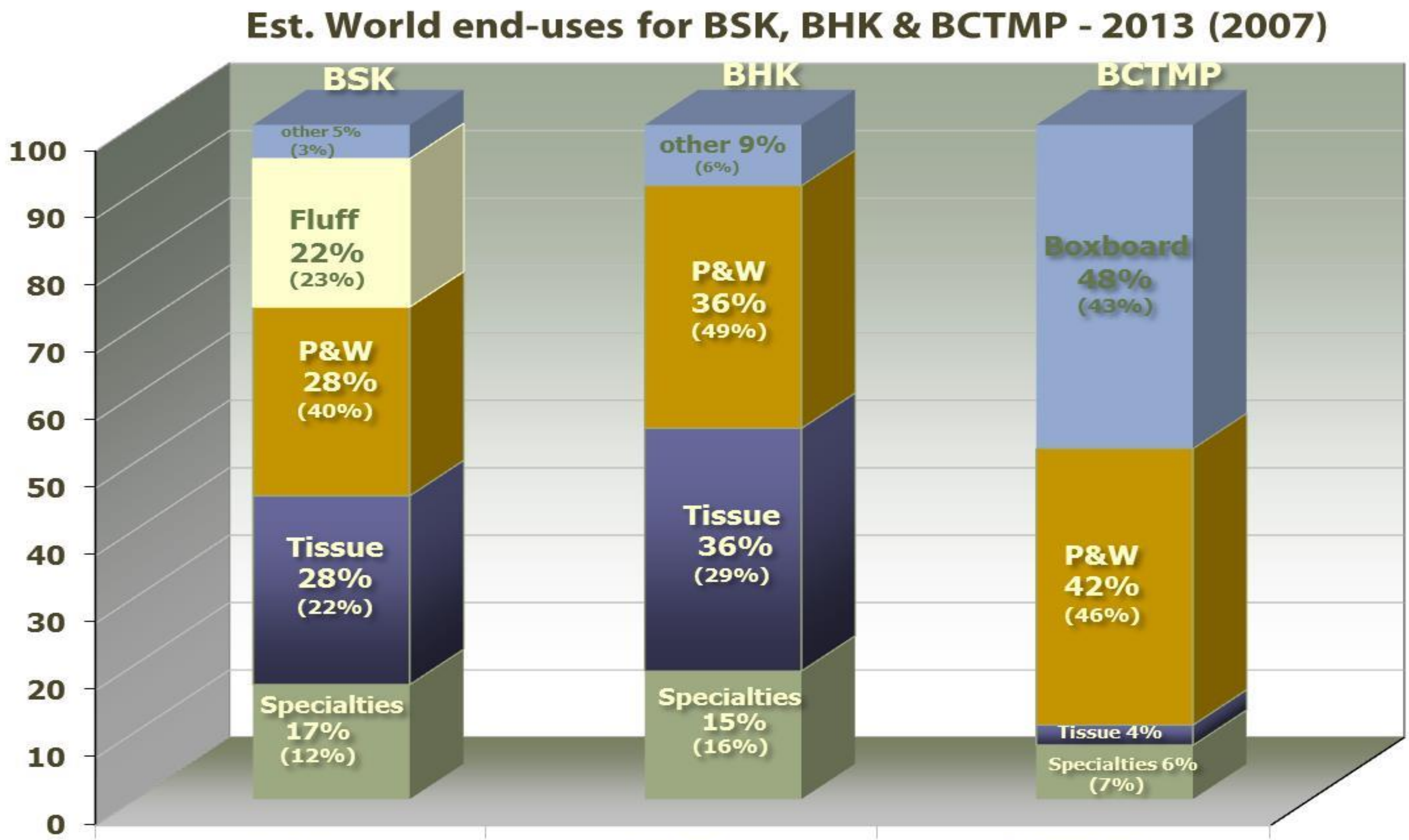
Source: FAO, PPI, Brian McClay & Associates


World Annual Market Pulp1 Shipments by Grade
(000's tonnes, est.)
Sources: PPPC, Company Info, GTADATA, B McClay & Associates Inc.
1) All chemical and mechanical grades
BEK
(2014/2013 % ch. = 8.6%)
NBSK
(-1.7%)
Other BHK
(-7.2%)
Other BSK
(1.4%)
High Yield (80% BCTMP)
(-0.8%)
UKP (+0.5%)
Sulfite (-7%)
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

World Paper Grade Market Pulp Shipments by Destination



Big shift from graphic papers to tissue and specialties



Sources: Brian McClay & Associates Inc., PPPC, Poyry

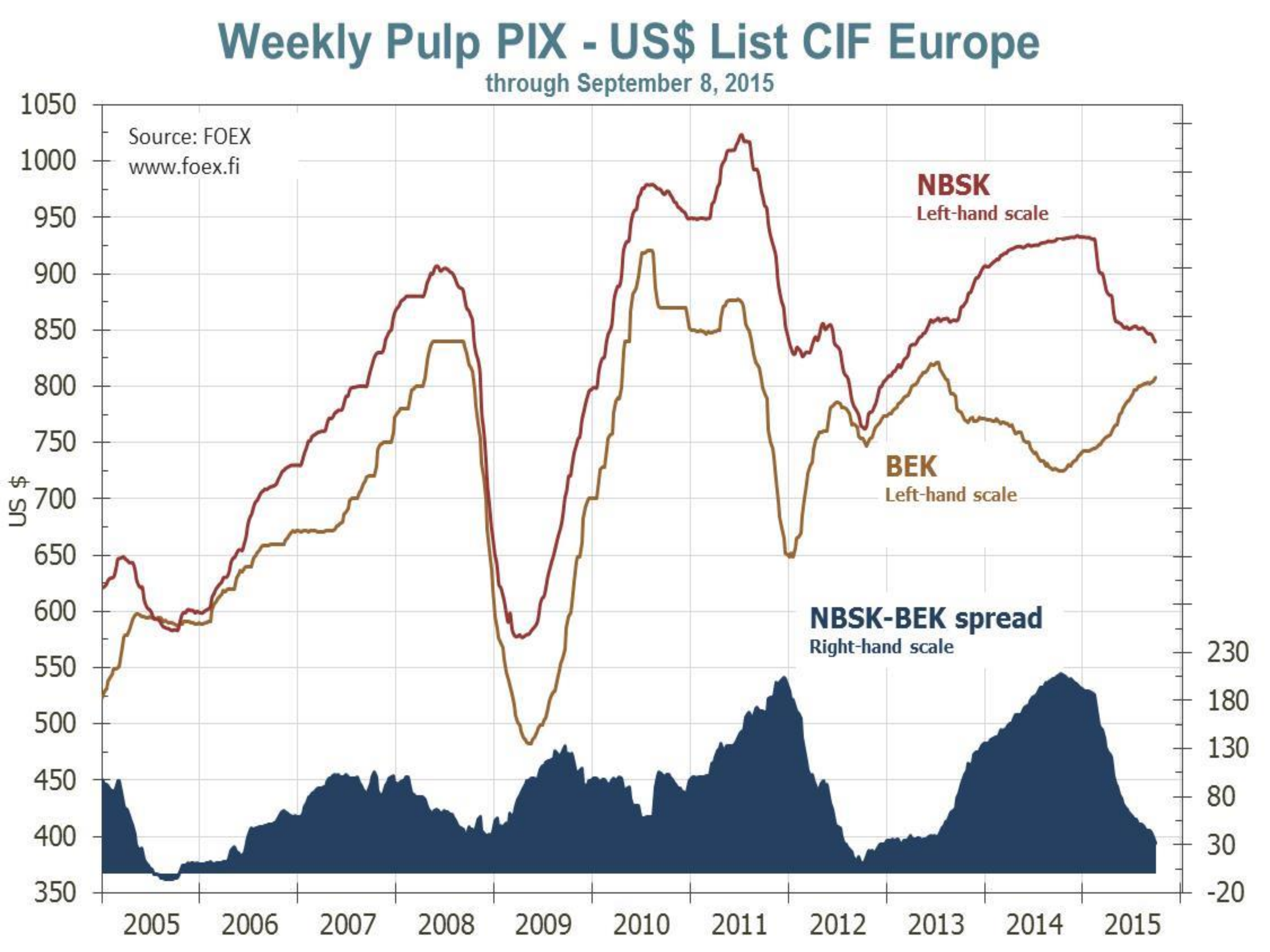
Major Economic and FX Forecast Assumptions

- Global GDP growth close to 4%/y 2015-19 vs. 3.4% 2013-14 with China still growing 7+%/y
- US$ 15 trillion US consumer market main driver of global economic revival.
- China real estate recovering, huge stimulus to boost growth through 2016. Consumer spending and services growing faster and more paper-centric than investment
- Eurozone economic recovery gains traction 2016.
- US$ to peak next 2 quarters after interest rates start moving higher and other economies start to catch up.

