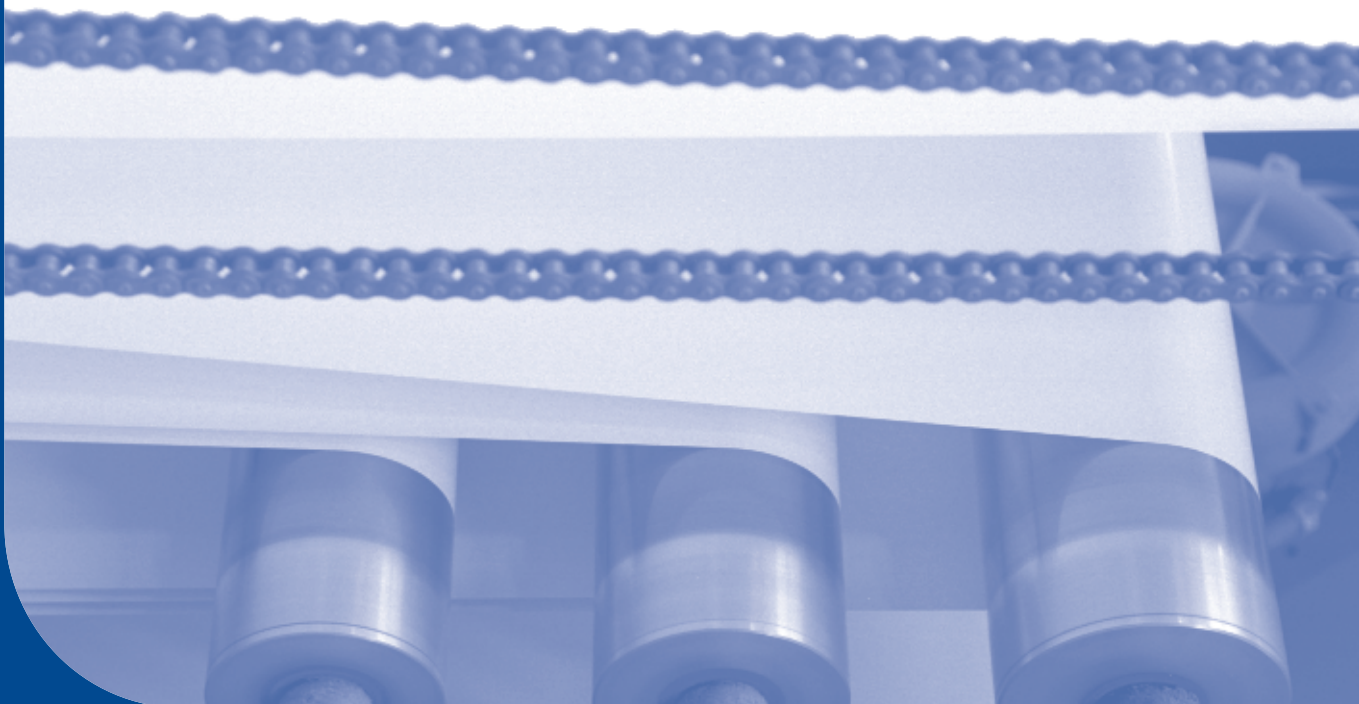




# **WOODFREE**

**FORECAST REPORT - INCLUDING FORECASTS OF  
DEMAND, SUPPLY AND PRICES**

**DECEMBER 2011**



**EUROPEAN PAPER MARKETS**

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# Regional Classifications

The EMGE European Woodfree Report is structured to include both Western Europe and Eastern/Other Europe region (excluding Russia), together with European-wide totals.

Specifically, there are 3 main geographical groupings in this report (W.Europe-16, E.Europe-14 and Europe-30), which are composed as follows:

## **W. Europe-16 :**

Germany, France, UK, Italy, Finland, Norway, Sweden, Belgium, Luxembourg, Netherlands, Spain, Portugal, Austria, Switzerland, Denmark, Ireland.

## **E. Europe-14 :**

Poland, Greece, Czech Republic, Hungary, Romania, Slovakia, Estonia, Latvia, Lithuania, Slovenia, Bulgaria, Cyprus, Malta, Iceland

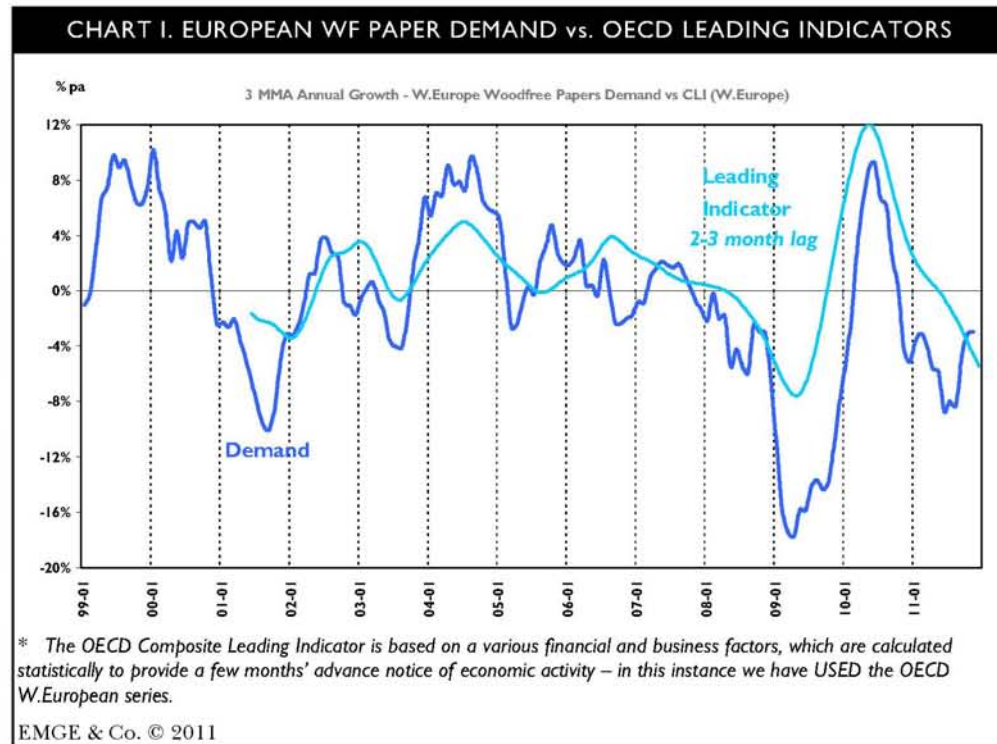
## **Europe-30 :**

All of the above. Quarterly Market forecast tables have been organised into their own section (see, page 105 onwards).

