



There are many areas where Australia punches above its weight. While we worry over the future of manufacturing, some companies are adding value and taking up opportunities around the world. In this month's special interview, Beca AMEC's Business Director for Forest Industries, Tony Johnson (pictured), explains where the future opportunities are likely to develop and how Beca AMEC intends to take advantage of them.

New Government: Spotlight on Paper Policy

Though no surprise, the election of the Liberal/National Coalition and Tony Abbott as Prime Minister on September 7th means a new government and new policy framework.

Most attention prior to the election – in fact for the last three years – was on the carbon price and its implications. However, there are other domestic policies important to the Australian industry. The stance of the new government will be critical for many of these policy areas.

IndustryEdge's understanding of current policy situations is summarized in the table below.

Policy Area	Likely Government Position
Carbon tax	The signature policy of the Abbott government to abolish the carbon tax or price. Whether it can win that outcome from a potentially hostile Senate is uncertain. If it does not, the previous government's linkage of the price to the European price may prove to be the best option.
Free Trade Agreements	The Abbott government is expected to pursue an FTA with China and is reportedly keen to see reasonable extension of other FTAs. The logical extension is the ASEAN FTA with only limited additional impact on pulp, paper and paper products.
Government Procurement	The last term of the Federal Parliament tightened procurement policy by focusing on 'not inadvertently damaging domestic manufacturing'. It is uncertain whether that emphasis has yet had an impact. It is unequally uncertain whether the new government will continue this approach. On balance, it seems likely government procurement support will remain because the competitive pressures on Australian industries remain strong.
Innovation Support	Following the <i>Pulp & Paper Industry Strategy Group</i> , the Industry Innovation Council was linked into the Manufacturing Leader's Group. Continuation of government supported innovation and collaboration seems likely, though in what form is less certain.

Source: *IndustryEdge* research

While its difficult to know which policy will be most significant across the pulp and paper supply chain in Australia, it is clear carbon and climate policy are the most prominent.

As the table above indicates, the new government's ability to abolish the carbon price altogether is dependent upon the make-up of the Senate. Its abolition is no certainty, but the

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safe bet seems to be the linking of the Australian scheme with the European scheme. That will lower the Australian carbon price sharply on current prices.

As it currently stands, the Australian carbon price is AUD24.15/t of CO₂e. The current price in the European ETS is AUD7.43.

From a trade perspective, linking with the EU ETS will mean no comparative carbon price advantage or disadvantage for domestic manufacturers competing with European manufacturers.

But any carbon price will remain a cost disadvantage compared with manufacturers based elsewhere in Asia who do not face a similar cost.

Overall, the new Government may be less interventionist than their predecessors, although there is no guarantee this will be the case.

Equally, whether or not a person supports government intervention depends very much on how it affects them.

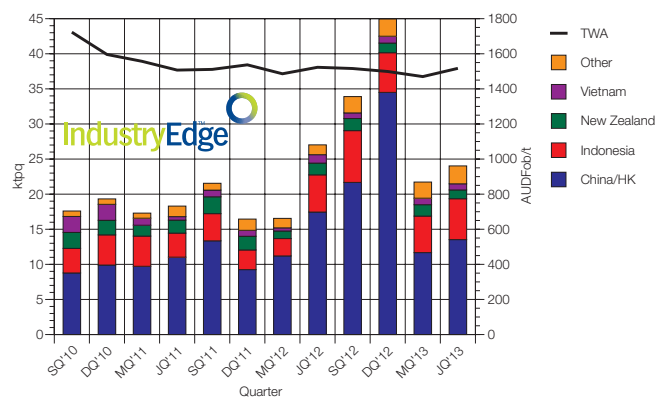
Curious Case of Tissue Imports

Across the course of calendar 2012, imports of tissue stock spiked to remarkable levels. Having hovered between 15 kt and 20 kt for most quarters in the last three years, tissue stock imports increased in each of the June, September and December quarters to be almost triple their previous quarterly average levels.

In MQ'12, total tissue stock imports were a relatively normal 16.7 kt. In JQ'12, imports rose to 27.0 kt, then to 33.9 kt in SQ'12 and finally, to 45.0 kt in DQ'12. Imports fell back steeply and closer to trend in MQ'13 to 21.7 kt. This situation is displayed in the following chart.

- Tissue stock imports tripled in late 2012, but the drivers are less clear.

Australian Tissue Stock Imports by Country: SQ'10 – JQ'13 (ktpq & AUDFob/t)



Source: ABS

It is easily observed that China delivered all of the increased imports.

Making sense of this trade spike is challenging. It is also important because understanding it increases comprehension of the dynamics affecting Australian and potentially global markets.

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Price Series Updates

IndustryEdge knows that the price of pulp and paper grades is vital to many of our subscribers. That's why, starting this month, we have upgraded the price data we supply on the back page of *Pulp & Paper Edge*. The price information now includes an 'at a glance' analysis of price movements. As ever, we welcome your feedback.

Think Global – Act Global

Australasia's Pulp & Paper Approach



Australasia's expertise in pulp and paper manufacturing goes way back. For decades, the industry was considered an innovator in the world of pulp and paper. And it still is. So much so that one of the world's leading forest industries consulting companies, represented by Beca AMEC, leads some of its significant projects in the global industry from its Australasian base.

Beca AMEC's Business Director for Forest Industries, **Tony Johnson** (pictured), just keeps getting on with the job, no matter where it is or what it takes.

He talked with *Pulp & Paper Edge* about global pulp and paper industry expertise.

PPE– Thank you for talking with us Tony. Can you tell us how Beca AMEC came about and what the company is involved in?

Tony Johnson: Beca AMEC was the vision of Sir Ron Carter of Beca Carter Hollings and Ferner (now Beca Group of New Zealand) and Tom Simons, of HA Simons (now AMEC). Beca Simons was formed in 1984 to execute forest industry projects in New Zealand, and from 1991 in Australia. Beca AMEC's industrial capability was a natural fit for other heavy industries particularly mining and metals, so the business expanded.

In the late 1980s, Beca Simons executed New Zealand's largest projects, the Fletcher Challenge Papers No. 3 Pulp Mill project at the Tasman Kaverau site, and in 1991 the Kinleith pulp mill project. In 1997 Simons was sold and eventually became part of AMEC, a UK based engineering services provider, now with over 29,000 employees worldwide.

PPE– That's a pretty big footprint. What role does the Australasian operation play in the total business?

Tony Johnson: We treat Australia and New Zealand as one market and run our business this way. We have common clients such as Norske Skog and Carter Holt Harvey. There are 26 pulp and paper sites in New Zealand and 19 in Australia and double that for solid wood production sites, so being Trans-Tasman is important.

The skills base in our main offices vary. Australia is oriented to service paper machines, recycle and deink facilities and tissue clients. New Zealand has strength in kraft and mechanical pulping, environmental areas such as water, waste-water treatment, air emissions control and wood products.

Over the last two years the Australian market has been very active for us, with a number of large projects including for Dongwha Timbers at its new Tasco sawmill at Bombala, with Australian Paper for its Recycled Fibre Plant for the Maryvale Mill and for Norske Skog's conversion of the Boyer Mill's PM2 to light weight coated mechanical grades.

PPE– You have had to do some innovative things to build that position – maybe even some that are a little bit scary from a business point of view. Tell us what being brave has meant for Beca AMEC.

Tony Johnson: For us being brave is about 'delivering innovative engineering solutions'. That's our approach to business. We harness the best technology and tools with an eye on project cost and schedule considerations. Innovation often means coming up with creative technical solutions so working closely with our clients is critical to understanding the cost-benefit equation.

We pride ourselves on using leading edge engineering tools. For instance, the Boyer Mill project utilised a 3D Plant Design Management System (PDMS) which allowed our Beca AMEC designers in Melbourne to interface with Metso's designers in Finland, and for Norske Skog to view the model at regular intervals for reviews.

Over the past decade our experience and innovative work with clients have seen us take up off-shore opportunities. We have worked in Malaysia on a recycled linerboard mill expansion, in India on due diligence, in Uruguay on operability reviews and in Chile and Brazil on major HAZOP studies.

PPE– Does building an end-to-end consulting model have expertise management challenges? How do you construct teams that can work across a range of disciplines?

Tony Johnson: Beca AMEC is a process led organisation and this aspect is very important through all phases from study to design to implementation. AMEC pulp and paper expertise is critical to the success of our business due to their breadth and depth across all types of paper and board making. The majority of our senior staff has site experience so we understand the issues from our client's point of view. This makes our team pragmatic and equipped to provide practical solutions.

For example, I spent ten years in AMEC's US, Canadian and South American organisation and know where to source expertise effectively.

To manage our expertise, we have established technical discipline groupings. These operate as a "community of practice" across the whole company and provide leadership in areas like:

- Providing the 'go to' avenue for technical expertise
- Establishment and ownership of standards and best practice in their respective disciplines
- Creating opportunity for improvement and innovation in our practices
- Fostering relationships with industry, technical and educational bodies

For example, the Pulp Technology Team covers the wood yard through to chemical pulp, with members located in US, Canada, Chile, Sweden, UK and Australia and New Zealand. These networks are strong because of previous face-to-face contact and established relationships from working on projects together.

When a project starts, team members are drawn from various departments and managed as a separate task group. We expect senior staff to oversee a number of intermediate and junior engineers. This gives the juniors experience and provides better value for our clients. A new dimension is the use of off-shore resources. Beca has added-value centres in Jakarta and Myanmar and AMEC in Chile.

Building multi-discipline project teams relies on three key areas of management:

- good project management practices around defining and scoping the projects and needs
- support from the technical discipline groupings to identify the right people, expertise and methods for the project
- support from the local section management in recruitment, training and development of the technical staff and overall resource / manpower balancing for assignment of people to projects

PPE– You get around the world, and especially this developing region. What are the stand out events and occurrences from a pulp perspective that you observe right now?