2016: US Election, Rio Olympics, Leap year

US consumers better financial shape, Canada’s worse

World BSK & BHK Monthly Shipments
3-month moving average through July 2015 (est.)1
2700
2600
2500
2400
2300
2200
2100
2000
1900
1800
000's tonnes
800
750
700
650
600
550
500
US$
BHK shipments (LHS)
NBSK China list - RHS (Aug)
BEK China list - RHS (Aug)
BSK shipments (LHS)
2012
2013
2014
2015
1. Brian McClay & Associates estimate. Sources: PPPC, GTAData, China Customs, other industry information.



Weekly Pulp PIX - US$ List CIF Europe
through September 8, 2015
Source: FOEX
www.foex.fi
NBSK
Left-hand scale
BEK
Left-hand scale
NBSK-BEK spread
Right-hand scale
US $
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
230
180
130
80
30
-20
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

Trend-line world market pulp demand growth 2.7%/y

BSK 1.8%, BHK 4.1%

World tissue paper output (33.6 mmt 2014) **to grow 4%/y 2015-19**

Around 1.35 million tonnes/y

Approx. 15% integrated to pulp or waste paper

So, 85% market pulp needed or 1.15 million tonnes/y

World p & w paper output (90 mmt 2014) **flat to -0.5% 2015-19**

unchanged demand for market pulp; less integrated more market

Specialty papers output (25 mmt 2014) **should grow 2%/y 2015-19**

+200k mt market pulp demand/y

Other grades: FBB +3%/y

+250k mt market pulp demand/y; mostly BCTMP

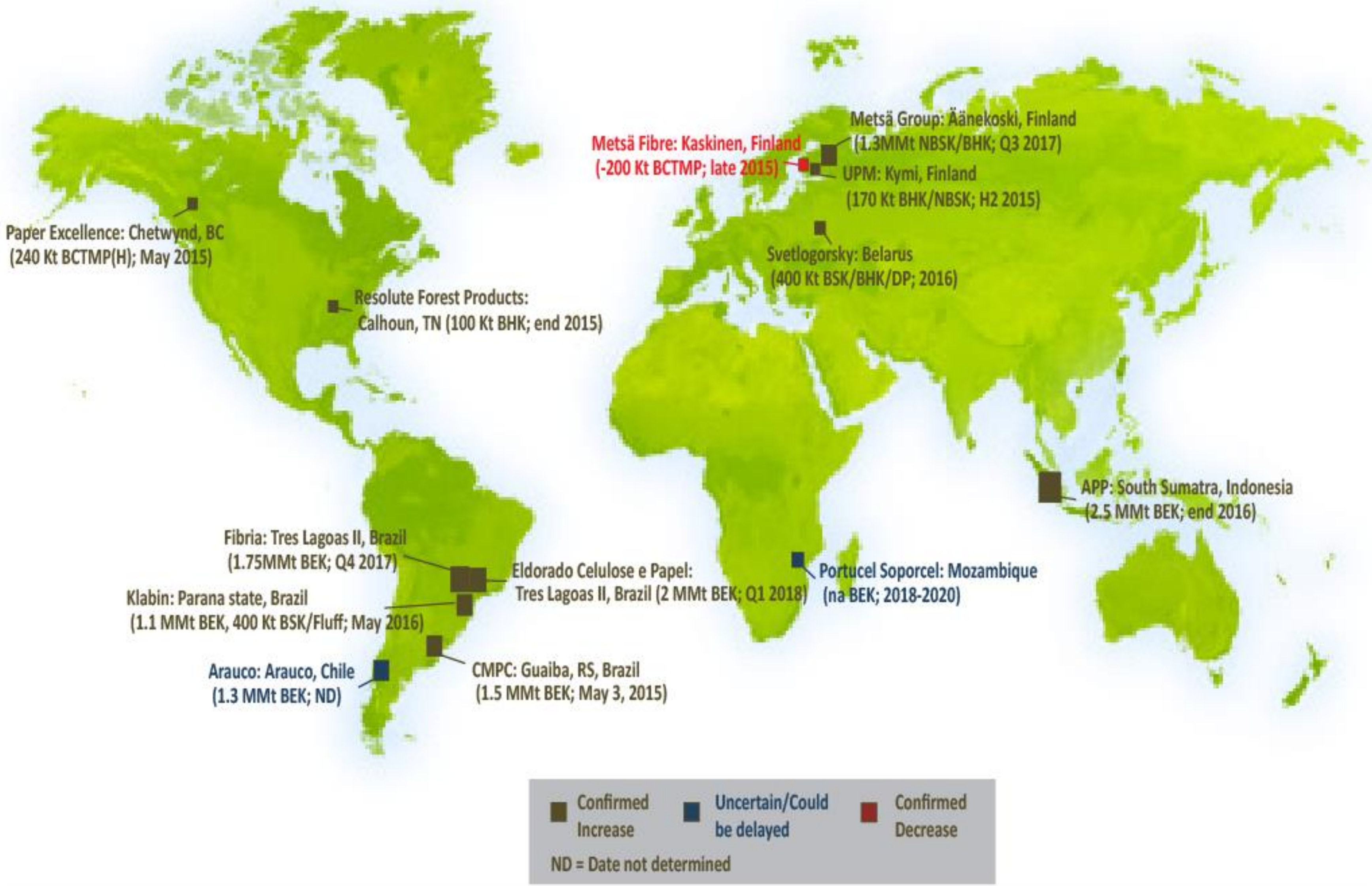
Approx. 1.6 mmt market pulp demand growth/y

+7.1 mmt BHK capacity 2016-18; 90% above demand growth

Company Name	Mill Location	Grade(s)	Effective Date	000's Tonnes	Notes
Ence	Huelva, Spain	BEK	Oct. 19, 2014	-360	Mill converted to an advanced renewable energy plant.
Mondi	Ruzomberok, Slovakia	BHK	Nov. 2014	100	New recovery boiler.
UPM	Fray Bentos, Uruguay	BEK	Nov. 2014	100	Permit increase.
Asia Pulp & Paper	Hainan Island, China	BEK	2014	-150	Switch from market to integrated production with start up of 6 new tissue PMs.
Expera Specialty Solutions	Old Town, ME, USA	NBHK	Jan. 9, 2015	200	Restart of mill closed in August 2014. Initial production BHK. Mostly integrated.
Paper Excellence	Chetwynd, BC, Canada	BCTMP	May 1, 2015	240	Restart of mill idled by previous owner Tembec in September 2012.
CMPC	Guaíba, Brazil	BEK	May 3, 2015	1300	BEK
Altri SGPS	Constância, Portugal	sulphite	Mid June 2015	-120	DP conversion started in 2012, completed in mid-June 2015.
Portucel Soporcel	Cacia, Portugal	BEK	July 2015	70	BEK expansion.
Metsä Board	Kaskinen, Finland	BCTMP	Late 2015	-200	Integration with new 400k FBB PM at company's Husum, Sweden mill
UPM	Kuusankoski, Finland	NBHK	End 2015	100	Integrated. EUR 160 million to add new pulp dryer and other improvements
Resolute Forest Prod.	Calhoun, TN, USA	BHK	Q4 2015	100	New continuous digester.
Double A	Alizay, France	BHK	May 2016	300	Integrated and market.
Klabin	Ortigueira, Paraná, Brazil	BEK	May 2016	900	1.5 million tpy (1.1 million BEK of which 200k integrated , 400k BSK/fluff).
Svetlogorsky Pulp	Svetlogorsk, Belarus	NBHK	Q2 2016	200	Flex' pulp mill to produce BSK, BHK and viscose grade DP.
Asia Pulp & Paper	South Sumatra, Indonesia	BEK	Q4 2016	2800	BEK and acacia. Two 1.4 million tpa lines.
Vitracimex	Quang Ngai, Vietnam	BEK	Early 2017	400	Equipment from Södra's Tofte Mill in Norway.
Metsä Fibre	Äänekoski, Finland	NBHK	Q3 2017	500	1.3 million tpa partly integrated BSK/BHK (800k/500k) mill.
Metsä Fibre	Äänekoski, Finland	NBHK	Q3 2017	-360	Closure of existing 520 BSK/BHK (100k /420k) mill. Partly integrated.
Fibria Celulose	Três Lagoas, Brazil	BEK	Q4 2017	1750	
Eldorado Papel e Celulose	Três Lagoas, Brazil	BEK	H1 2018	2000	