*In addition to the above regions, we have again included a brief section on Russia (see page 7), at the request of a number of clients.*

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# Introduction



This forecast report ("EUROPEAN WOODFREE DECEMBER 2011") is an update in the **EMGE** series EUROPEAN WOODFREE.

In this report, we present forecasts for the European Woodfree paper market from 2010 to 2015.

Based on all the data available (to October 2011) and combining the latest developments in the markets, we present an updated outlook for demand, trade, investment, capacity, operating rates and prices for the European Woodfree paper markets. The sub-grades covered include Coated Woodfree Sheets and Reels, as well as Uncoated Woodfree Cut-Size, Folio Sheets and Reels. The report does not cover speciality grades or I-side Coateds.

Also, in this issue, we introduce an upcoming new media development (see page 21) that has the potential to compete with print for advertising spend – **Social Networking Media** (e.g. **Facebook**).

## Forecast Summary: Data

TABLE 1: FINANCIAL STATEMENTS SUMMARY							
Forecast							
Category	2015	2016	2017	2018	2019	2020	2021
Revenue	100	105	110	115	120	125	130
Operating Profit	20	22	24	26	28	30	32
Operating Expense	80	83	86	89	92	95	98
EBITDA	30	32	34	36	38	40	42
EBIT	25	27	29	31	33	35	37
EBI	20	22	24	26	28	30	32
EBT	15	16	17	18	19	20	21
Net Income	10	11	12	13	14	15	16

Forecast							
Category	2015	2016	2017	2018	2019	2020	2021
Revenue	100	105	110	115	120	125	130
Operating Profit	20	22	24	26	28	30	32
Operating Expense	80	83	86	89	92	95	98
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EBIT	25	27	29	31	33	35	37
EBI	20	22	24	26	28	30	32
EBT	15	16	17	18	19	20	21
Net Income	10	11	12	13	14	15	16

Forecast							
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Operating Expense	80	83	86	89	92	95	98
EBITDA	30	32	34	36	38	40	42
EBIT	25	27	29	31	33	35	37
EBI	20	22	24	26	28	30	32
EBT	15	16	17	18	19	20	21
Net Income	10	11	12	13	14	15	16

TABLE 2: FINANCIAL STATEMENTS BY QUARTER							
Forecast (in \$ million)							
Average Month	Forecasting Year			Forecasting Month			
	Year	Half	Quarter	Year	Half	Quarter	Year
Revenue	100	105	110	100	105	110	115
Operating Profit	20	22	24	20	22	24	26
Operating Expense	80	83	86	80	83	86	89













### Deliveries, Capacity and Operating Hours

TABLE 8 - DEMAND SUPPLY OUTLOOK						
Range 08						
MS years	2010	2011	2012	2013	2014	2015
<b>Energy supplied</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
<b>Unplanned resources</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
<b>Total supplied</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
Range 09						
MS years	2010	2011	2012	2013	2014	2015
<b>Energy supplied</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
<b>Unplanned resources</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
<b>Total supplied</b>						
Hydro	1000	1000	1000	1000	1000	1000
Coal	4000	4000	4000	4000	4000	4000
Oil/Gas	0	0	0	0	0	0
Range 10 (PWT only)						
MS years	2010	2011	2012	2013	2014	2015
Hydro	1000	1000	1000	1000	1000	1000
Coal	1000	1000	1000	1000	1000	1000
Oil/Gas	0	0	0	0	0	0

Source: ENGE, ENTSO-E, ENTSO-G

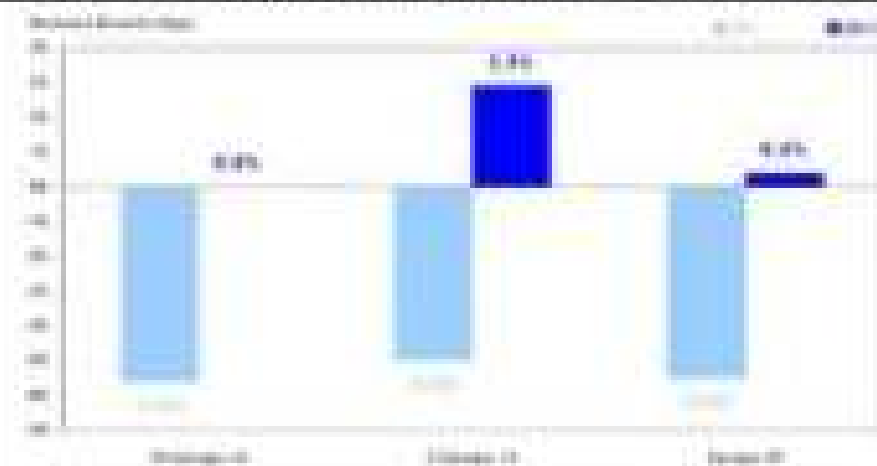
*Forecast / GDP*

Table B. EMU's Economic Forecast						
European GDP – real growth %						
	Germany	France	UK	Italy	Spain	European
2010	2.7%	1.4%	1.9%	1.2%	1.9%	1.9%
2011	2.0%	1.2%	0.9%	0.5%	1.1%	1.2%
2012	1.2%	0.9%	0.7%	-0.2%	0.7%	0.6%
2013	1.7%	1.2%	1.0%	0.0%	0.9%	1.2%
2014	2.1%	1.6%	1.2%	1.2%	1.4%	1.6%
2015	2.0%	1.7%	1.0%	1.7%	2.1%	1.9%
Long-term average growth %:						
2005-10 %	1.2%	0.7%	0.9%	-0.2%	1.0%	0.9%
2005-15 %	2.1%	1.6%	1.7%	1.0%	1.5%	1.7%
	2010	2011	2012	2013	2014	European
2010	1.0%	1.0%	0.1%	1.0%	0.2%	1.0%
2011	0.1%	1.0%	0.2%	1.4%	0.7%	1.0%
2012	1.0%	0.9%	0.7%	0.0%	1.0%	0.8%
2013	0.1%	0.7%	0.1%	0.4%	0.1%	1.2%
2014	0.7%	1.0%	1.0%	1.1%	0.8%	1.0%
2015	1.2%	0.7%	1.7%	1.9%	0.8%	1.4%
Long-term average growth %:						
2005-10 %	1.0%	1.2%	0.0%	1.0%	0.2%	0.9%
2005-15 %	2.0%	1.6%	0.0%	1.0%	0.8%	1.4%