Tony Johnson: The outlook for pulp is embodied in AMEC's long-term vision, which we call Transition 2020. Its based on a long term industry scenario, and highlights the shift from a highly successful 'first half' (1970s to current) for the Latin American pulp sector, to a diminishing second half (current to 2035) with potential erosion of margin and returns, due to announced new capacity not matching slowing demand.



Source: Beca AMEC

There is around 5 million tonnes currently under construction, and a further 15 million tonnes talked about. Even half this new volume would impact long term pulp price trends, volatility, survivability of higher cost pulping, even some Latin American production, with Asian producers sitting closer to markets.

The pulp producers' response involves consolidated ownership, merged commercial organisations and specialisation, including transition to dissolving pulp. Overall this is a hard road.

Large domestic integrated players are responding with aggressive commercial strategies in pulp, to bridge the time when their integrated products take up all their pulp. Considering growth in domestic markets (packaging, tissue, printing and writing), integrated players have good prospects, and less exposure to export markets. In South America, the North American and European manufacturers are seeking a footprint. Domestic producers may begin their own offshore expansion. This is very much crystal ball gazing but it fits with the unfolding pulp outlook.

Asia is a major opportunity for Australia and NZ companies. Beca is well established in Asia with a hub in Singapore as well as several large regional offices. Kajal Mukherjee, our planning guru in Tauranga has led our initiative in this region and I continue to be cautiously optimistic that we have front-end value added services that would allow us to participate in the growth, including in India.

PPE– Without disclosing trade secrets, is there any technology or innovation event that we should all be looking out for at the moment?

Tony Johnson: Innovation is the key.

I see a bright future for pulp and paper, albeit different to the past. We have the skills, a stable political climate, and we can grow softwood as well as anywhere in the world. We have to harness this to look ahead. I think back to the turn of the century in say South Australia, or New Zealand in the 1920s, and the vision of a new primary industry based on forestry. This needed leadership, innovative thinking and investment to plan 50 years ahead. I am very keen on strategic planning with a minimum 10 to 15 year horizon.

The effect of the information and electronic business on our industry is being felt severely by newsprint and the communication papers segment.

Demand for paper and board will continue and adaptation and diversification will be required. For example, in North American commodity grades, much rationalisation has occurred. Those left are either super-optimising, squeezing cost out or converting to something more profitable.

A completely new set of players is emerging in the biofuels and bio-power sectors. AMEC has probably the strongest biofuels, biochemical, bio-power resume in North America. They have completed many studies, engineering and construction projects in the sector over the last seven years or so. We leverage this experience for our Australian and New Zealand clients. Early involvement means sound business decisions can be made when emerging technologies are proven. Ignoring bioprocessing opportunities is like ignoring the impact the electronic age is having on printed media.

PPE– Do you think there are any opportunities for Australia and New Zealand in that or are we just going to be buyers and followers?

Tony Johnson: My view is an export focus is required to be competitive in the real world, especially Asia. Softwood is a necessary ingredient in many grades, which is an advantage we have over Asian producers. There are few pulp and paper opportunities, however, development of packaging grades is one area that continues to grow.



Source: Beca AMEC

With respect to biofuels, in Australia the opportunity is the extensive land mass, sun, carbon dioxide which are the key ingredients for algae. New Zealand in contrast has extensive forest and crop areas that lend themselves to bio-refineries. Bio-refineries that can produce a range of fractions and products are the ultimate goal.

The opportunity for pulp and paper producers is in their raw material collection and handling expertise, but industrial processes and having permitted sites which are extremely valuable. However, pulp and paper manufacturers are not technology developers and that is the challenge. AMEC is a prime implementer with more than 100 pilot, demonstration, and commercial scale projects from studies through design to construction.

I advocate Australia and New Zealand as being fast followers to realise early opportunities.

PPE– So, where do you see Australia and New Zealand fitting in the global and Asian regional pulp and paper industries in coming years?

Tony Johnson: Our advantages are a skilled workforce, our research and development capability in New Zealand, softwood resources and knowledge, land, and the right climate for tree growth. Our disadvantages in Australia are high salaries across the board, which to some extent is compensated for by automation and scale.

Domestic suppliers are disadvantaged by government policy not aligned to buying local. The EU countries have been strategic in the use of labels such as Blue Angel certification which essentially requires local content in local products to protect local manufacturing.

Asia is where the opportunity lies. Consideration should be made to join them via joint ventures, partnerships, alliances or face being left behind.

PPE– Is there anything special you can identify about Australia and New Zealand that gives us an edge over the coming decades?

Tony Johnson: Radiata pine is a wonderful fibre. Having been brought up in the Paul Kibblewhite school of fibre differentiation, I am a believer in segregation by density. Papermakers want tensile strength and they develop this in their refiners but segregation can help lower energy costs.

Specific examples I can think of that give us an edge are:

- Prehydrolysed kraft with C5 and C6 sugars for ethanol and biochemicals, and their further treatment to NanoCrystalline Cellulose. It's really a wonder component with a wide range of applications.
- Packaging is a growth area with innovation in functional coatings and embedded electronics
- High-end consumer tissue products will continue to be developed.
- Diversification such as Norske Skog Boyer's PM2 conversion to LWC grades.

PPE: And what about your role?

Tony Johnson: I am passionate about our industry and see a bright future. This will be different from the past and it will present its own set of challenges. But this keeps life interesting. I have great confidence in our team and the next very talented set of engineers coming through our ranks. I am excited about the new dawn for the pulp and paper industry.

A great leader was our founder, Sir Ron Carter – still going strong in his sixth decade of work. Sir Ron was egalitarian, like many kiwis like to think of themselves, and did a lot to break down silo mentality. In Beca AMEC, we are equal and all have a role in the team. We are as good as the team, so working together and enjoying work is important.

We have been part of the pulp and paper industry for nearly 30 years. We are strong industry participants, engaged in continual skill development and have a desire to help the industry develop and prosper. We have a strong senior team, the majority with ownership in our business.

So we all have a vested interest in making sure clients have success and come back to us for the next project.

PPE: Tony, thanks for joining Pulp & Paper Edge and sharing your obvious passion and drive with us. All the best to you and your team for the future.

The analysis of this curious event is below.

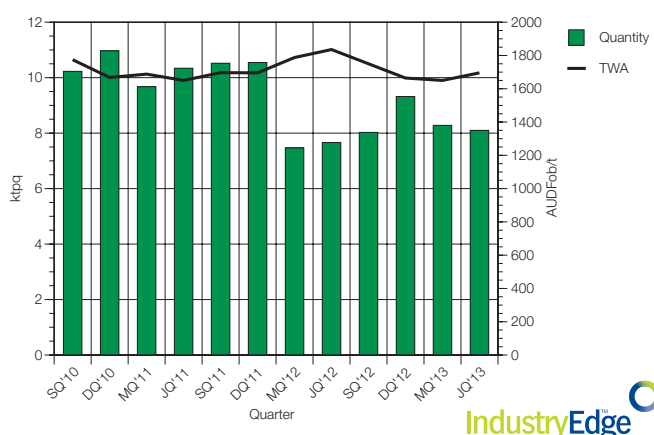
Firstly, because tissue and the toilet and facial products created from them are consumer goods, patterns of consumption in developed countries change only gradually and over time because the population can afford to purchase all of the product it requires. So this large spike did not occur because Australians started using more tissue products.

Secondly, pulp imports may have been expected to decline as shipments of pre-manufactured tissue stock were imported. Tissue manufacture would be switched off for economic reasons, mainly because pulp prices were too high or tissue stock was available very cheaply. As the chart above shows, the trade weighted average price of tissue stock hardly moved during the import spike. Similarly, as described elsewhere in this edition of *Pulp & Paper Edge*, pulp imports hardly decreased over the same period.

- Imports of converted toilet tissue have fallen over the last year

Third, imports of converted tissue products, especially toilet paper, might have decreased over the same period. That would occur where the pre-converted product was more expensive than importing tissue stock and converting it in Australia. As the chart below indicates, there was a decline in imports of converted toilet tissue.

Australian Converted Toilet Tissue Imports: SQ'10 – JQ'13 (ktpq & AUDFob/t)



Source: ABS

The steepest decline occurred from DQ'11 to MQ'12 when quarterly imports fell from 10.5 kt to 7.5 kt. However, this 3 kt fall goes nowhere near accounting for the increase in tissue stock imports.

While, as a matter of fact, this situation remains a 'mystery', some clues remain for interpretation.

IndustryEdge considers it likely that one or more tissue manufacturers in Australia had low pulp stocks in the first half of 2012. As pulp prices rose, there was a modest reduction in pulp imports and the decrease in converted toilet paper shipments. With consumption stable, the prospect is that manufacturer pulp and tissue stock inventories are now relatively high. The increase in imports of converted tissue stock and its effects on the market are still washing through the trade.

Data on annual tissue production will be available over coming months and that should shed some light on our most intriguing trade mystery of the last year. This data will be included in the annual *Pulp & Paper Strategic Review*, where we expect to provide a detailed analysis of the trade and its precise situation.

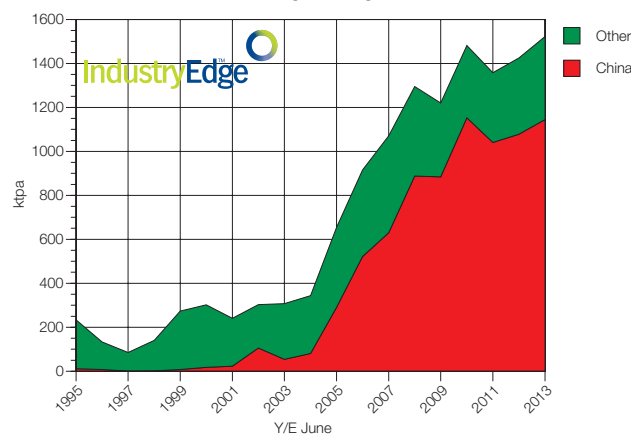
Over the top – Australian exports of recovered paper clears 1.5 Mt

Predictable it may have been, but remarkable nonetheless, Australia's recovered paper exports exceeded 1.5 million tonnes for the first time in 2012-13.