Selected Hardwood Market Pulp Capacity Changes 2014 - 2019

June 2015

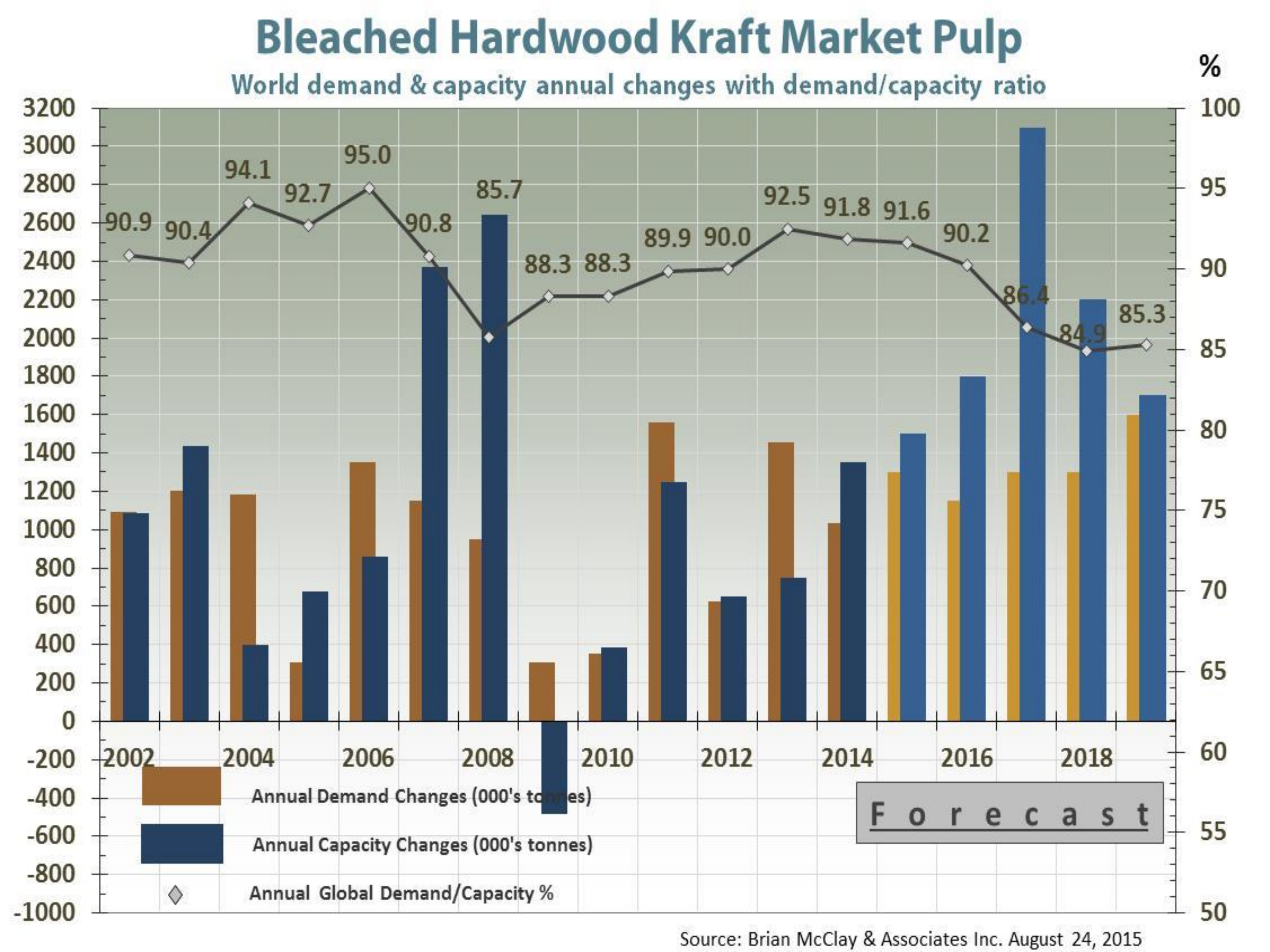


+2.8 mmt BSK capacity 2016-18; 2x demand growth

Company Name	Mill Location	Grade(s)	Effective Date	000's Tonnes	Notes
Heinzel Group	Pöls, Austria	NBSK	Mar. 23, 2014	-240	Boiler damaged by explosion.
Mondi	Stetí, Czech Republic	NBSK	Apr. 2014	-85	Integrated to new 150K bleached kraft paper PM.
Holmen	Iggesund, Sweden	NBSK	Q2 2014	70	New recovery boiler (Q2, 2012) allowed gradual capacity expansion.
UPM	Pietarsaari, Finland	NBSK	July 2014	70	Fiber line rebuild
Mondi	Syktyvkar, Russia	NBSK	Oct. 2014	100	Installed a new 100k pulp dryer
Verso Corp.	Jay, Maine	NBSK	Oct. 2015	-90	Roll pulp
UPM	Kuusankoski, Finland	NBSK	End 2015	70	Integrated. EUR 160 million to add new pulp dryer
Heinzel Group	Pöls, Austria	NBSK	End 2015	240	Restart of repaired #2 boiler that exploded March 23, 2014
Metsä Board	Husum, Sweden	NBSK	Early 2016	150	Added capacity from closure of 600k t/y CM/UWF pms and new 400k FBB line
Rayonier AM	Jesup, GA, USA	Fluff-BSK	Q1 2016	245	C line, rebuilt to make specialty DP in 2013 will only make fluff/DP
Klabin	Paraná, Brazil	SBSK	May 2016	400	1.5 million tpy (1.1 million BEK, 400k BSK/fluff) under construction, on schedule.
Svetlogorsky Pulp	Svetlogorsk, Belarus	NBSK	Q2 2016	100	Flex' pulp mill to produce BSK, BHK and viscose grade DP.
Intl. Paper	Riegelwood, NC, USA	Fluff-BSK	Mid 2016	360	Fluff and softwood paper pulp
Domtar Corp.	Ashdown, AR, USA	Fluff-BSK	Q3 2016	315	Converting UWF PM 64 to baled SBSK and rolled fluff pulp output.
Celulosa Arauco	Valdivia, Chile	BSKP	Late 2016	-275	Conversion to DP. EIA has been legally challenged by local community.
Södra Cell	Värö, Sweden	NBSK	Q4 2016	275	$610 million investment to expand this existing 425k NBSK mill.
Metsä Fibre	Äänekoski, Finland	NBSK	Q3 2017	800	1.3 million tpa partly integrated BSK/BHK (800k/500k) mill.
Metsä Fibre	Äänekoski, Finland	NBSK	Q3 2017	-100	Closure of existing 520k BSK/BHK (100k/420k) mill.
Shandong Chenming	Hubei, China	NBSK	2017	300	Greenfield mill.
SCA	Timrå, Sweden	NBSK	mid-2018	470	100k for internal use