Source: EMU, October 2011

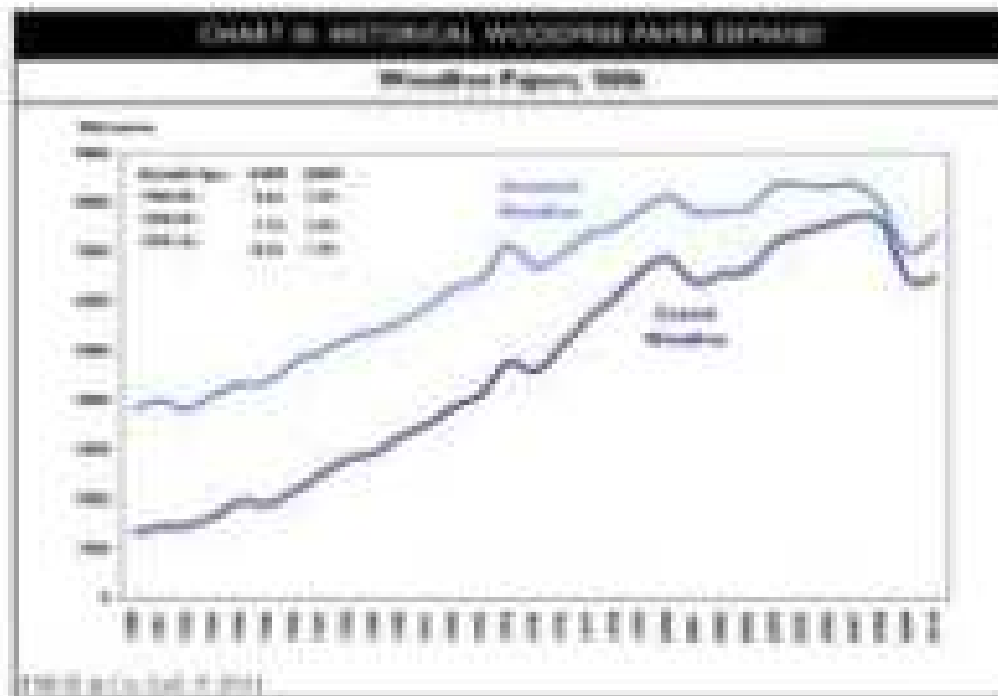
## Forecast Summary: Commentary

Chart 6: Europe and North America Summary – 2011 & 2012 Outlook



EMERGE ANALYSIS | 10

- Following negative demand in 2010, the very short-term outlook for Woodfree paper demand remains negative/negative, with European economic activity weighed down mainly by worries about the financial stability of several highly-indebted Eurozone countries, and by extension, the Eurozone itself, as well as stubborn unemployment levels and falling Woodfree Paper prices, which encourage reductions in inventory.
- In 2011, W Europe-NA demand is expected to fall by -12% for Coated Woodfree and by -14% for Uncoated Woodfree.
- In E Europe-NA in 2011, we expect demand to fall by -8% for Coated Woodfree and -11% for Uncoated Woodfree. This is a downgrade on our forecast, as negative demand has been offset by a strong economy outlook in Eastern Europe.
- All of this adds up to our demand outlook for the Europe-NA region in 2011, which are -14% for Coated Woodfree and -10% for Uncoated Woodfree.
- We expect the current downturn to bottom in the next month or two, as worries about the Eurozone crisis eases. We predict that the decline in demand will ease, with demand usually returning to growth in mid 2011, boosted by the London Olympics and the Euro 2012 football championship in Ukraine and Poland. The balance for 2012 as a whole is forecast to be flat in W Europe-NA, but positive in E Europe-NA and Europe-NA.



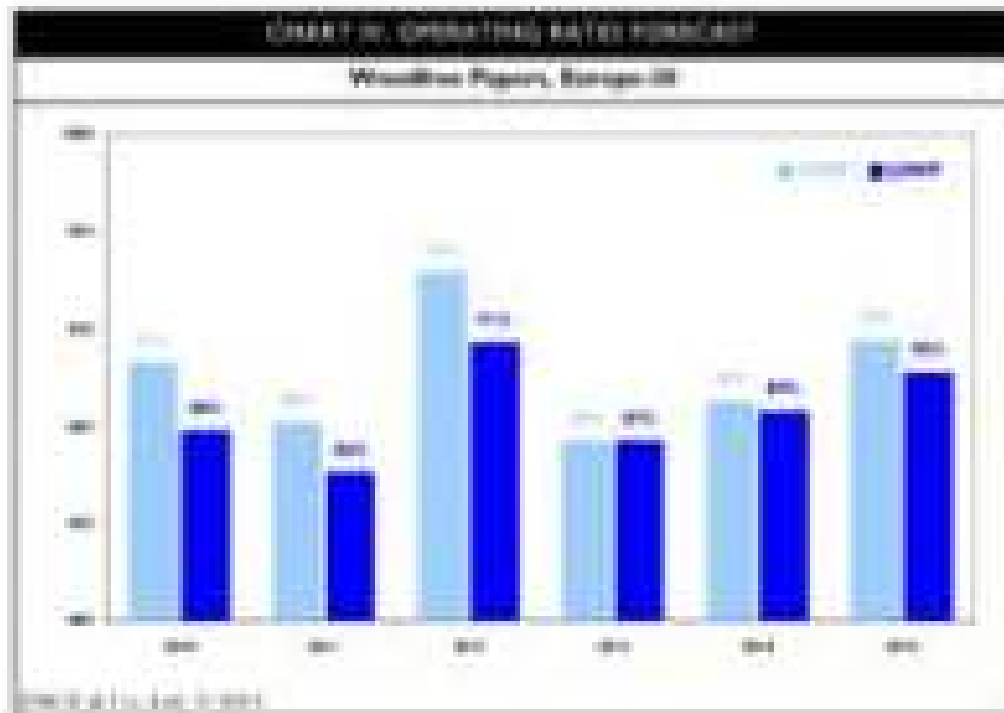
- Global economic demand is expected to weaken after the US Presidential election in late-2012 and especially in 2013, largely because we believe the new US President will have no option but to make dramatic changes in policy and thus spending cuts to prevent the country's finances spiralling out of control.