For the full financial year, Australia exported a total of 1.522 Mt, recording a 6.9% increase in export volumes on the previous financial year, when Australian exports totaled 1.424 Mt. The prior export record was achieved in 2009-10 at 1.482 Mt.

The following chart shows Australia's recovered paper exports over the past 18 years.

Australian Recovered Paper Exports - China and Other: 1995 – 2013 (ktpa)



Source: ABS

- Exports of recovered paper grew by 6.9% year-on-year in 2012-13

In 1994-95, Australia's total exports of recovered paper were just 233.6 kt, a volume that was not exceeded until 1998-99. It was not until 2003-04, just a decade ago, that export volumes began their stellar rise.

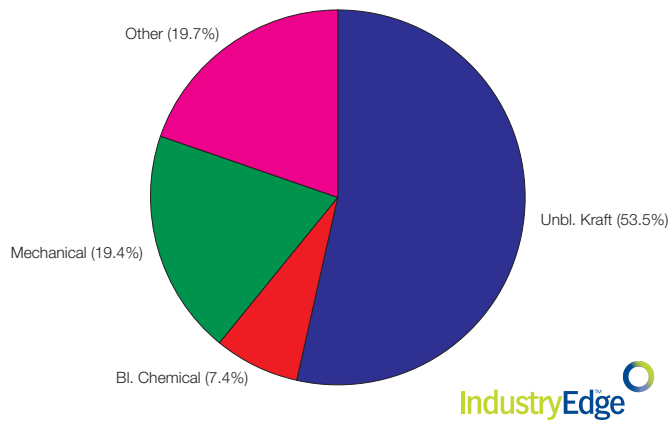
As the chart demonstrates, the rise of China as an economic power, and its demand for fibre to manufacture cartons and boxes in which to ship its manufactured goods has been the primary driver for increased recovered fibre exports over the last two decades. China accounted for 75.2% of all exports in 2012-13, having received just 4.3% of the total in 1994-95.

To some extent, the need for recovered paper for remanufacture into packaging is reflected in the export volumes for each of the grades of recovered paper. Unbleached kraft paper (primarily cardboard and cartons) accounting for 53.5% of the total or 814.4 kt. Mechanical grades, primarily old newsprint, accounted for 19.4% or 295.5 kt.

The highest value recovered paper grade is bleached chemical paper, typically made up of office papers. Just 112.1 kt was exported in 2012-13, down from a record 121.6 kt in 2011-12. Australian Paper's strategic move into the manufacture of high recycled content office papers and its new de-inking facility will likely see these exports decrease further in coming years. Its facility will utilize 80 ktpa of bleached chemical recovered paper, some of which will be diverted from current export streams.

Just last week, Australia's guidelines for what constitutes 'post-consumer' recovered paper were brought into line with the International Standards. This means material from printers and converters that did not end up with final consumers, will now be acceptable in government procured recovered paper stocks. The result is recovery volumes will likely increase, while exports will decrease.

Australian Recovered Paper Exports by Grade: 2012-13 (ktpa)



Source: ABS

The other consideration with respect to recovered paper is price. In 2011-12, the trade weighted average price for all exports was AUDFob173/t. In this most recent year, driven by China, the average price declined to AUDFob153/t but with very large differences between the average prices for the major grades.

Final figures, including prices, are being analysed now, but Australia is fast approaching balance in its use and export of recovered paper. By the time the 2013 edition of the *Pulp & Paper Strategic Review* is released in late October, aggregate paper recovery, use and exports will be clear.

This is an important strategic issue for the Australian industry.

Whether Australian exports of recovered fibre can rise further in coming years is dependent on several factors. For any significant lift in exports to be realized, domestic packaging production and utilization would need to rise, as would imports of consumer goods packaged in boxes, cardboards and cases.

The downside of down

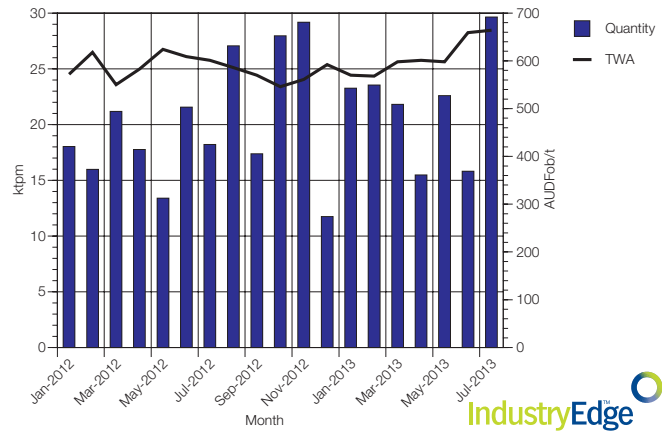
How a declining currency can bite back

All truisms are generalisations. That is as much the case with Australia's depreciated currency as with anything else.

The recent fall in the value of the Australian dollar relative to the US dollar has delivered welcome competitive relief for domestic paper manufacturers and provides exporters with an improved trading position. That is all to the good.

However, analysis of the latest data demonstrates some of the downside of the declining currency. We could find no better example than the increased cost of pulp imports – the vast majority of which fuel Australia's tissue manufacturers – which the following chart shows clearly.

Australian Pulp Import Volume and TWA: Jan '12 – Jul'13 (ktpm & AUDFob/t)



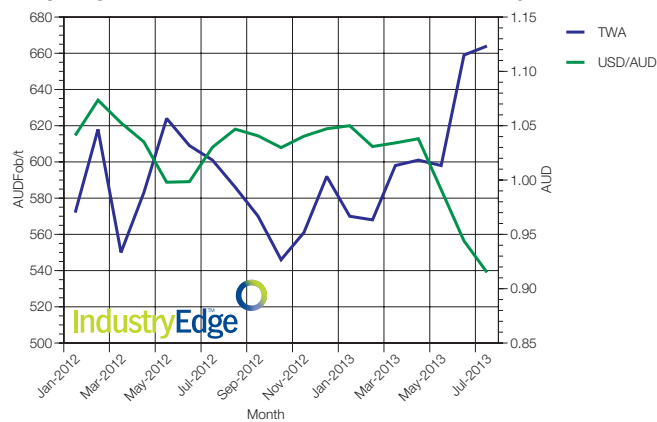
Source: ABS

In May 2013, as the Australian dollar commenced its depreciation, the trade weighted average price for imported pulp was AUDFob598/t. Just two months on, in July, the average price had grown by AUD66/t or 11%, pretty much in line with the average currency movements between the two months.

- Imported pulp prices have jumped as depreciated currency begins to take effect

There is another way to consider the cause of the rapid increase in the value – and unit cost – of imported pulp. With the monthly volume of pulp imports stable, the effect of the depreciation of the Australian dollar can be isolated against the average price per tonne, as in the following chart.

Pulp Import Prices vs AUD: Jan '12 – Jul '13 (AUDFob/t & AUD/USD)



Source: ABS

What is plain is that as the value of the Australian dollar has declined in recent months, the cost of a tonne of pulp has increased. The consistency, which is really the sensitivity of commodity prices to currency movements, creates an almost mirror image. If the chart was represented as an ink-blot, it would be pleasingly symmetrical to a Freudian psychologist.

But it's by no means as pleasing to the eye for the domestic manufacturers who are forced to absorb the higher prices, with little opportunity in the short term to pass on the effects.

Despite a depreciating Australian dollar being a double-edged sword, the upsides remain strong. Importers of some coated mechanical papers report difficulties in getting any type of price increases. One reported their concern at increasing prices when Norske Skog is due to commence supplying light weight coated grades in 2014. The problem is that to maintain market they are receiving more than 10% less per tonne than they were just a few months ago.

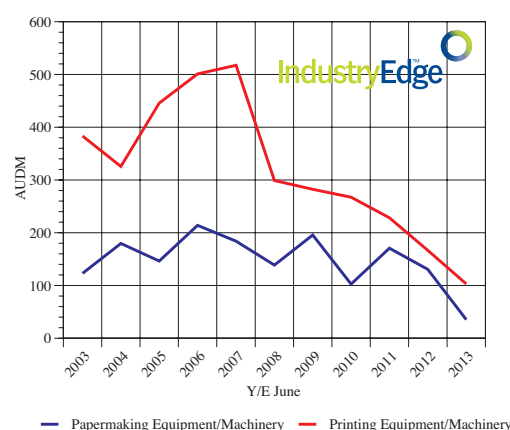
Equipment and Machinery Imports Collapse

Imports of papermaking and printing equipment collapsed 53.4% in 2012-13, based on the previous financial year, with the total recorded value reaching just AUD138.3M. In 2011-12, imports totaled AUD296.9M.

The value of 2012-13 imports was at its lowest level in decades. Papermaking equipment and machinery imports totaled just AUD35.3M, down 72.9% from AUD130.4M in 2011-12. Printing equipment and machinery imports were valued at AUD103.0M in 2012-13, down 38.1% on the previous year.

Imports of both papermaking and printing equipment and machinery over the last decade are set out in the following chart.

Imports of Papermaking Equipment and Machinery: 2003 – 2013 (AUDM)



- The value of Imports of printing equipment have declined 12.3% per annum over the last decade

Source: ABS

There is no direct correlation between the value of imports of papermaking and printing machinery. However, over the last three years, the declines have trended in very similar directions.