Selected Softwood Market Pulp Capacity Changes 2014 - 2019

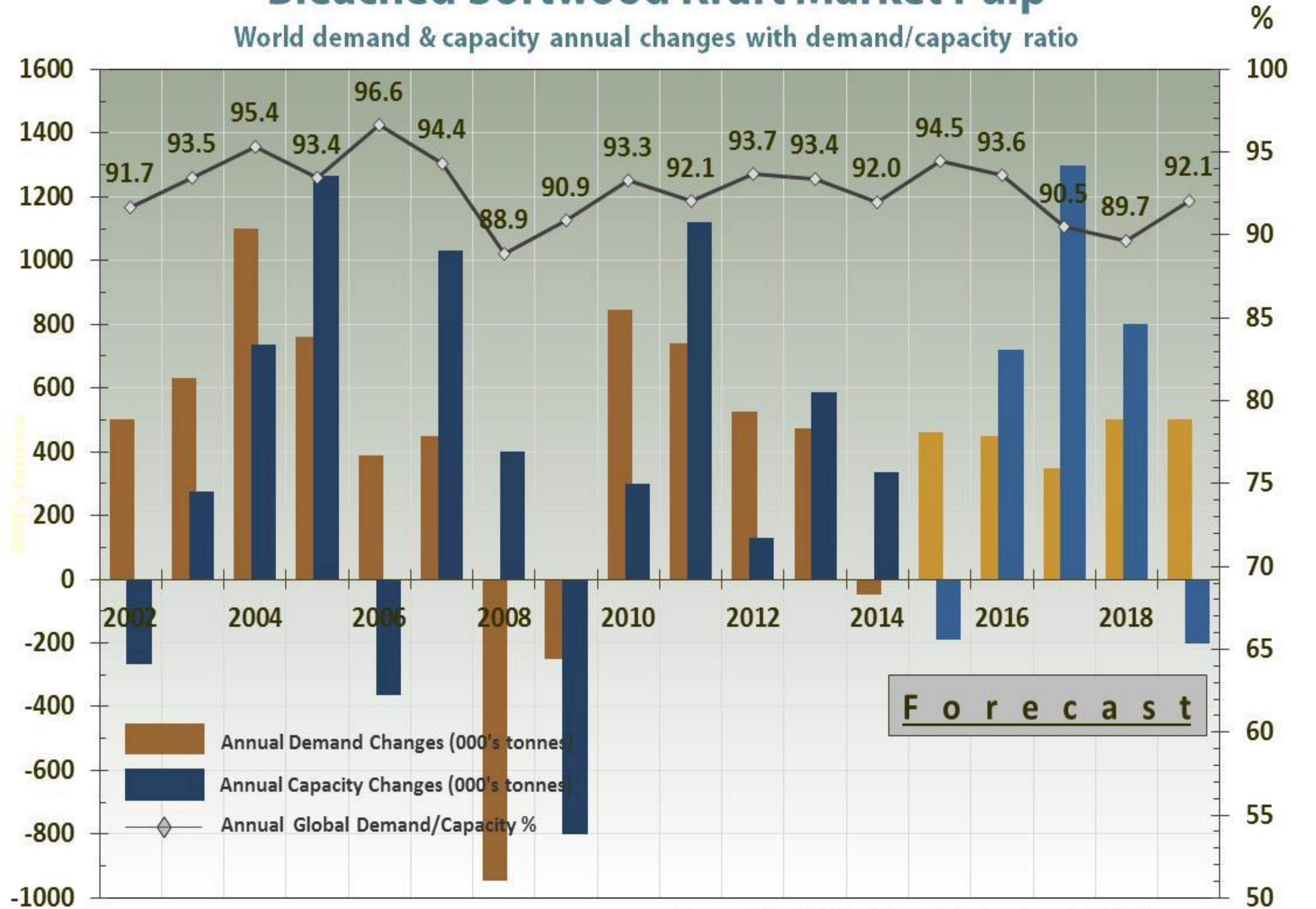
September 2015



Bleached Hardwood Kraft Market Pulp
World demand & capacity annual changes with demand/capacity ratio
%
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-200
-400
-600
-800
-1000
100
95
90
85
80
75
70
65
60
55
50
90.9
90.4
94.1
92.7
95.0
90.8
85.7
88.3
88.3
89.9
90.0
92.5
91.8
91.6
90.2
86.4
84.9
85.3
2002
2004
2006
2008
2010
2012
2014
2016
2018
Annual Demand Changes (000's tonnes)
Annual Capacity Changes (000's tonnes)
Annual Global Demand/Capacity %
Forecast
Source: Brian McClay & Associates Inc. August 24, 2015