- This is expected to be a difficult process, disruption and the outcome will have a negative impact on global economic growth. European and Asian economies and paper markets will also be affected. Consequently, our paper demand forecasts for 2013 are significantly negative.

- During 2014, we predict a more stable situation, with the market cycle beginning to improve and demand returning to growth once again (but in 2014, but not strongly enough to make 2014 a positive year). However, unless serious steps toward restoring strategic debt turn into a full-blown financial crisis (see "Distressed - Current" section, page 20), this pattern is forecast to be repeated and continue in 2015, which we expect to be a year of growth.

- In the long term, amid a range of demand dampening factors (see End Use/Demand Drivers, from page 24), the long-term trend for Woodline paper demand in Europe is expected to be negative. As such, long-term demand is forecast to be negative in Y-Europe-14 (-1.0% pa average for 2005-2015 in Closed Woodline and -1.0% pa average in Unclosed Woodline). However, from a much lower base, we expect a slightly positive trend in E-Europe-14 (+0.4% pa average in Closed Woodline and +0.4% pa average in Unclosed Woodline).

- Added together, this gives us a negative long-term forecast for the Europe-20 region (-1.1% pa average in Closed Woodline and -1.0% pa average in Unclosed Woodline).

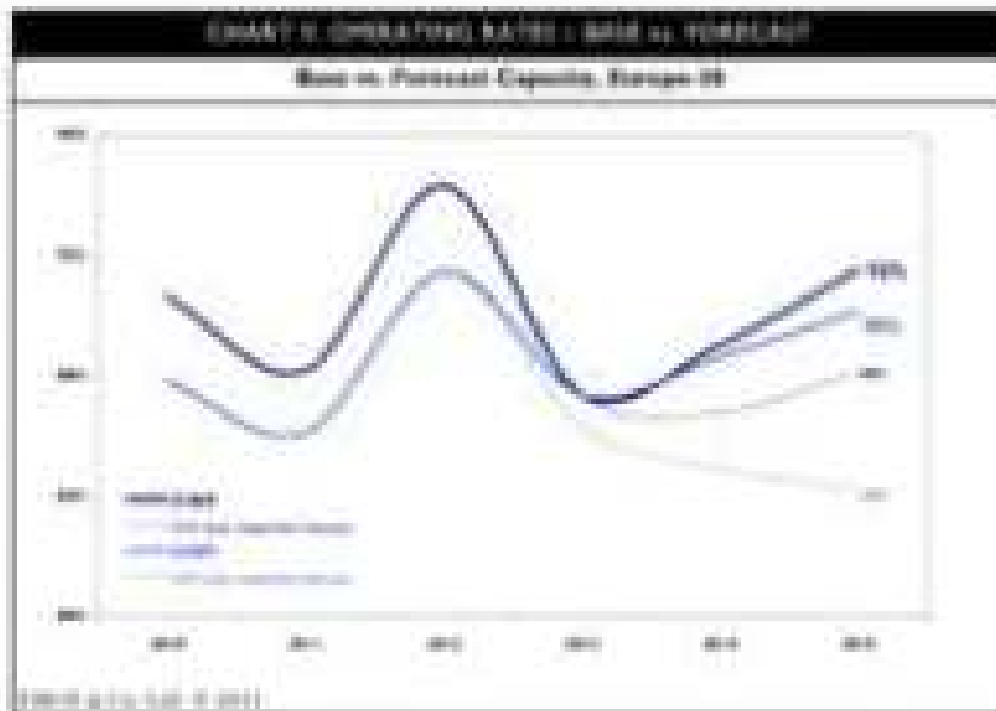


- Due to global and European overcapacity, the UK sector does concentrate sulphate in processing capacity, generally following periods of particularly heavy investment.

- Following a recovery over 2011, the industry already announced its forecast to help Operating Rates rise above 80% in 2013 (see chart above). We expect that as long paper supplies follow the market in 2013.

- The forecast paper-machine closures (which have not yet been decided), are predicted to take place mainly in 2014 and 2015. These will be in response to the poor forecast year of 2013, which is predicted to see Operating Rates fall to 87%, due to poor economic demand conditions.

- The subsequent (as yet undecided) closures are then forecast to help boost Operating Rates back up to 80% in 2014 and 85% and above in 2015.



- The industry has proven itself capable of closing capacity when necessary, which is one of the reasons why we have forecast more capacity additions than have to be built announced. However, we warn that if the industry does not make more closures than it is currently planning, then we would expect Operating Rates to be well over Base Capacity. This would be especially difficult in the Unbleached Woodfree sector, where Operating Rates could slide below 85%, no profit (85% is the OPEX cover).

- Despite a weak Euro, we expect European Coated Woodfree net exports to fall during the forecast period, due to weak global demand and competition from Asian capacity. Unbleached Woodfree net exports are expected to rise in 2011 and 2012 but to be followed by declines in 2013 (due to poor demand) and 2014/2015 (due to European capacity cutbacks).

- Prices, meanwhile, are falling as forecast, but we expect this to end during the first quarter of 2012, partly due to unusually stronger demand and capacity reductions boosting Operating Rates and partly due to Chinese buyers re-entering the pulp market and starting a new global price cycle. This should then be followed by a moderate price recovery during the improving demand period and opening months in 2012, followed by renewed declines in the poor 2013 that we are forecasting.

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Good Weather appears demand appears weakened again in November (+2%, compared with +2% in October), and we maintain our expectation that the recent improvement will be temporary. This is backed up by the fact that underlying demand drivers have shown no significant recent improvements from the slightly negative situation we have seen for much of the year.