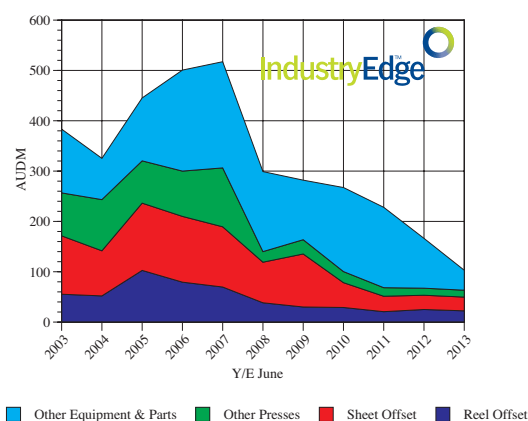
As the chart demonstrates, though imports of papermaking equipment have been at lower levels over the decade, they have been relatively stable. The last year's decline means there has been an average annual rate of decline of 11.7%. Had that year been excluded, imports of papermaking equipment would have grown by 0.7% per annum.

By comparison, the value of imported printing equipment has declined by an average rate of 12.3% per annum over the decade but by a very large 23.6% per annum since the peak in 2006-07.

We expect less regular imports of papermaking equipment because there is only a small number of machines and they are typically valued in the hundreds of millions of dollars. To an extent then, the result in 2012-13 is expected. Equipment for Amcor's new recycled paperboard machine at Botany in New South Wales was already imported, while the new equipment for Norske Skog's upgrade of its PM2 at Boyer in Tasmania is limited in nature and value.

Turning to the value of different types of printing equipment being imported into Australia, the following chart shows there has been decline across the board over the last decade.

Value of Imports of Printing Equipment by Type: 2003 – 2013 (AUDM Fob)



Source: ABS

Over the decade, imports of reel offset presses declined by an average rate of 8.6% per annum, sheet offset presses by 13.5% per annum and other presses by 16.8% per annum.

With increased importation of mill-sheeted paper, the very decline in the value of sheet offset press imports requires consideration. The lower Australian dollar and difficulty in other markets has meant machine manufacturers have dropped prices where required to win sales. That does not, however, translate into such significant declines in import values. In the four years since 2008-09 when the impact of the GFC was felt, the value of imported sheet offset presses has declined by an average rate of 28.6% per annum.

In so far as it is reflected in the value of imported equipment, investment in printing in Australia is not faring well.

Overall, the declines in the value of imported printing equipment are more serious than those for papermaking equipment. One large papermaking investment can turn the value of those imports around, while for printing equipment, the trend is everything as most investments are smaller in value.

Everyone in the supply chain is rightly concerned by these considerations and matters such as the volume and value of imported printed material. These issues will be explored in detail in the 2013 edition of the *Pulp & Paper Strategic Review* (see page 21) and at the Australasian *Printing & Communication Papers Market Outlook Forum* being conducted in Melbourne on Thursday 28th November 2013 (see page 13).

Beyond circulation, it's the pulse that matters for newspapers

Disquiet about the reporting of newsprint circulation figures has resulted in the development of what promises to be a revolutionary new evaluation tool for assessing the effectiveness of printed media and advertising in general.

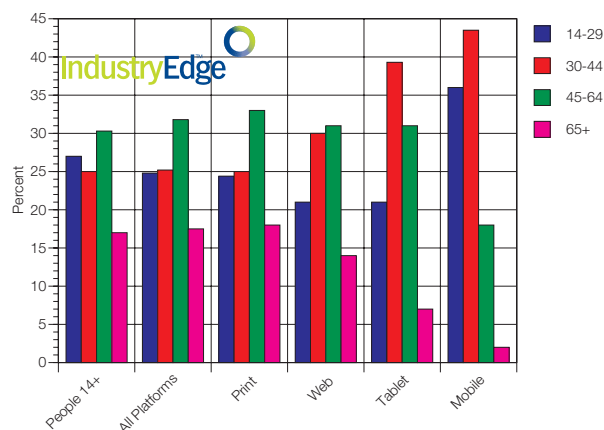
The new system, called 'emma' is short for *Enhanced Media Metrics Australia*. It is run by Ipsos MediaCT and aims to capture readership of news whether its printed or on other media platforms including websites, handhelds and tablets. Ipsos data is fused with Nielsen Online Ratings to create a unique offering.

Emma considers circulation of newspapers and all news media. However, it focuses on readership and reader habits rather than raw circulation numbers alone.

Some will argue that placing the measurement of newspapers amidst the measurement of other media invites comparisons that will be uncomfortable. However, *IndustryEdge* prefers the sophisticated view that newsprint is part of an integrated, multi-channel news and media consumption for most of the population.

Measuring performance of printed news media with the other medium, on a continuing basis, will assist advertisers to understand the inter-play between the various options more effectively.

Age Profile of Newspaper Reading by platform



Source: *The Newspaper Works*

- Newspapers are struggling for circulation but growing their readership online

At the same time as the *Emma* platform was launched, the latest printed newspaper circulation figures were released. That data, supplied by Roy Morgan Research has been considered by some to be of limited value in the digital era, because it does not include digital sales, distribution or readership

The limitations do not make the newspaper circulation data entirely redundant and it still cannot be ignored. The decline in average paid printed newspaper sales (circulation) continue to be substantial and above 10% as recorded for JQ'13 against JQ'12.

Just as significant is the decline in average readership over the six months to the end of June 2013. In general, the readership decline is slower than that of the sales decline.

Doubtless there are further declines to come and those may result in masthead closures and a shift away from daily printing of some publications. The table below shows the most recent newspaper sales and readership figures for selected newspapers.

Selected Newspaper Circulations (JQ'13) and Readerships (2012-13)

Newspaper (Weekday)	Ave. Paid Daily Print Sales (JQ'13)	% Change (YoY)	Ave. Readership ('000s) (2012-13)	% Change (YoY)
Daily Telegraph (Syd)	310,724	-11.2	759	-9.9
Sydney Morning Herald	141,699	-17.0	562	-13.4
Herald-Sun (Melb)	416,027	-10.3	1,073	-8.1
The Age (Melb)	142,050	-16.2	539	-9.0
Courier Mail (Bris)	173,095	-8.8	485	-9.0
The Australian	116,655	-9.8	367	-12.0
Australian Financial Review	66,220	-6.8	236	+3.5

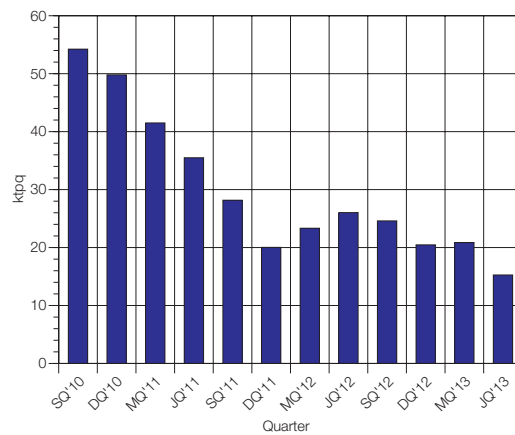
Source: *Audit Bureau of Circulations & Roy Morgan Research*

It is falling newspaper circulation figures that are reducing newsprint consumption in Australia. Over the last two to three years, all declines in consumption has been taken up by lower imports, rather than any significant reduction in domestic production in Australia.

Latest data indicates that trend is continuing, with the declining value of the Australian dollar a likely cause. The chart that follows shows quarterly imports of newsprint to Australia since SQ'08 along with the AUD to USD exchange rate.

- Newsprint imports collapse to just 16.3 kt in JQ'13

Australian Imports of Newsprint: SQ'10 – JQ'13 (ktpq)



Source: ABS

As the Australian dollar depreciation has started to take effect, the latest import declines are evident. Imports for JQ'13 were the lowest they have ever been at just 16.3 kt or a monthly average of less than 5.5 kt per month. The trend has continued into 2013-14, with imports for July recorded at 6.3 kt.

IndustryEdge analysis to be reported in the 2013 *Pulp & Paper Strategic Review* will demonstrate imports are taking the full brunt of changes, with Australian domestic production largely unaffected.

Paper Market Outlook Forum to Receive Latest Trade Updates

The 2013 Australasian Printing & Communication Papers Market Outlook Forum will be conducted in Melbourne on Thursday 28th November.

Attendees will be treated to a full suite of the latest trade and market data, covering volumes, prices and major changes.

In addition, speakers and presenters are preparing to describe the factors that will affect markets in the near term, including economic conditions, currency considerations, new corporate and government procurement requirements and the latest sustainability drivers.

The most recent speakers to join the line-up for the Forum are:

Bill Healey, CEO, Printing Industries Association of Australia, on the changing role of printed media and communications and the relationship between printers and paper makers and suppliers

Kellie Northwood, Executive Director of the Australian Catalogue Association, who is just as well known in her role as spokesperson for the Australian arm of the paper and print effectiveness campaign, Two Sides and,

Yvonne Laycy, Manager, Sustainable Supply Chain Management (SSCM), Enterprise Sourcing, Investments & Business Partnering, Group Service at Westpac (invited).

Discussions are continuing with several potential speakers, including a leading economic

forecaster. On procurement, we are now awaiting advice from the new Government about a representative from policy makers, probably from the Department of Sustainability, Environment and Water who have recently announced new policy on post consumer content for recycled paper.

We are also very pleased to announce that Print21 has joined *IndustryEdge* as the official media partner for the Forum, strengthening the Forum's focus on the future of print and paper.

Register for the Forum at www.appita.com/industryedgeforum

In response to requests, we are organizing for a small number of promotional opportunities at the Forum, including information tables. For further details, contact Tim Woods at tim@industryedge.com.au.

Costs Rising on Uncertainty: FSC 'More Expensive' Form of Certification

IndustryEdge was recently engaged to conduct a risk assessment for a subscriber, with an emphasis on business risks associated with third party certification schemes. The particular focus was on forest certification schemes.

While much of this material is known and understood well by many subscribers who are actively involved in advising their own clients about forest certification, *IndustryEdge* came across some new material of sufficient interest to share through *Pulp & Paper Edge*.

Academic research conducted by a US based economic research unit, Econostats, which is part of George Mason University, found that certification by the Forest Stewardship Council results in "...significantly higher costs and lead to significantly lower output." and goes on to assert that "Higher costs and lower output lead to lower economic activity including lost jobs, income and tax revenues."