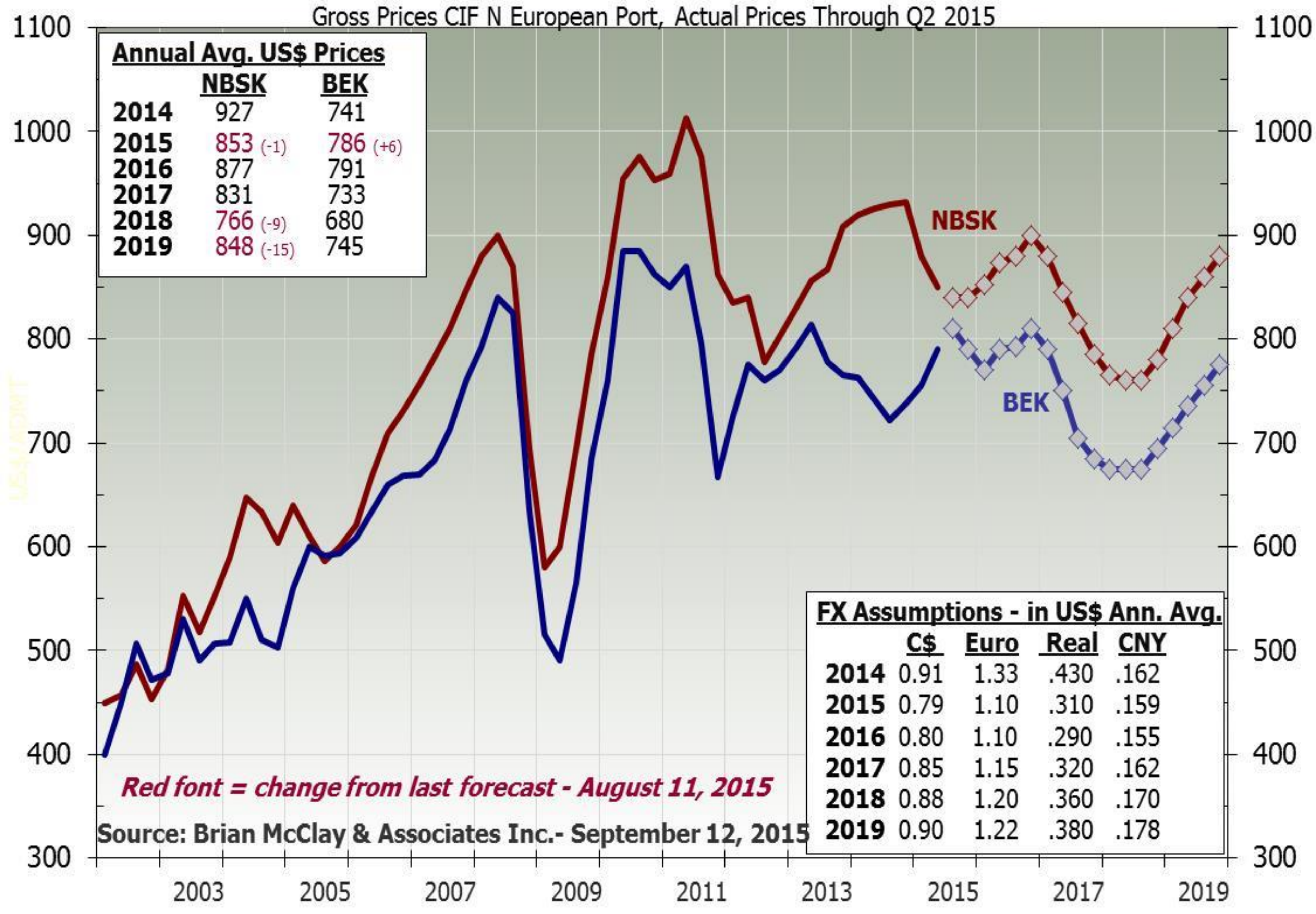
Bleached Softwood Kraft Market Pulp

World demand & capacity annual changes with demand/capacity ratio

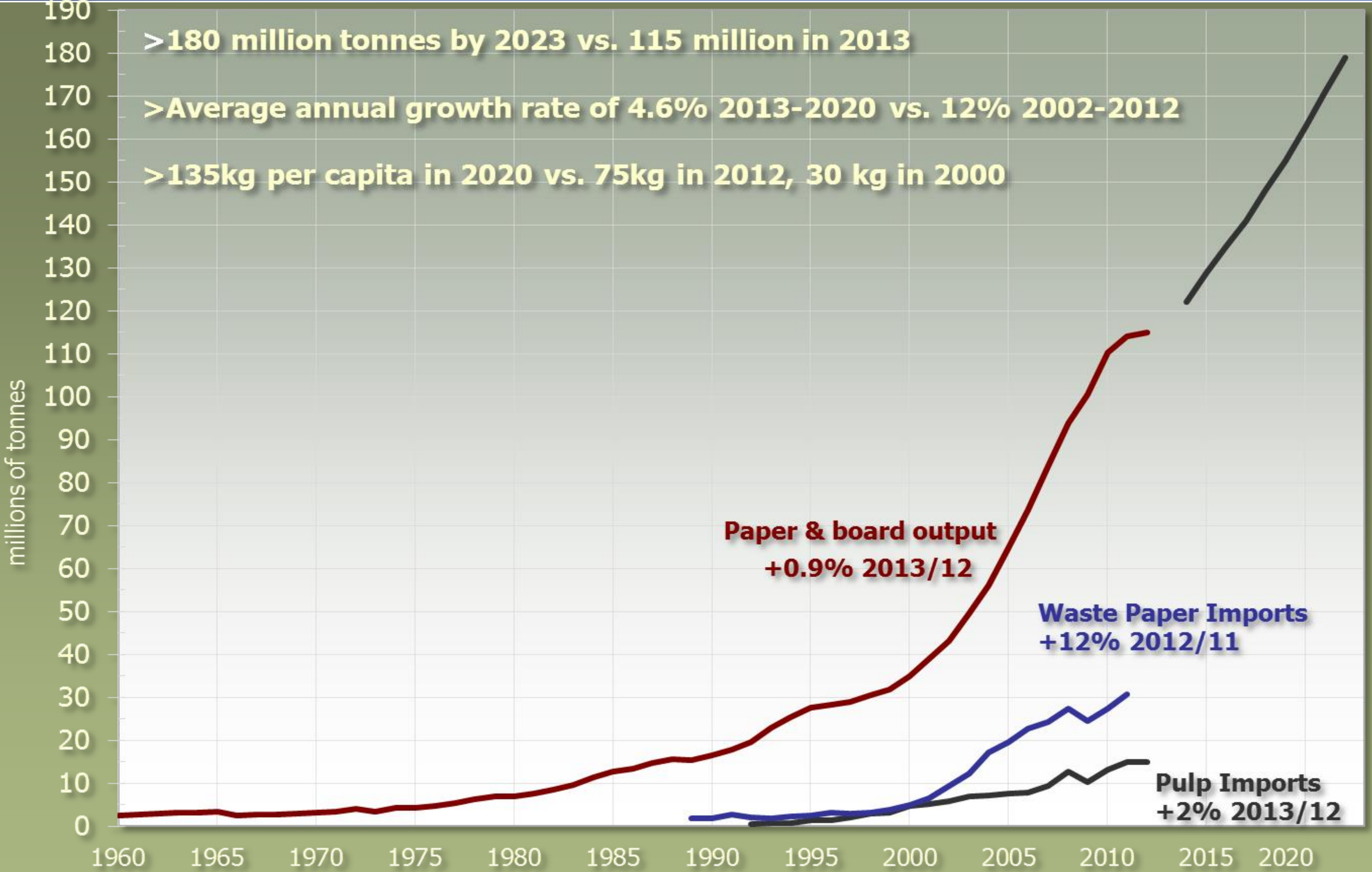


Source: Brian McClay & Associates Inc. August 24, 2015

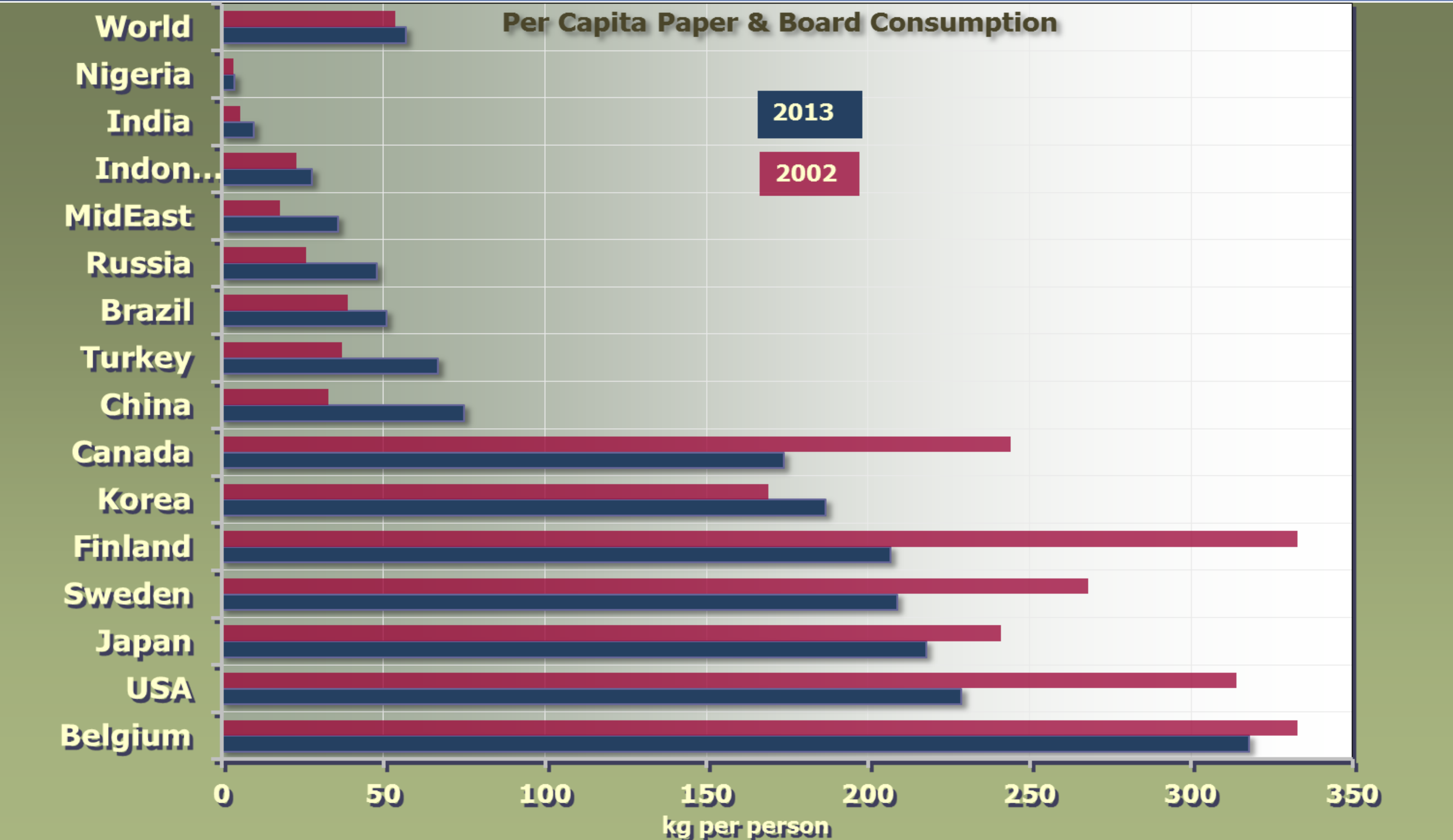
Quarterly NBSK/BEK US$ Prices in N Europe - 2019



Even with modest aagr of 4.6%, China's paper & board output will reach 180 million tonnes in 2023, 65 m tonnes over 2013.