Although political and financial leaders in the European Union are making rather slow progress on budget deficit rules and bailout funds that will reassure the financial sector, the scenario behind our forecasts in this report presumes that they will not fail. Although we are not currently forecasting a new financial crisis, we do acknowledge the possibility (see 'Demand - Context').

Still, even without a new Credit Crunch, businesses and consumers have reduced their spending because they are worried about the potential for a new recession, while governments have reduced their spending to try to prevent their budget deficits from going too much worse. All of this adds up to slow economic activity and not high employment.

This is reflected in the generally negative demand drivers that we are using in the market plan. Examples of weak drivers of European paper demand are fairly widespread.

What is expected is a drop in price advertising in 2011 in France and the UK, and less advertising is predicted to hit or fall, while Germany is expected to be the only major market with advertising in growth, at around +2% (before inflation). Separately, France

has been reporting a steady slowdown in German magazine advertising growth each month, to +3.1% for the year to October 2011, compared with around +3.0% in September (and higher growth rates earlier in the year). Overall, the picture suggests a drop in Western European magazine advertising pages.

Moving with magazines, consumer magazine circulation is falling in the UK, because of closures. Although the decline in circulation was earlier in the first half of 2011 (which was already a slowdown from growth of +4% in the second half of 2010 and +3.2% in the first half of 2011), the data now include magazines which stop publishing, not the UK's largest circulation title, by TV magazine, which is no longer to be printed monthly. In Germany, meanwhile, total magazine circulation is continuing to fall by around -1.0% to -1%, as it has been for two or three years now. The quarterly declines this year have been -1.0%, -1.0% and -1.0%, respectively.

In the retail sector, the UK's leading retailer, Royal Mail, reported a -4% drop in sales volumes in the six months to September 2011, with volumes down by -20% in the past five years. Not only this, but further falls are expected to result from a new scheme between the UK government and the direct marketing industry, as set up a website by April 2012 that will enable households to opt out of receiving all advertising mail.

Before the new opt-out scheme was announced, Royal Mail had predicted that sales volume declines would continue at around -2% per annum for the next five years. La Poste, meanwhile, the national carrier in France, reported a "surprising" decline in volumes of -3.0% in the first half of 2011. Germany's Deutsche Post (DP), also reported a structural decline in mail volumes in the third quarter, "due to a substitution", although the company did not put a figure on the drop.

In addition, the media landscape is about to change once again, with the rise of new third broadcasting media, in particular Facebook, fighting for a share of the advertising/marketing pie.

In the printed book sector, a recent case of Woodlark Paper, sales in the UK have been falling by -4% to -10% in recent months, although these declines are in comparison with a strong year-on-year pickup, which was boosted by paperback sales of the first book in the highly successful "Twilight" series of books in the second half of 2010.

With almost all of the available data now demand indicators pointing to falling volumes of printed materials, the printing sector might be expected to be suffering, but increasingly, the surveys from the two largest print markets in Europe (Germany and the UK) have actually been rather contrasting in recent months.

In Germany, the picture generally is rather negative. Printing industry sentiment has been lowering since well before the euro crash for a year or so, although the net result of months has been better than this. However, the September figures for the printing &

months are much worse, with the last couple of months showing far weaker conditions than earlier in 2013.

In the UK, in contrast, the latest printing industry survey (Q1 2014) showed improved business conditions, with more companies reporting third-quarter order levels being normal or better for the time of year, and operating costs and lead times rising. Short-term expectations were also quite good, with more companies expecting an improvement than a decline, and the balance of companies expecting no fire, rather than fire, markets is slightly positive, too.

There are other countries experiencing problems due to too cooling into a very tight posture, but the pessimistic expectations in Germany do at least reflect a market generally in decline (judging from the demand survey), while the optimism in the UK is probably more related to the low starting base, given declining orders for a range of processing needs in that country.

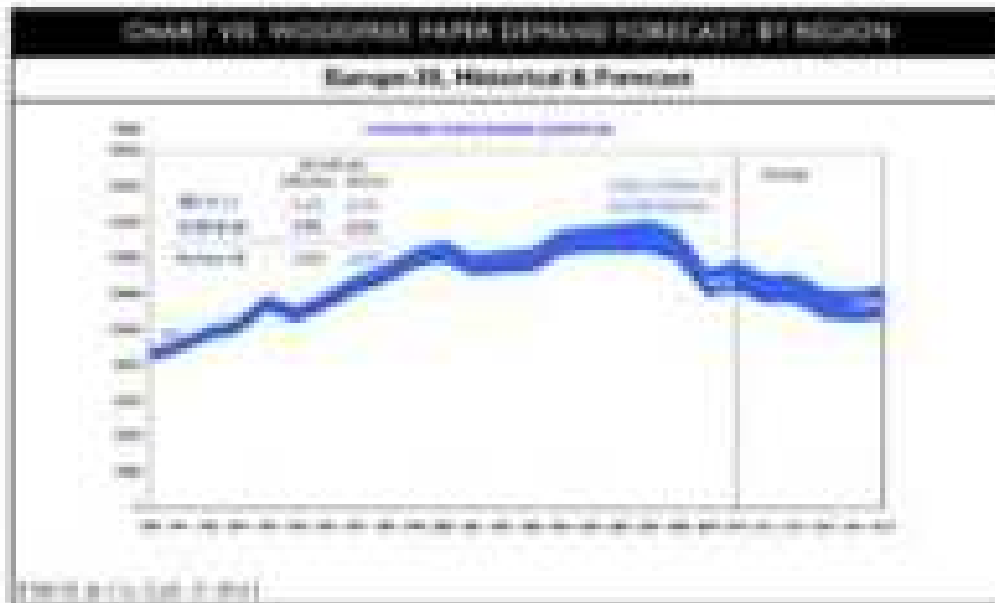
In our view, almost all of the available indicators point to real underlying consumption being in decline, which would suggest that the recent improvement in the Council Woodflow apparent demand index does not signal a turnaround yet.

However, we do expect that, the financial markets and consumer nerves will soon calm and, in due course, when companies and consumers get more used to the new economic situation, spending will gradually become more normalised again.