Econostats conducted its research by estimating and comparing the costs associated with certification by the FSC with the dominant certification schemes in the US – the American Tree Farm System (ATFS) and the Sustainable Forest Initiative (SFI).

It is important to note this research relates to costs of forest certification, so the extent it rolls into costs and the risks of increased costs for chain of custody certification is unclear.

Econostats found that requirements to achieve certification by the FSC were unequal within the US, from State to State. More importantly, it found that it was more difficult than in some developing countries, creating a competitive disadvantage for domestic producers within their own markets.

Compliance costs were found to be highest for the FSC, partly because of ever changing interpretations driven by stakeholder group interventions.

At its most direct, the research report states, "... domestic policies that artificially inflate the demand for FSC timber while depressing its supply of US product results in more imports of forest products from regions that lack the environmental safeguards taken for granted in the US."

The report provides fully detailed cost analysis of the schemes and their operations and impacts on forest management, including some very substantial losses of revenue, employment and taxation. As it is freely available, the material can be replicated for many other situations.

Of course, industry has regularly and rightly complained about several of the aspects of forest certification and the extent to which it is imposed upon them by external parties. While this report adds to the evidence of the potential risks – and they are real and clearly can be significant - one further area of the report by Econostats requires consideration.

They find that a competitive forest certification system provides advantages, but for our part, *IndustryEdge* does not observe the evidence in the report supporting competition. Our view is that there is good reason to conduct accurate economic and financial analysis of forest certification schemes to ensure they are competitive and the risks are understood. That is not the same thing.

Our parent company, Fitzpatrick Woods Consulting has previously conducted private client research into dual certification. That work found there was no definable benefit for a forest manager holding FSC certification as well as their preferred PEFC certification.

More importantly, the evidence suggests forest management is not enhanced by ever-changing standards. It would be reasonable to anticipate that constant changes translated to improved ecological and socio-economic outcomes. Yet, there is no evidence of this.

At an Australian level, the FSC is seeking to make a virtue of its current process to establish a locally applicable standard. For many years, the ENGO stakeholders of the FSC have interpreted the meta-standard on a case by case basis. Forest managers have been the losers as uncertainty prevailed.

That is what makes the Econostats analysis all the more disturbing. It seems even a local FSC standard will remain subject to the interpretation of ENGOs, retaining the uncertainty, increasing costs and adding no sustainability value

The Econostats research report can be downloaded from www.econostats.com.

Financial Results Update:

Amcor

Reporting season for publicly listed companies always rings a few surprises, but this year at least, there is little to consider from the pulp, paper and paperboard sectors.

On 19th August, Amcor released its full year results, advising an 8.6% lift in after tax profits to AUD689.5 million for the 2012-13 financial year.

The Amcor division now known as Amcor Australasia & Packaging Distribution (AAPD) will be placed to the market before the end of the year in an already announced demerger (see *Pulp & Paper Edge*, Edition 100, August 2013). The company reported its result as 'solid', with sales revenues up 2.5% for 2012-13 compared with the previous financial year.

However AAPD's profit was down 2.3% on the previous financial year, with Australasian strength balancing out reduced profits from the rest of the AAPD business.

Pre-demerger cost controls and business focus (including the closure of the Petrie Cartonboard Mill in Queensland) were a focus of the company's investor presentation.

PaperlinX

PaperlinX followed with its results on the 21st August. Despite booking a full year loss of AUD90.2 million after tax for 2012-13, the result was around three times better than the previous year.

PaperlinX reported its performance in Australia, New Zealand and Canada was strong and the company suggests its turn around strategy is progressing well, though it remains a work in progress.

IndustryEdge notes the emphasis on the positive performance of the non-European businesses. It takes only a cursory examination to understand PaperlinX's European businesses remain the company's Achilles heel. The dilemma for PaperlinX is there is only so much the company can do in Europe. Its performance there is largely related to the state of the pan-European economy and demand for paper.

The strategic differences between Amcor and PaperlinX are as stark as their financial performance and results. Amcor's move off-shore is in a diversified and growing business, while PaperlinX's was more narrow and into mature markets with demand constraints.

While they are on different trajectories and in some respects operate on different planets, there are few investors who will forget it was Amcor that set PaperlinX upon its course.

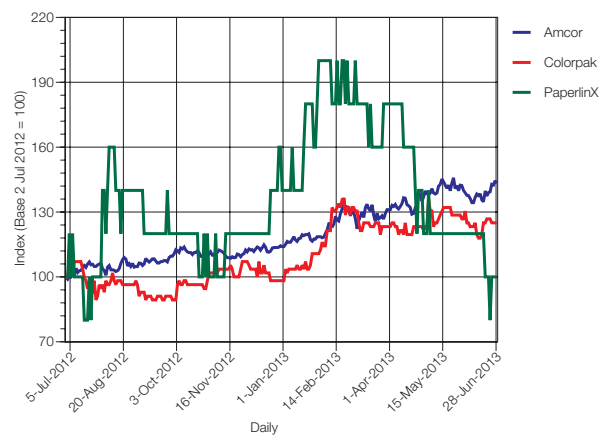
- Amcor's stability in share price growth is almost matched by Colorpak, but not by PaperlinX

Colorpak

Colorpak, a small but strategically well placed printed packaging products manufacturer has delivered its results. It reported its net after tax profit at AUD7.5 million for 2012-13, down 2.2% on the previous financial year. For a relatively small company – and contrasting with PaperlinX – its earnings represented 5.87 times what it required to cover its interest. In 2011-12, that figure showed earnings covering interest 4.82 times.

The Colorpak investor presentation focused on the company's continuing efforts to rationalize and integrate and signaled further developments on that front, as well as growth opportunities.

Index of Share Price Movements: 2 Jul 2012 - 28 Jun 2013



Source: ASX

Pulp Market Briefing

Pulp Prices Moving North, South and All About

Underlying demand drivers are pulling pulp prices in different directions as the typically most stable period in the year's trading commences. Reported regional differences in price trajectory are continuing, with the prospect the pricing leadership of China will continue on the back of balanced stocks and increased buying activity. The balance has come about as the mature markets in Western Europe and North America have taken the necessary closures and for example swung across to dissolving pulps, removing capacity at the right time. At the same time, the year long narrowness of the differential between softwood and hardwood pulp may have driven some paper manufacturers to softwood pulp, placing a new floor into demand.

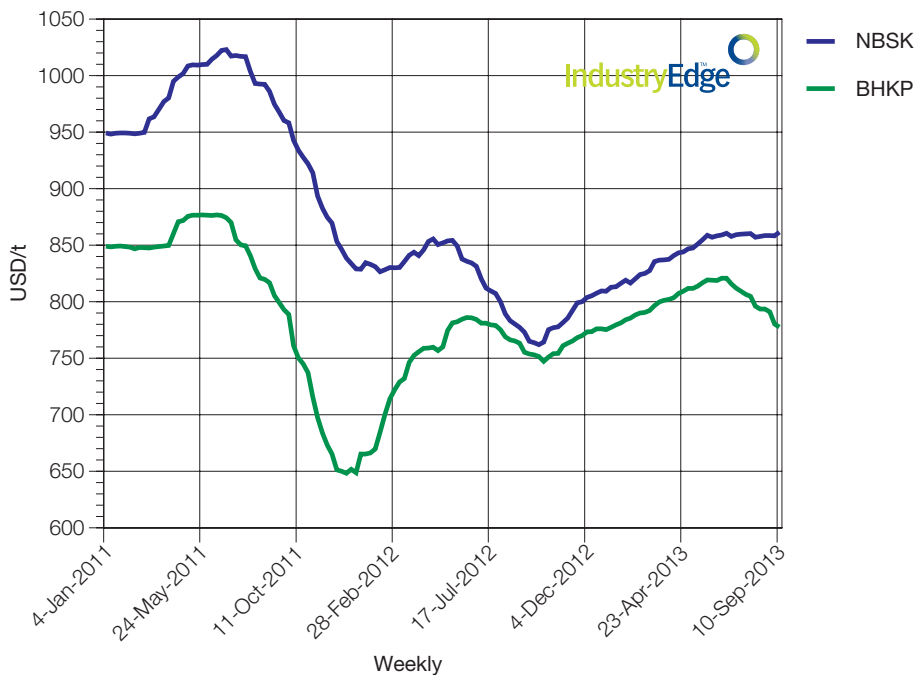
That said, *IndustryEdge* sources suggest that the announced price increases for softwood pulp are likely to be delayed until October. However, by then, with softwood chemical pulp inventories having remained at 28 days of supply, price increases of up to USD30/t for NBSK are expected to take hold.

Hardwood pulp inventories moved out 5 days over the last month and are sitting at 46 days of supply, meaning there are 36 days of supply for bleached chemical pulps combined. The list price of BHKP has slipped by around USD10/t, but steep discounts continue to be offered on spot sales.

Chinese August prices are assumed to have been around USD670/t for NBSK and between USD620/t to USD640/t for BEKP and lower for other hardwoods.

Varied demand and supply balances and pressures have impacted the spread between the major chemical pulps, pushing them to their widest differential in more than a year.

Weekly NBSK and BHKP PIX Prices: 4 Jan '11 – 10 Sep '13 (USD/t)



Source: FOEX

While a consensus view on the demand drivers for the softwood pulp price is easy enough to identify, current weakness in hardwood pulp demand is more difficult to analyse.

Discounting of BHKP is reportedly being driven by Indonesian producers who are seeking to drive their acacia pulp into the market. They have grown their position in China by 28% for the calendar year to the end of July. Any market lost to softwood pulp over the year or more when hardwood pulp has effectively been over-priced is being paid back in lower demand and prices now.

Hawkins Wright has suggested the depreciation of the Indonesian rupiah has made pulp exports from Indonesia more attractive, in the lead up to APP and APRIL both increasing their integrated supply as they expand their Chinese paper production over coming years.