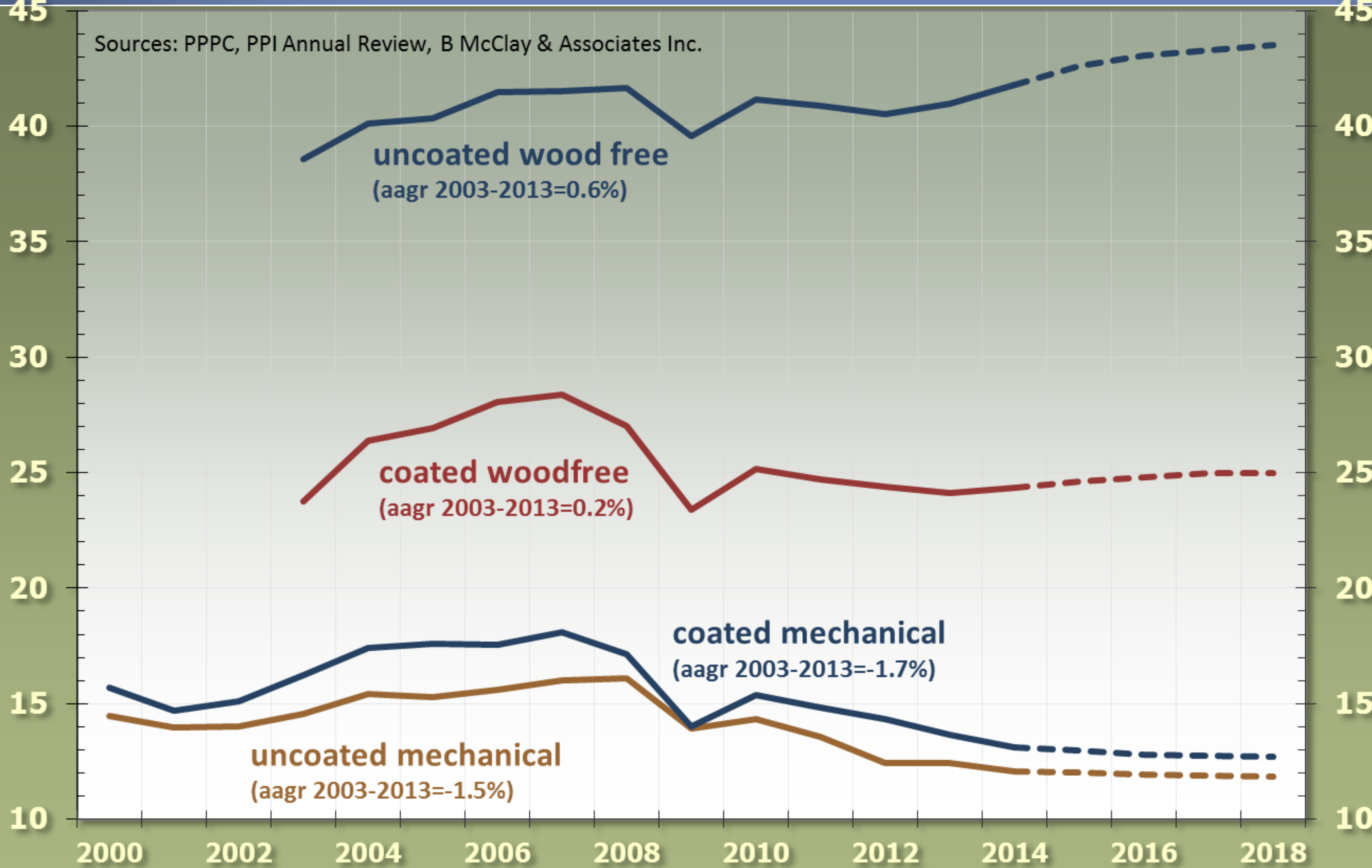


Emerging markets have good paper growth prospects



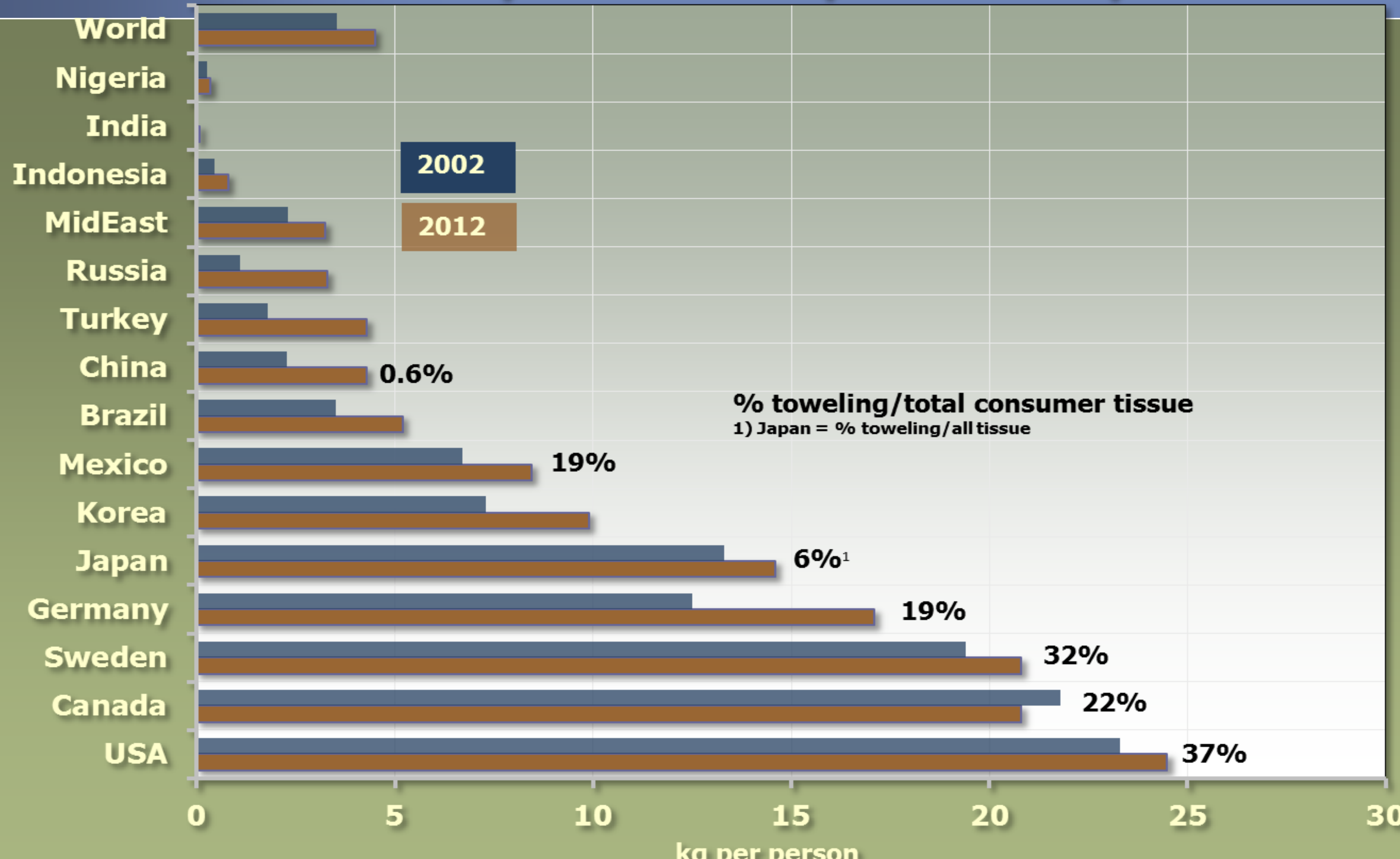
World Printing & Writing Paper Demand by Grade

million tonnes



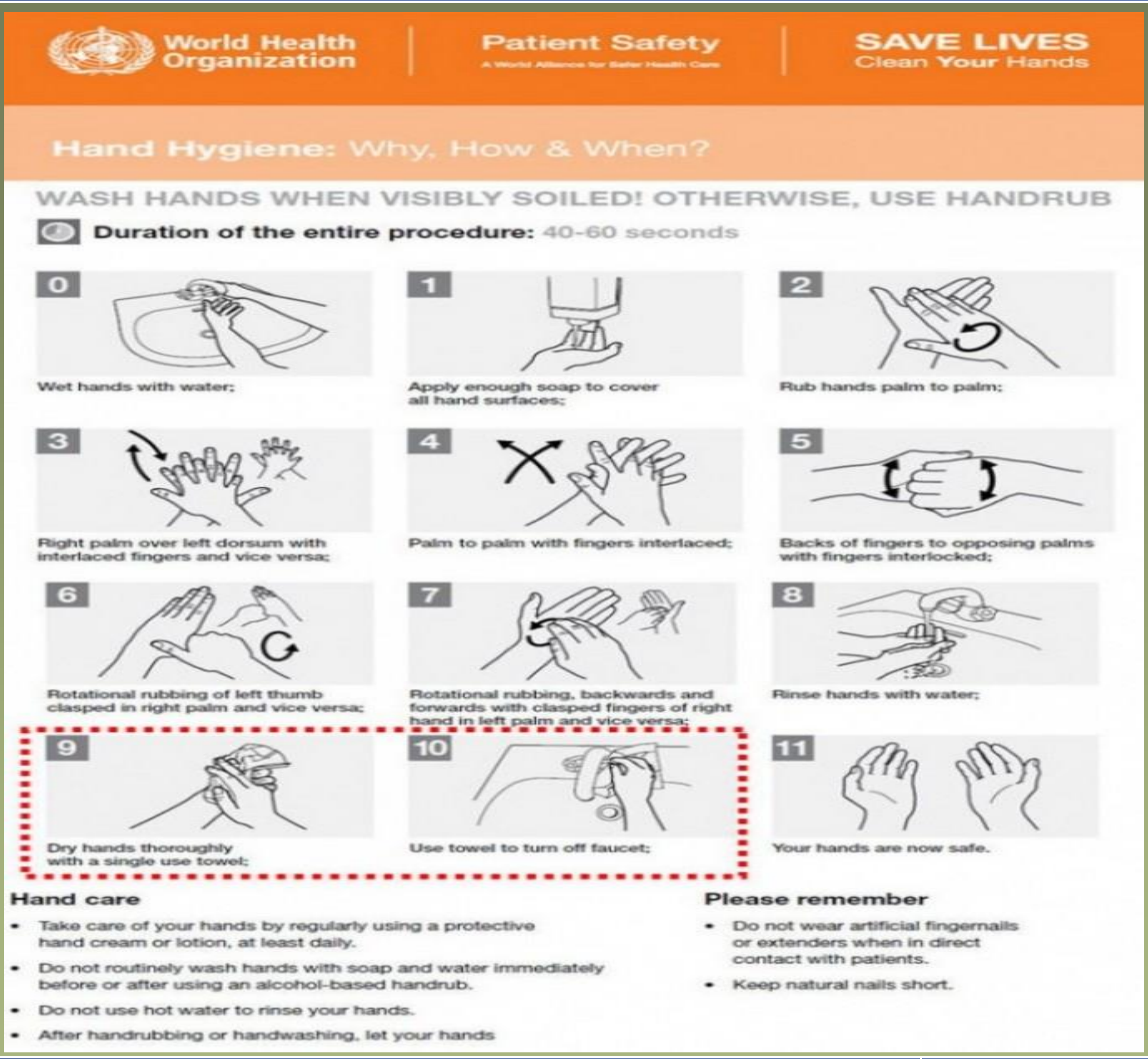
Print still important, screens a crowded space