From the mid-2000s, we do not expect European Woodflow demand to return to growth in 2012, helped by a (temporary) economic and marketing and efficiency boost from the Olympic Games in London (the last European Olympics – in Greece in 2004 – helped the economy to recover from the very weak 2003). In addition, the Euro-2012 football championship, which should benefit not only the two nations of Ukraine and Poland, but also the press in the nations using part, as most of Europe could not a national team.

The business improvement will begin from a negative position, and although we are forecasting a return to demand growth during 2013, the delayed start of the improvement means we have downgraded our forecast for the full year from positive to slightly negative.

### 1.3 Demand: Long-term Outlook

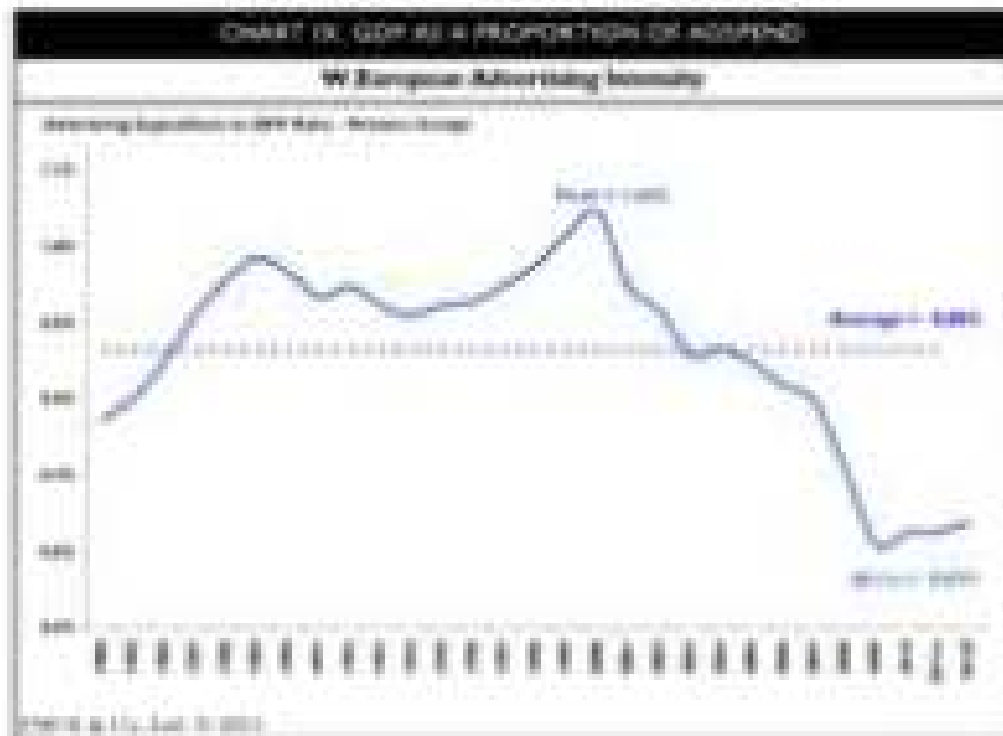


We mentioned earlier that the upturn in 2011 is only expected to be temporary, followed by a return to decline in 2012. This is partly because there are few strong growth drivers either in Europe or worldwide, but mainly because we expect fairly dramatic recovery by the new US government, following the Presidential election in Nov 2011. The current government is expected to keep on to the bare minimum spend of the economy, to avoid closing down, but a new budget agreement will be necessary, once the election is over. This process, and the budget cut themselves, are expected to have a dampening effect on the USA and global economy in 2012, and this includes Europe. We expect the budget cut to be implemented in 2011, and perhaps also extending into 2014. However, by 2014, we predict that both businesses and consumers will have ceased being panicked.

Eventually, with the decline of stock markets wiping down on bank credit and consumer spending, we are forecasting that the market cycle will begin to improve as the year progresses in 2014. However, although this is expected to mean a return to some paper demand growth in the second half of 2014, it will not be enough to counterbalance the negative earlier part of the year, meaning overall over 2014 is a whole net out for demand. 2015, in contrast, is forecast to be a year of growth again, as the cycle continues on to a good end.

Overall, the demand cycle (2010-2013), we are forecasting is for long-term to negative demand. This is largely because most of the positive driver influences on Worldwide Paper demand during the forecast period are expected to be negative, outweighing the few positive influences. As shown in these forecasts, the negative effects will be most strongly felt during the time of a (global) economic downturn - i.e. 2013.

### 1.2.1 Long-Term Trend for Drivers – Advertising Expenditure



The above chart shows the ratio of Advertising Expenditure (Adspend) to Economic Activity (GDP) following significant increases in the 1960s and 1970s, the proportion of Advertising spend in the general economy has been falling since the beginning of the 21st century. It appears that this long-term downward cycle may have reached a turning point in 2008, and that (from a lower level) advertising activity can recover some of its lost ground within the economy.

In modern society the need for Advertising and Marketing activity to help all the wheels of economic activity to rotate, especially in a world where communications are an exponentially increasing need. The road to get through the "noise" is more vital than ever. Although paper is no longer the main medium of choice, the internet is limited, the role of paper continues to be important for high quality communications and marketing. We believe the main potential upside for Woodfree Paper demand will be found in the Office Papers, Print and Packaging segments.

We briefly outline some key long-term market demand influences on the following pages. However, the overall conclusion is that the positive, neutral and negative factors set below the zero line in most scenarios, and as such, the overall long-term demand trend for woodfree paper demand will be for decline.

### 1.3.2. Long-Term Real-Life Drivers - Social Networking Media

The essence of the report again is that as a new, recent development - Social Networking Media (SNM) - this is changing the way the Internet is being used and has the potential to be a major part of the New Media for the commercial advertising/marketing world.

Online Social Networks are widely known nowadays, but their future remains unclear. The main website for Social Networking is Facebook, and there are numerous others, such as Twitter, Google+, LinkedIn, Bebo, MySpace, NextG2, Tumbler etc. In the words of the IJL: "The emergence and popularity of online social networks in recent years has changed the Internet ecosystem leading to a more collaborative environment. Thousands of millions of Internet users participate in social networks, form communities, produce and consume media content in real-time ways."<sup>2</sup>

Although its roots were in personal communications, the widespread success of Social Networking has increasingly attracted commercial interests and has started to get rise to a whole new method for advertising, marketing and promotion. We use the term Social Network Media (SNM) to describe the media that are involved in these types of marketing activities.