These arguments are all grist to the mill, but the strategic issue, in *IndustryEdge's* assessment, is the different trajectories not of demand for pulp, but of demand and prices for different grades of paper.

With Chinese packaging board manufacturers complaining about the poor quality of imported recovered fibre (primarily unbleached kraft), they have little choice but to enter the market for softwood pulps to increase the strength of their fibre. Growing packaging demand is expanding the market for stronger softwood fibres.

Tissue demand is growing, but it's a relatively slow and small journey and seems balanced between the pulps, at least for the time being.

It is stagnation and potential further declines in printing and communication paper demand that appears to be holding back demand for hardwood pulps. That, and the continuing expansion of hardwood pulping capacity ahead of demand – the exact opposite of what has occurred with softwood pulp capacity – are combining to drive prices down.

However, when it comes to pulp prices, just as what goes up must come down, eventually, what comes down must also go back up. When that will happen is another question altogether.

Chinese capacity closures

In relevant news, the Chinese government has announced the compulsory closure of 7.4 million tonnes of annual pulp and paper production. However, all of this is to be taken on machines with capacity below 51 ktpa and that operate inefficiently. RISI reports an additional 1.2 million tonnes was added to existing requirements and will cover 67 separate firms. That's an average of just 18 kt per company.

If nothing else, this gives a sense of the extremely long tail in inefficient and below scale production in China.

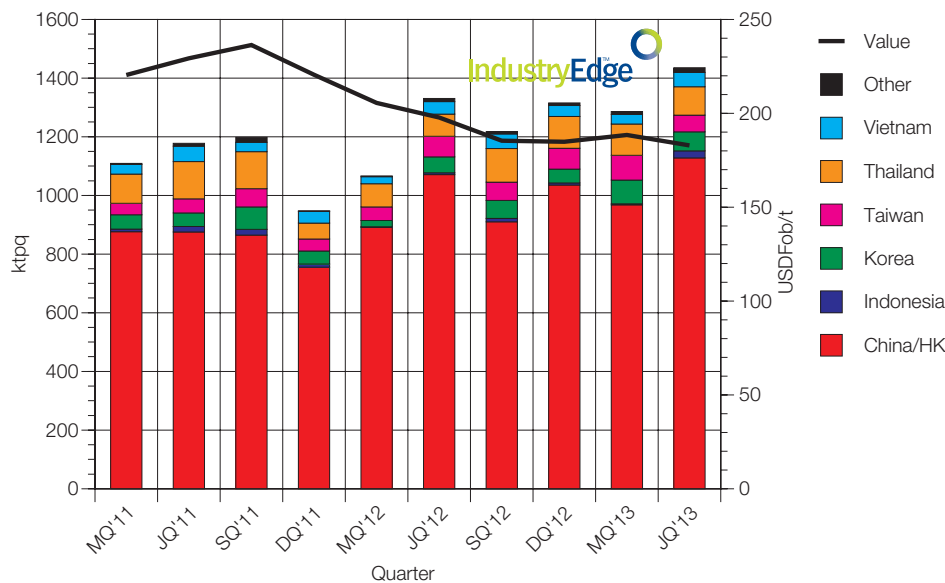
It is important to place the closures in context. In 2011, confirmed closures totaled 8.3 Mtpa and in 2012, the unconfirmed closures totaled 9.9 Mtpa of capacity. These figures are not net and thus, do not include new capacity installations.

Asian Fibre Snapshot

Japanese Recovered Paper Exports

Exports of recovered paper from Japan continue to grow, topping 1.4 Mt for the first time in JQ'13 and ending 2012-13 having exported more than 5.2 Mt for the full year. As Figure 1 demonstrates, the trend for export growth is clear to see, as is the dominance of supplies to China.

Fig. 1 – Japan Exports of Recovered Paper by Country: MQ'11 – JQ'13 (ktpq & USDFob/t)



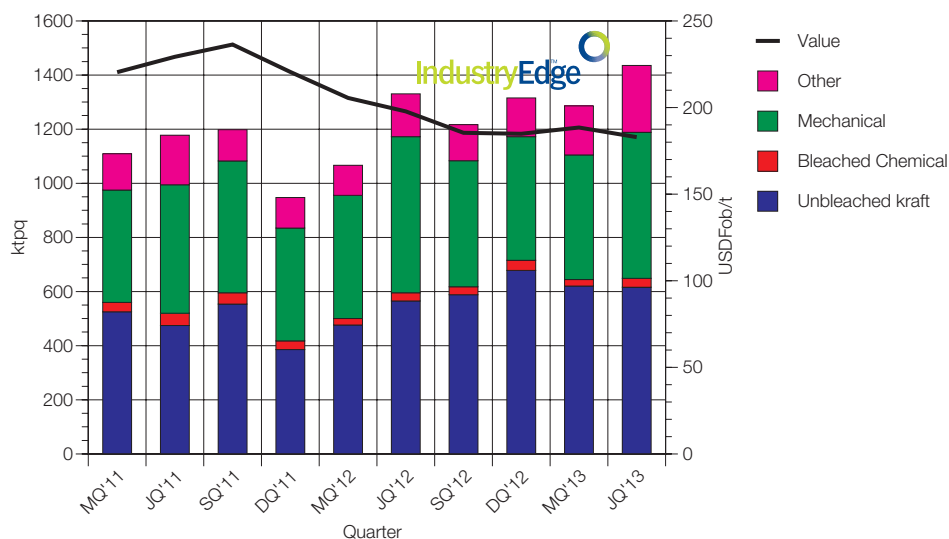
Source: Japan Customs

Exports to China accounted for 4.04 Mt in 2012-13 or 76.9% of the total export volume. Supplies to China have averaged 937.5 ktpq since MQ'11, growing at an average rate of 2.2% per quarter, slightly below the average growth rate for all recovered paper exports of 2.6% per quarter.

Both the growth trend and the dominance of Chinese demand are consistent with exports from Australia.

Of equal interest is the changing make-up of recovered paper exports from Japan. The highest value bleached chemical grade has declined by an average 0.5% per quarter since MQ'11. All other grades, as Figure 2 shows, have experienced growth. However, while the largest volume is unbleached kraft or old containers and cartons, it has grown at just 1.6% per quarter, while mechanical grades or old newsprint have grown at 2.7% per quarter. The largest increases have been in the other or mixed and unsorted grade of recovered paper which has grown at a healthy 6.2% per quarter.

Fig. 2 – Japan Exports of Recovered Paper by Grade: MQ'11 – JQ'13 (ktpq & USDFob/t)



Source: Japan Customs

The implication of the growth in other recovered paper exports is that sorting is not occurring or where it is, it occurs in the destination country. This has contributed to the decline in the trade weighted average price of Japanese recovered paper exports from USDFob220/t in MQ'11 to USDFob182/t in JQ'13.

The similarities between the trends in Japanese and Australian recovered paper exports are evident and symptomatic of the critical nature of this element of global fibre supply.

Korean Kraftliner Imports

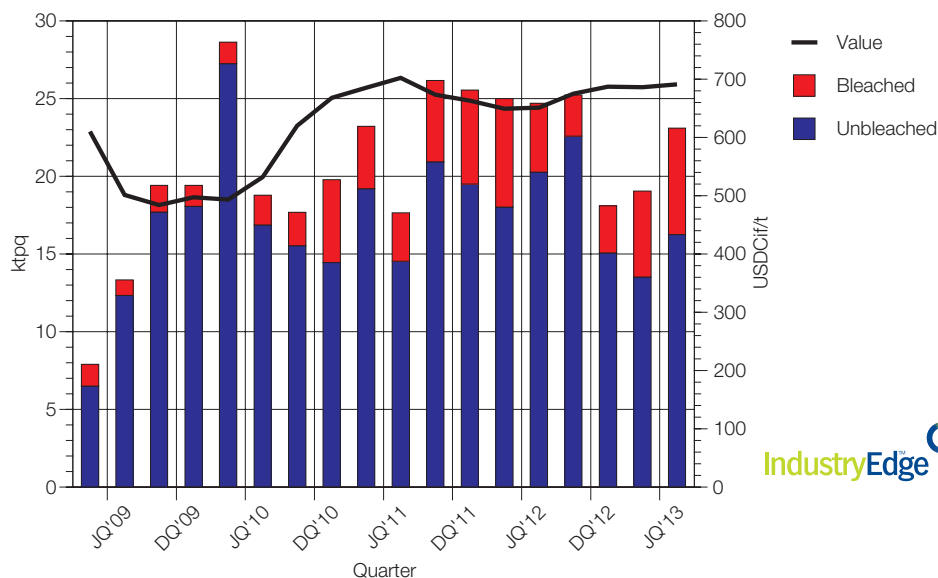
Imports of kraftliner into Korea remain small in volume, but are sufficiently large to provide a pointer to the structure of the industry. As Figure 1 shows, a sharp rise in imports from 7.9ktpq in MQ'09 to 19.4 ktpq in SQ'09.

At that time, almost all of the increase was in unbleached kraftliner. There has been subsequent and observable stability in unbleached kraftliner imports, which have grown by an average of 5.2% per quarter since MQ'09.

In JQ'13, imports of unbleached kraftliner imports totaled 16.2 kt.

There has been a gradual increase in bleached kraftliner imports, which have grown by an average 9.2% per quarter since MQ'09 to reach 6.8 ktpq in JQ'13.