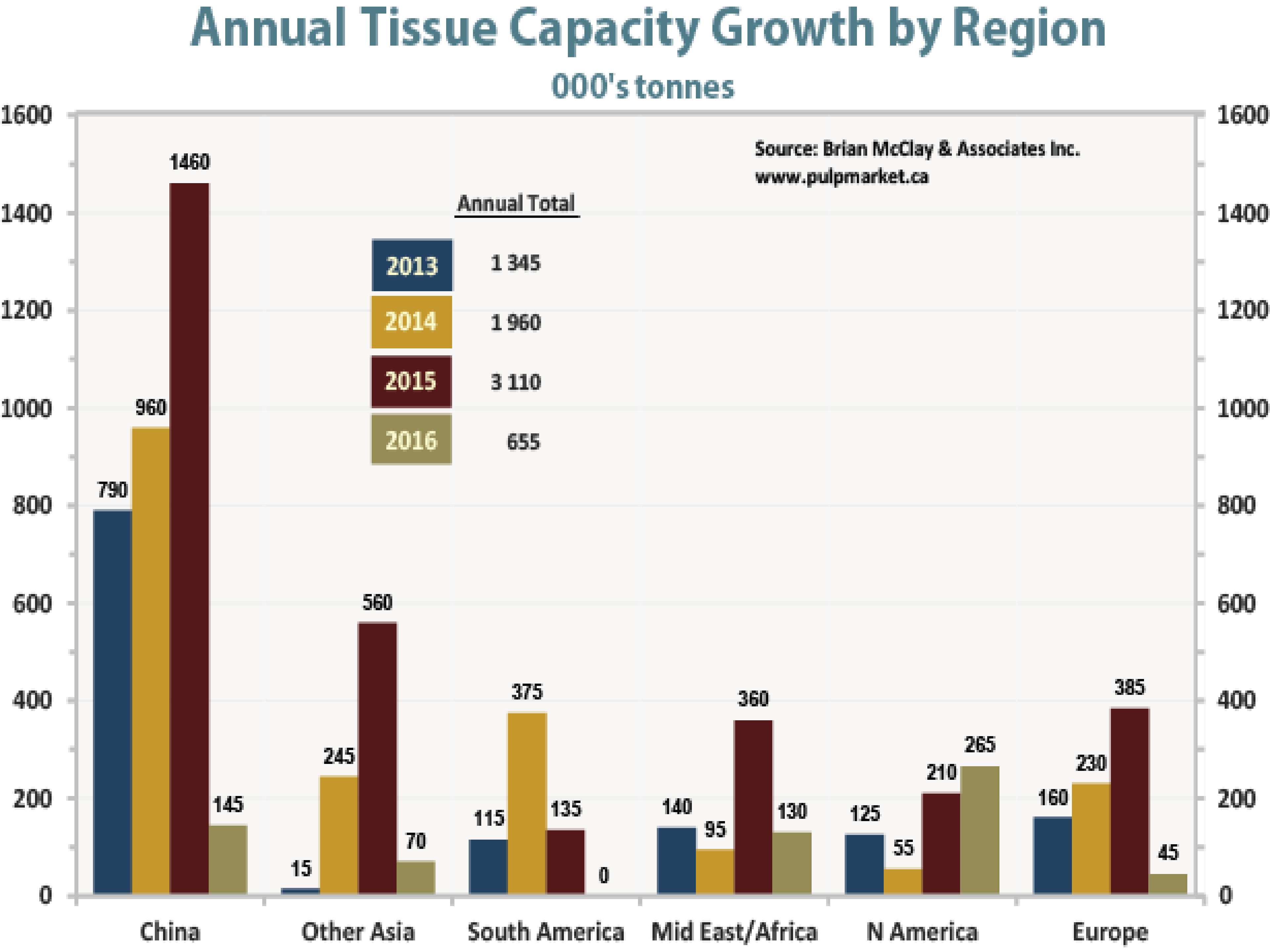
Per Capita Tissue Paper Consumption



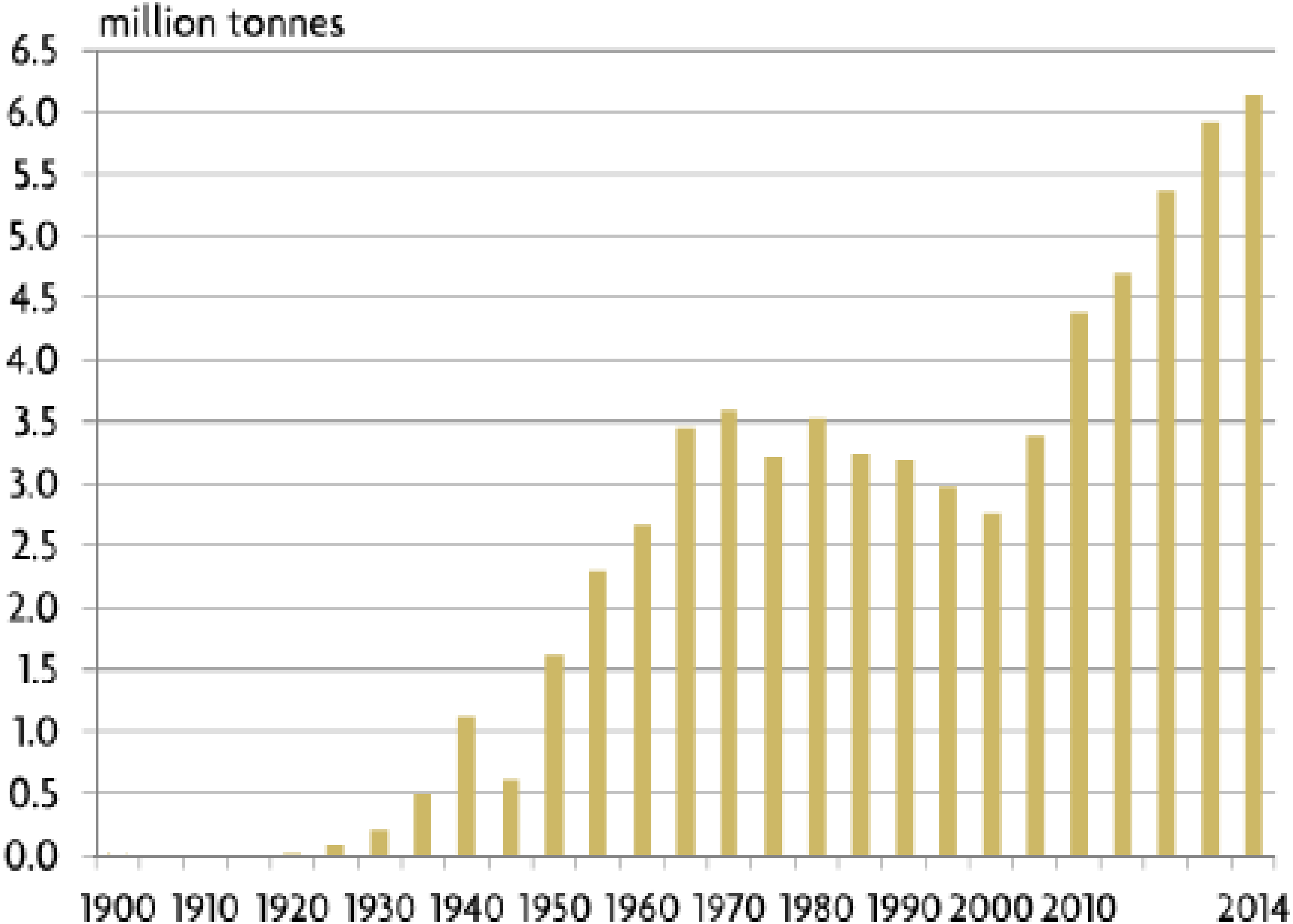
Print may be seen as old, tissue is modern, sophisticated