According to Comscore, a company that monitors and measures Internet usage and activities, the reach of Social Networks has grown dramatically in recent months and is now around 85% of Internet users in most European countries, with an estimated average for Europe as high as 92.4% in September 2011.

The dominant SNM website is Facebook, with over 800 million active users worldwide, including an estimated 250 million unique visitors in Europe alone (September 2011 data). Comscore estimates that the reach of Facebook is 70% to 80% among all Internet users in most European countries, while the average among all of the top 5 EU countries is about 75%. However, these figures may be overstated, as a single person may have registered from their one unique visitor name. Even so, the percentage reach is undeniably high.

Average time spent per user on Social Networking sites in Europe is estimated to have grown to 280 minutes per month (September 2011), i.e. almost 12 minutes per day, with many active users spending as much as one to three hours per day on these Social Networking websites. Users are not confined to teenagers and children, but are evenly distributed across all ages of the population.

Online Social Networking is a relatively new category, which is developing and growing rapidly alongside and integrating with other Internet systems, such as email, search engines, web browsing, video and phone sites etc.

With widespread and immediate access to the Internet for almost all users, through broadband, Wi-Fi and mobile Internet, the spread of Social Networking will continue to grow and expand itself as a means of modern communication (the post, telephone and email).

Because of the high level of activity and widespread penetration of online Social Networking, the spread of WPP's revenues to Advertisers, Publishers and Mobile operators (especially Facebook). Almost all products and services have or will soon have a Social Network page. The new industry will be on Facebook.

The experience consisting of a revolution in the world of Advertising and Marketing.

According to Ernst & Young, the global growth of digital advertising on the Internet is expected to be one of the fastest, forecasted to grow between 10% to 20% per

USD million (2010 exchange rate):

	2010	2011	2012	2013	2014
Display	\$21,849	\$25,362	\$29,960	\$35,597	\$42,688
Growth %		16%	18%	19%	20%

However, most of these adwords are single paid for display ads on websites (eg Google and Facebook ads banners).

In the Social Network Media world, the advertising and marketing activities and funding are much broader and more varied than single paid for advertisements.

In addition to so-called "Society-Paidword" Adwords (eg ads banners on Facebook ads), there are "Society-Enabled" Adwords, which have a "click here" or "like" button to drive users onto the Advertiser's Social-Marketing page. These "like" buttons represent personal endorsements for the advertiser's products, which are then associated with the individual user, and the user's network of "friends". Already, the brand Coca-Cola has around 20 million fans all its Facebook page, growing at 1.7 million every week.

Moreover, as soon as a user has agreed to become a fan on a Social-Marketing site page, the marketing manager can provide a wide range of offerings to encourage and engage customers, including discount coupons, product information, news, product support, client feedback etc. Sometimes users will choose to "Subscribe" to an advertiser's page too, in order to receive regular updates of these offerings (eg Twitter).

The growth of Facebook.com as an Advertising Media provider is currently being developed, ahead of the company's announced plans to launch first on the Social Media, probably with a IPO in April 2012. According to eMarketer, Facebook's global advertising

revenue is expected to double to US\$1.8 billion this year alone. If the historical growth of Google.com is anything to go by, Facebook could reach an advertising revenue of over \$20 billion by 2014.

Questions surrounding the growth of Advertising and Marketing on Social Networking websites are numerous and there have already been several cases of abuse and invasion of privacy. However, in time, we expect these issues will be resolved and the Social Networking Media companies will eventually establish themselves solidly in the Media world, alongside other forms of advertising on the Internet, Television and Print.

Although Facebook may double its revenue this year, the impact is negligible or non-existent for print advertising as far. For example, in Germany where Social Networking is as popular as anywhere, Nigerian advertising has continued to grow by around 25% in 2011, despite a weak economy. But the 2011 developments will be important to monitor in future. We expect that Social Networking Media will become an increasingly important subject for Paper based media and paper companies, either as a threat to the printed version of their end-user base or as an opportunity for stimulating new print based marketing services.

At this early stage, it is difficult to distinguish between hype and reality. It has yet to be established how effective and valuable the responses to all the 2011 activity really is to the advertisers/marketers. How much companies are likely to spend on it and how the right offers rather parts of their media spending mix. Until these issues can be established, what we hope will soon become more clear as the 2011 developments unfold, is a desperate to distinguish whether the rise of 2011 is just another fad in the traditional world of Internet and Online Advertising, which is already saturated into the 2012 paper demand forecasts, or whether it will add further downward pressure to the existing negative demand trends.

However, we feel it is important to give our clients advance warning of these developments. If you have an interest in the subject, please contact ENGE for further information.





series of so far unfulfilled policies that will continue to make substantial but reversible resource sectors, threatened by further losses of forest habitat and usage. This is likely to be more beneficial to the Pop and Paper sector than others, especially as the Paper sector is already on the way to falling in general to become less fuel fuel dependent and more energy self-sufficient and biomass dependent.

For the Office Paper sector, this will benefit the production side, because of the inherent efficiency and low-fuel fuel needs for paper-making compared with pulp. But it will also benefit (or at least have a reducing negative impact on) the demand side, as companies realize that reductions in Office Paper usage have less (or insignificant) impact on their fuel/fuel carbon usage reduction targets.

**Electronic Billing and Paperless Statements** are another long-term demand for **Unassured Wholesale** paper demand. Electronic billing is growing to high double-digit percentages, and this is a development we believe will have a long way to run, with strong demands generated for personal effectiveness. Printed statements, newsletters, e.g. from banks and utilities, have been under threat for some time. It seems likely to "paperless" companies. However, we believe much of the potential has already taken place, as this may not be a dramatic negative to the larger sector, with a billing probably representing the greater share.