Fig. 1 – Korean Imports of Kraftliner by Grade: MQ'09 – JQ'13 (ktpq & USDCif/t)

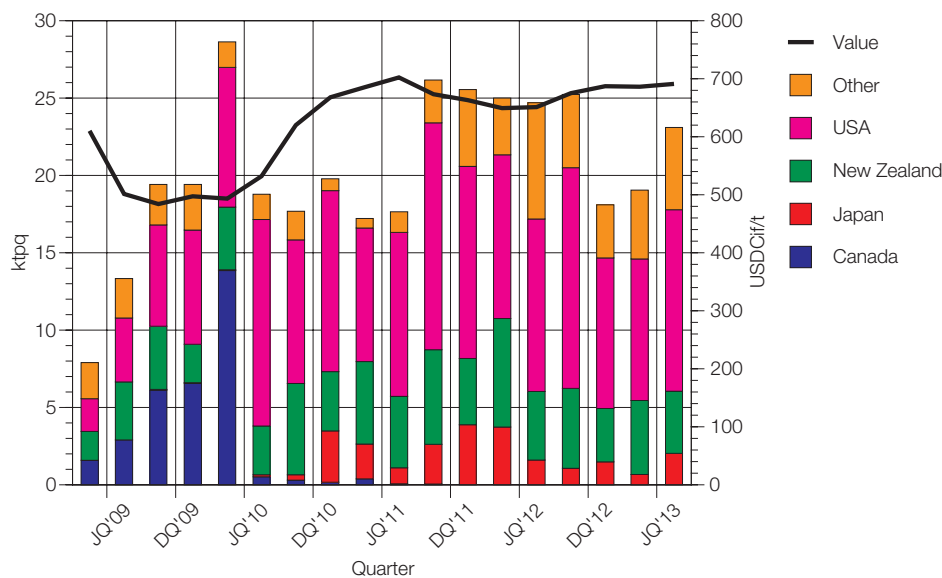


Source: Korean Customs

The pattern of importing countries has altered slightly as the imports have grown. Canadian supplies grew substantially through to MQ'10, after which they collapsed to less than 1 ktpq, before disappearing altogether after SQ'11. The low trade weighted average price at the time supplies some clues as to the role of the Canadian supplies.

Significant supply is provided from the USA, which in JQ'13 delivered 11.7 kt. Only New Zealand (4.0 kt in JQ'13) and Japan (2.0 kt in JQ'13) hold significant positions over time.

Fig. 2 – Korean Imports of Kraftliner by Country: MQ'09 – JQ'13 (ktpq & USDCif/t)



Source: Korean Customs

Annual Strategic Review Puts Global and Regional Trends in Perspective

As population growth, expanding middle classes, rising regional demand, potential fibre shortages and advanced technological transformations coincide in coming years, pulp and paper markets will change ever more rapidly.

In the context of global and regional mega trends, the 22nd annual edition of the *Pulp & Paper Strategic Review* gives you information vital to the decisions that will guide your business into the future:

- How large currency movements are actually affecting prices and domestic production
- What trends are set to continue in paper and paperboard supply in Australia and New Zealand
- Why 1.5 million tonnes per annum of recovered paper exports may be Australia's limit
- What caused a massive spike in tissue stock imports in 2012-13
- How strong the market for coated mechanical papers (brochures and catalogues) is and could be
- The future of coated cartonboard supplies in Australia
- How sustainability issues are placing pressure on imports from south-east Asia
- Will Australia ever meet the conditions for building a new pulp mill

The *Pulp & Paper Strategic Review* is the only comprehensive analysis of the Australian and New Zealand markets and industries.

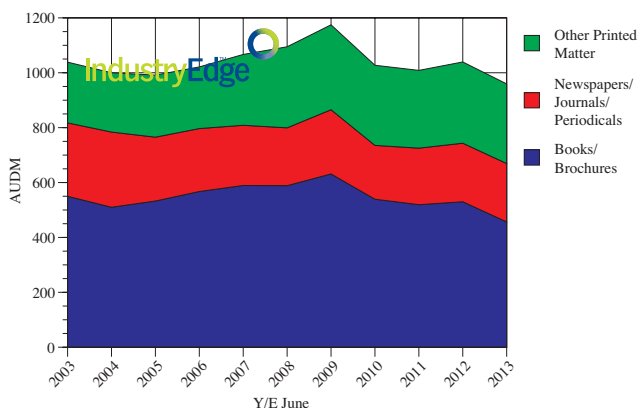
The *Review* includes detailed production, import, export and pricing data for all major grades and sub-grades of paper and fibre. Hundreds of tables and charts are provided, along with *IndustryEdge's* expert commentary and analysis.

The 2013 *Pulp & Paper Strategic Review* will be released in late October/early November.

Existing subscribers to *IndustryEdge* publications and services may subscribe to receive a printed copy and a complimentary copy on USB with a slide deck of all of the charts in the *Review* for just AUD1,600 (+GST for Australian subscriptions).

A brochure and order form will be available in October. Advanced orders can be placed by contacting *IndustryEdge* on +61 [0] 3 5229 2470 or by emailing info@industryedge.com.au.

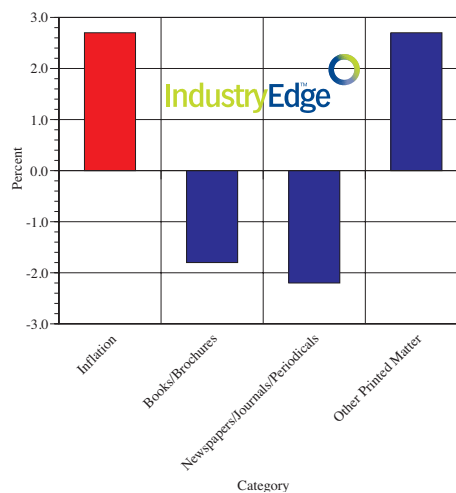
Imports of Printed Material by Type: 2003 - 2013 (AUDM)



Source: ABS & IndustryEdge estimates

The value of imported printed material declined to its lowest level in a decade in 2012-13, falling to AUD959.2M. Almost the entire AUD80.5M single year decline in import value was taken up by books and brochures, which fell AUD73.4M, reflecting the shift to e-readers as imports of newspapers, journals and periodicals and other printed matter remained largely stable.

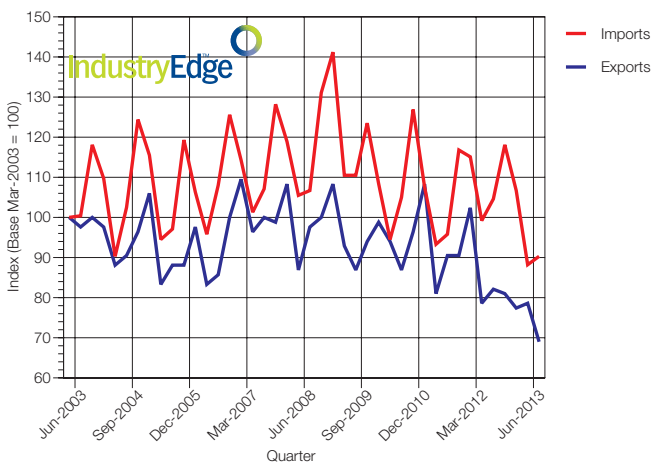
Growth in Printed Material vs Inflation: Since 2003



Source: ABS & IndustryEdge estimates

Over the last decade, Australian inflation has averaged 2.7% per annum. Over the same period, the average growth in the value of print imports has been variable with the value of books and brochures declining by 1.8% per annum and the value of newspapers, journals and periodicals falling by 2.2% per annum. Only other printed matter has grown, equaling the inflation rate of 2.7% per annum.

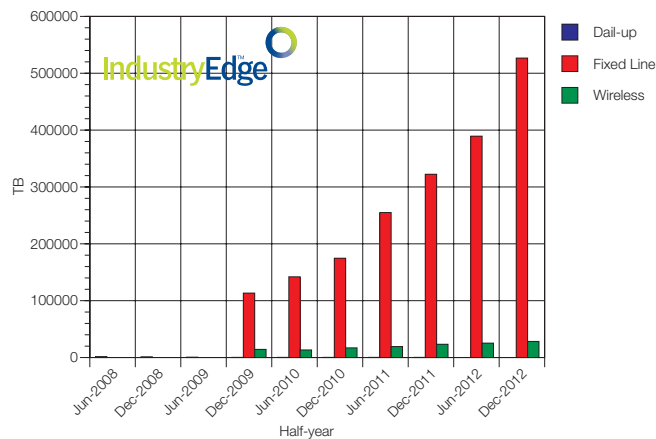
Trade Price Indices for All Printed Material: MQ'03 - JQ'13



Source: ABS & IndustryEdge estimates

The prices of both printed matter imports and exports have declined over the last decade. Export prices fell by an average 31.0% to the end of 2012-13, while the decline in imports has been a comparatively small 9.7% over the same decade. Since the Australian dollar commenced its appreciation in late 2011, the average price of exports has fallen more steeply than imports.

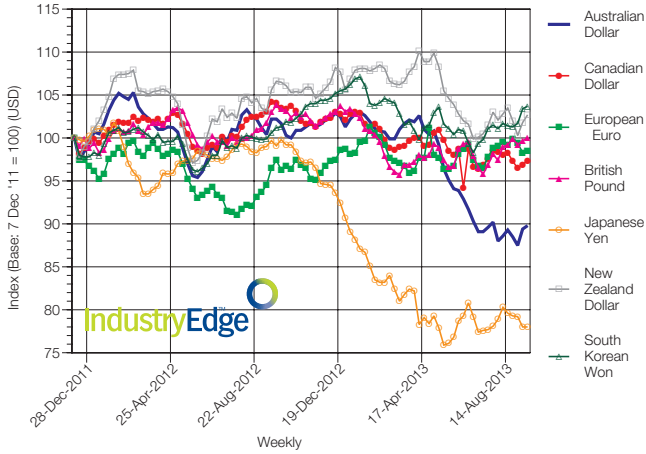
Volume of Data downloaded by Connection Type: JQ'08 - DQ'12



Source: ABS & IndustryEdge estimates

For comparison purposes, it is worth considering digital media as it compares with print. The explosion in data downloads had already commenced when broadband was first measured, but data downloads have grown over the 10 half years of available information by an average of 25.9% for each half year. In DH'12, total data downloads amounted to 554,771 TB, over 95% of which were by broadband technology.