Potential upside to toweling use due to health concerns




Annual Tissue Capacity Growth by Region
000's tonnes
Source: Brian McClay & Associates Inc.
www.pulpmarket.ca
Annual Total
2013 1 345
2014 1 960
2015 3 110
2016 655
1600
1400
1200
1000
800
600
400
200
0
1460
960
790
145
560
245
70
15
375
115
135
0
360
140
95
130
265
210
125
55
385
230
160
45
China
Other Asia
South America
Mid East/Africa
N America
Europe

History of Cellulosic Fibers Production



Microplastic deposits found deep in world's oceans and seas

Study of 12 sites concludes that deep sea sediments are acting as a sink for substantial quantities tiny pieces of plastic

Microplastic particles move up marine food chain research

Plastic pollution in the oceans consumed by corals

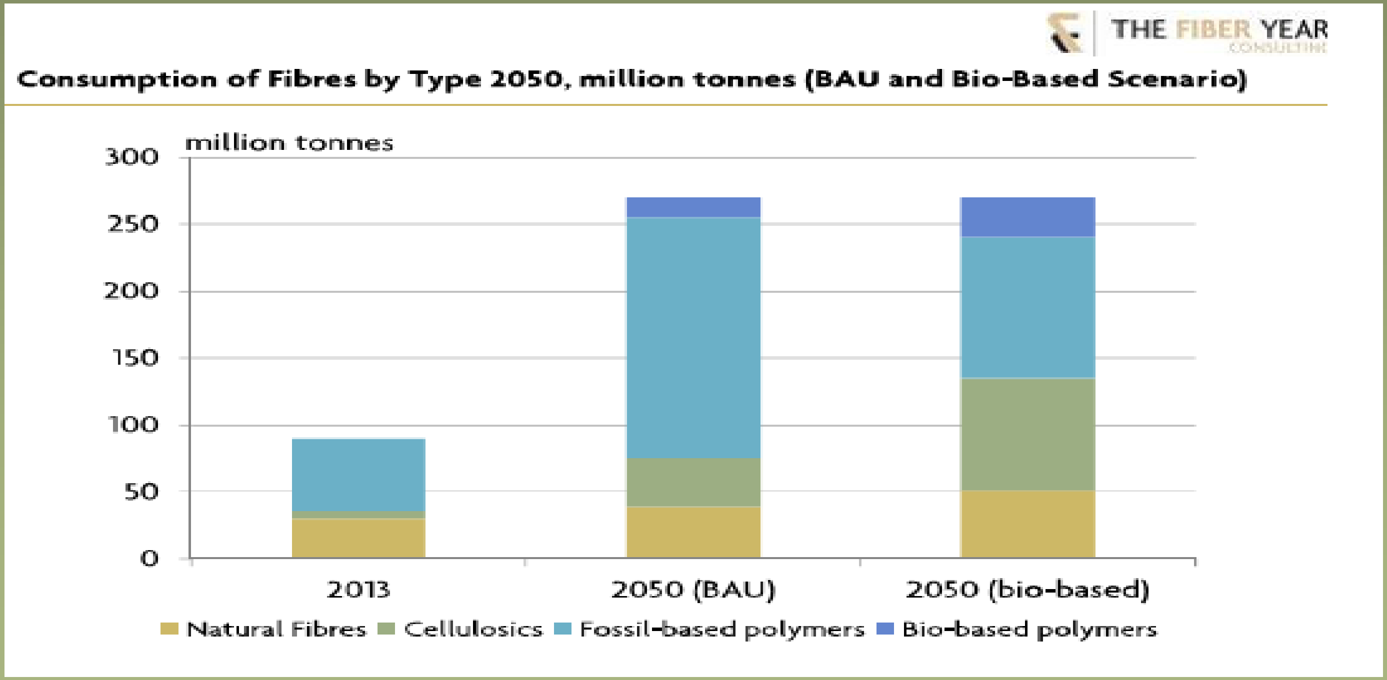
Posted Mar 2, 2015 by Tim Sandle

Scientists studying Australia's Great Barrier Reef have discovered that coral will eat microplastic pollution. Microplastics are the remains of plastic pollution discarded into the oceans.

As Digital Journal has previously reported, many parts of the world's oceans are replete with plastic junk — the waste products of modern life. Plastic is now the main form of ocean debris, causing serious concerns about its impact on the health of ocean communities.

Micro-plastics choking the worlds oceans

- **85% of ocean solid waste pollution is micro-plastics – mostly textiles**
- **Polyester non-biodegradable, DP pulp -based rayon is biodegradable**
- **1900 micro-fibrils released each washing of polyester garment**



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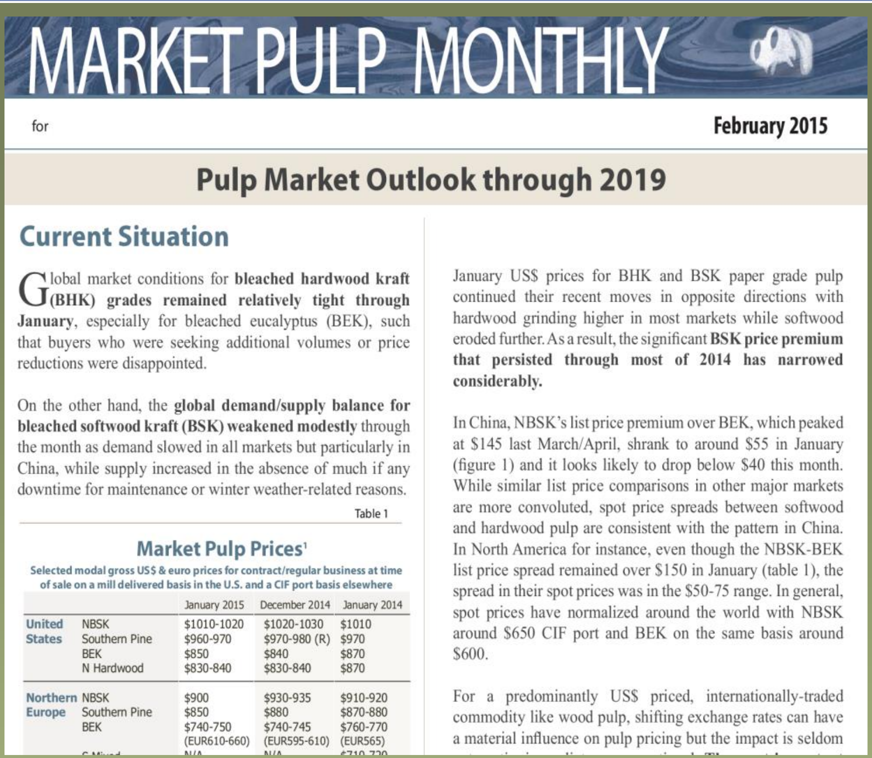
MARKET PULP MONTHLY

for **February 2015**

Pulp Market Outlook through 2019

Current Situation

Global market conditions for **bleached hardwood kraft (BHK) grades remained relatively tight through January**, especially for bleached eucalyptus (BEK), such that buyers who were seeking additional volumes or price reductions were disappointed.

On the other hand, the **global demand/supply balance for bleached softwood kraft (BSK) weakened modestly** through the month as demand slowed in all markets but particularly in China, while supply increased in the absence of much if any downtime for maintenance or winter weather-related reasons.

Table 1

Market Pulp Prices[1]

Selected modal gross US$ & euro prices for contract/regular business at time of sale on a mill delivered basis in the U.S. and a CIF port basis elsewhere

		January 2015	December 2014	January 2014
United States	NBSK	$1010-1020	$1020-1030	$1010
	Southern Pine	$960-970	$970-980 (R)	$970
	BEK	$850	$840	$870
	N Hardwood	$830-840	$830-840	$870
Northern Europe	NBSK	$900	$930-935	$910-920
	Southern Pine	$850	$880	$870-880
	BEK	$740-750 (EUR610-660)	$740-745 (EUR595-610)	$760-770 (EUR565)

January US$ prices for BHK and BSK paper grade pulp continued their recent moves in opposite directions with hardwood grinding higher in most markets while softwood eroded further. As a result, the significant **BSK price premium that persisted through most of 2014 has narrowed considerably.**

In China, NBSK's list price premium over BEK, which peaked at $145 last March/April, shrank to around $55 in January (figure 1) and it looks likely to drop below $40 this month. While similar list price comparisons in other major markets are more convoluted, spot price spreads between softwood and hardwood pulp are consistent with the pattern in China. In North America for instance, even though the NBSK-BEK list price spread remained over $150 in January (table 1), the spread in their spot prices was in the $50-75 range. In general, spot prices have normalized around the world with NBSK around $650 CIF port and BEK on the same basis around $600.

For a predominantly US$ priced, internationally-traded commodity like wood pulp, shifting exchange rates can have a material influence on pulp pricing but the impact is seldom

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