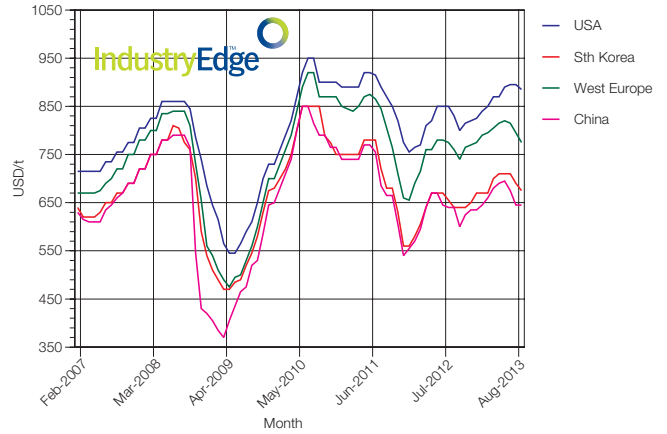
Main Trading Currencies: 7 Dec '11 - 11 Sep '13



Source: Uni of BC

The Australian Dollar remains stable against the US Dollar, as have all major trading currencies. However, the Australian Dollar, along with the Japanese Yen, remains diverged from the other countries, still displaying evidence of its depreciation since May 2013. While other currencies remain in a tight band, the South Korean Won is steadily appreciating.

Eucalyptus Pulp Prices by Region: Jan '07 - Aug '13

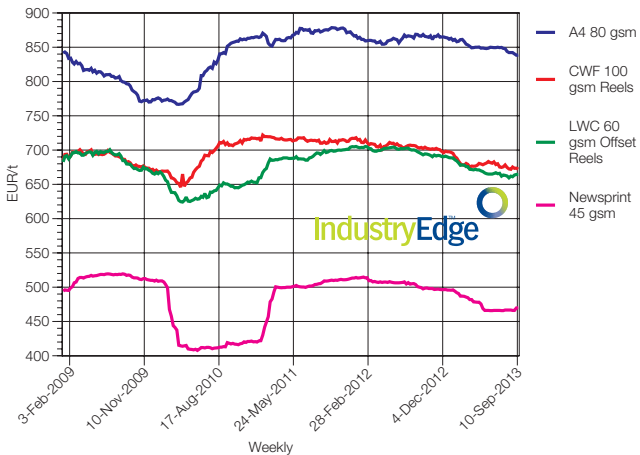


Source: Hawkins Wright

Note: Due to extreme volatility in the market, these price indications are subject to revisions. Transaction prices shown are before any loyalty or large order discounts.

Prices for hardwood pulp have declined in recent months, with large regional differences. In August, market leading China paid USD645/t, precisely the same as in January 2013, having hit a high for the year of USD695/t in May 2013. Western European prices at USD775/t are down USD15/t on the start of the year, while South Korean prices at USD675/t are up USD5/t over the same period. US prices averaged USD885/t in August, up USD45/t since the beginning of 2013.

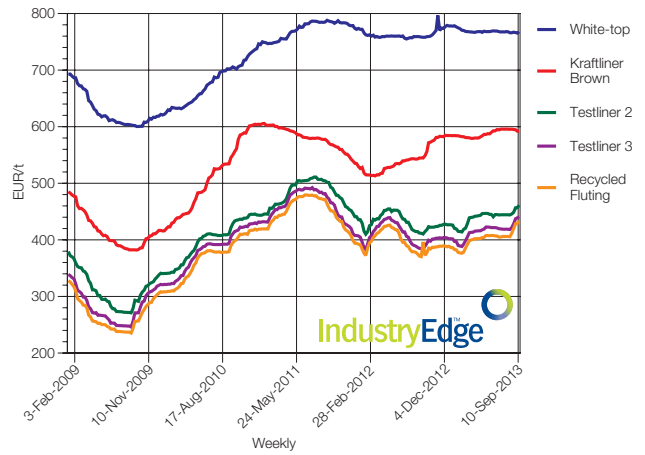
PIX Paper Indexes: 6 Jan '09 - 10 Sep '13 (EUR/t)



Source: FOEX

A4 80 gsm prices continue their long and slow decline, trading at EUR838.49/t in early September, down 2.8% from the EUR862.89/t achieved at the start of calendar 2013. CWF 100 GSM reels have declined 3.5% over the same period, trading most recently at EUR671.98/t, while the close tracking LWC 60 GSM Offset Reels have equalled the decline despite showing modest improvement in recent weeks and trading at EUR664.23/t in early September. Newsprint 45 GSM prices have declined 5.2% over calendar 2013 and recently traded at EUR469.78/t.

PIX Packaging Indexes: 6 Jan '09 - 10 Sep '13 (EUR/t)



Source: FOEX

White-top prices continue to be stable at EUR767.67/t, having barely moved since February 2013. Prices for Kraftliner Brown have softened marginally since the start of the financial year, but are also relatively stable and traded at EUR592.41/t. Price growth in Testliner 2 (+8.2% since the start of 2013) has been bested by price growth in Testliner 3 (+9.8% over the same period), while Recycled Fluting prices have grown by 12.2% since the start of 2013, though remaining below the Testliner prices.

Pulp & Paper Market Edge September 2013



Grade/Specification	Weight (gsm)	Form	Monthly Prices			3-month moving Average			12-month moving Average		
			Current	Previous	% Change	Current	Previous	% Change	Current	Previous	% Change
Printing & Communication											
Uncoated Mechanicals											
Newsprint Norske Skog Announced Price	45	Reels	\$ 1,025	\$ 1,025	-	\$ 1,025	\$ 1,025	-	\$ 1,025	\$ 1,025	-
S/C Mech Offset (Sweden)	52	Reels	\$ 1,085	\$ 1,085	-	\$ 1,085	\$ 1,085	-	\$ 1,085	\$ 1,085	-
Norske Skog Norstar	52	Reels	\$ 1,123	\$ 1,123	-	\$ 1,123	\$ 1,123	-	\$ 1,123	\$ 1,123	-
Coated Mechanicals											
LWC - Asia (USD)	54	Reels	\$880	\$880	-	\$880	\$880	-	\$1,100	\$1,100	-
LWC - Asia (USD)	64	Reels	\$850	\$850	-	\$850	\$850	-	\$1,080	\$1,080	-
MWC - Asia (USD)	80	Reels	\$1,080	\$1,080	-	\$1,080	\$1,080	-	\$1,080	\$1,080	-
LWC - Italy	54	Reels	\$1,050	\$1,050	-	\$1,050	\$1,050	-	\$1,130	\$1,130	-
LWC - Italy	64	Reels	\$1,000	\$1,000	-	\$1,000	\$1,000	-	\$1,100	\$1,110	-
MWC - Italy	80	Reels	\$1,100	\$1,100	-	\$1,100	\$1,100	-	\$1,280	\$1,280	-
Packaging Grades											
Coated Cartonboard											
1/S Solid Bleach Board CFR	350um+	Reels	\$ 1,560	\$ 1,560	-	\$ 1,533	\$ 1,440	7.3	\$ 1,407	\$ 1,412	-0.4
Local (Artcote White)	400um+	Sheets	\$ 1,954	\$ 1,954	-	\$ 1,954	\$ 1,954	-	\$ 1,951	\$ 1,951	-
Local (Artcote Greyback)	400um+	Sheets	\$ 1,729	\$ 1,729	-	\$ 1,729	\$ 1,729	-	\$ 1,726	\$ 1,726	-
Local (Artcote Kraft)	400um+	Sheets	\$ 2,027	\$ 2,027	-	\$ 2,027	\$ 2,027	-	\$ 2,024	\$ 2,024	-
Pearl Kote® Ctd Kraft Back	356um+	Reels	\$ 1,050	\$ 1,050	-	\$ 1,050	\$ 1,050	-	\$ 1,050	\$ 1,050	-
Pearl Kote® Ctd Kraft Back	457um+	Reels	\$ 1,040	\$ 1,040	-	\$ 1,040	\$ 1,040	-	\$ 1,040	\$ 1,040	-
Container Materials											
Kraftliner	200	Reels	\$ 963	\$ 963	-	\$ 963	\$ 963	-	\$ 942	\$ 938	0.3
Testliner	100	Reels	\$ 838	\$ 838	-	\$ 838	\$ 838	-	\$ 831	\$ 831	-
Sack Kraft											
Semi extensible	70/80	Reels	\$ 1,500	\$ 1,520	-1.3	\$ 1,523	\$ 1,583	-3.9	\$ 1,668	\$ 1,668	-
Flat Sack Brown	80	Reels	\$ 1,400	\$ 1,420	-1.4	\$ 1,423	\$ 1,479	-3.9	\$ 1,493	\$ 1,493	-
Fibre Resource											
Recovered Paper (AUD)											
Mechanical Recovered Paper Export Price			\$180	\$187	-3.9	\$182	\$178	2.2	\$190	\$190	-
Recovered Paper (USD)											
ONP - No 8 De-inking USA into Asia			\$160	\$158	1.3	\$162	\$183	-12.5	\$195	\$202	-3.4
ONP - No 8 De-inking Japan into Asia			\$207	\$203	1.9	\$205	\$208	-1.8	\$229	\$235	-2.4
ONP - No 8 De-inking Europe into Asia			\$173	\$171	1.2	\$172	\$190	-12.5	\$196	\$203	-3.5
OCC - USA into Asia			\$227	\$227	-	\$210	\$214	-2.0	\$221	\$226	-2.2
OCC - Japan into Asia			\$210	\$214	-1.9	\$201	\$192	4.6	\$212	\$218	-2.9
OCC (1.05) - Europe into Asia ¹			\$194	\$194	-	\$194	\$191	1.5	\$207	\$211	-1.8
Pulp (USD)											
NBSK Landed		Bales	\$770	\$770	-	\$777	\$807	-3.7	\$772	\$775	-0.4
Bleached Eucalypt Landed		Bales	\$670	\$680	-1.9	\$680	\$697	-2.5	\$674	\$666	-0.4

Notes: * = Prices updated on a quarterly basis

¹ (95% + OCC content)