## 1.2.4. Long-Term End-Use Drivers – Advertising/Marketing Print



In the **Magazine** sector, meanwhile, the sector would benefit from any growth in total advertising expenditure. However, magazine advertising is being hit hard growth in the advertising market as a whole. This is partly due to being considered as magazines, which are being read by who are spending more time using other media. Although there is potential for growth in total advertising, any growth will be slower in magazines, due to falling circulation. Also, any advertising growth would depend on economic confidence, which is expected to be in short supply for most of the forecast period. As such, the outlook for **Consumer Weeklies** and **Consumer's Magazines** for most of the forecast period.

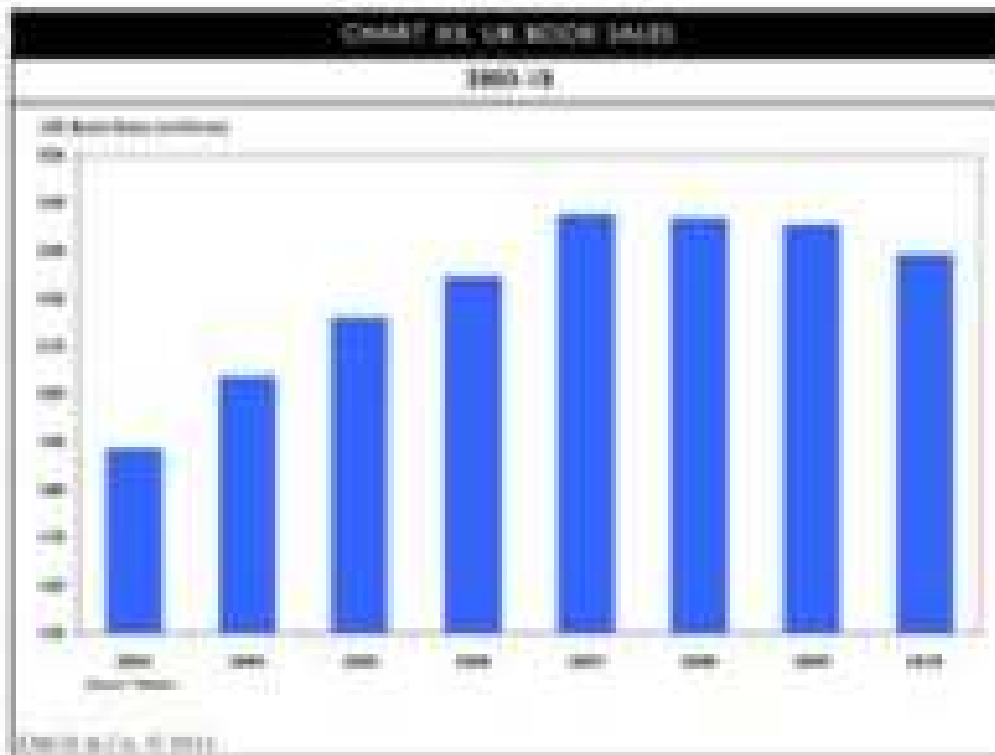
Reports from the retail **Mail** carriers in several markets indicate suggest that the downturn in the volume of printed orders and advertising material is on a long-term downward trend, as consumers progressively use more electronic means of communication.

Although Direct Mail has a powerful impact for its users, marketers are attracted by new alternative electronic means, now including social networking media etc. This is a long-term demand decrease for **Unsorted Weeklies** (for the envelopes), and a combination of **Unsorted** and **Sorted Weeklies** (for the content).

### **Catalogues/Brochures/Leaflets and Corporate Printed Communications**

Meanwhile, are expected to continue in the trends of becoming slower, publishing less often on, in some cases. Businesses are becoming more focused on online things and a shift to their primary media uses, with printed marketing material given at best a good support role, or at worst no role at all.

### 4.2.3. Long-Term Profit for Drivers – Books



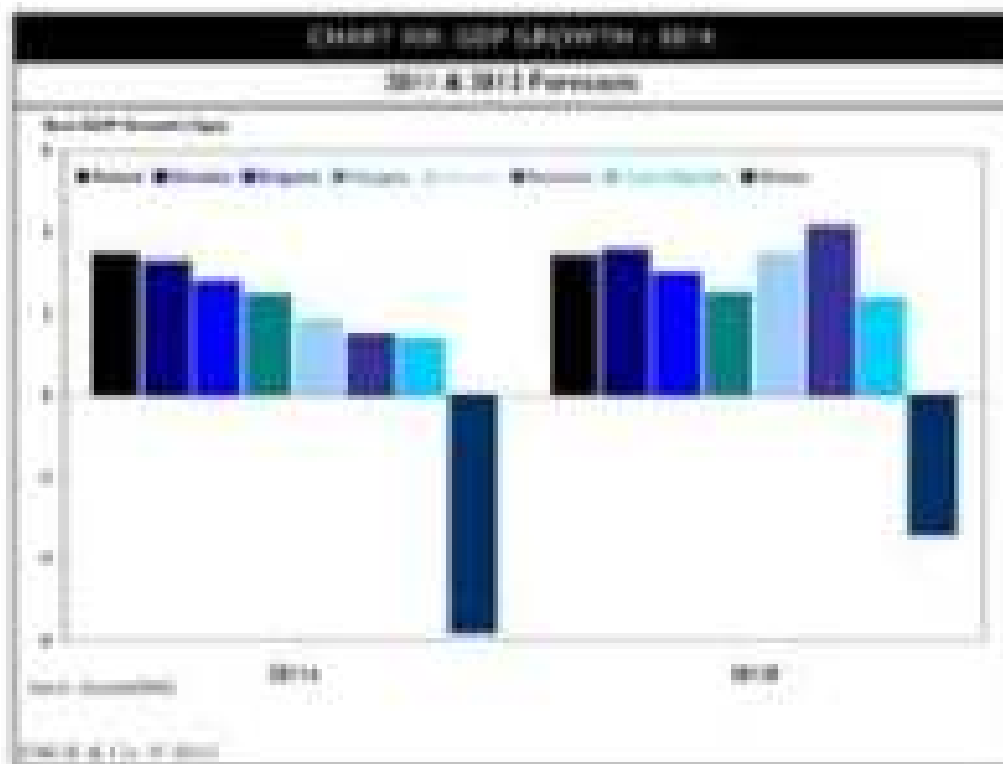
Finally, the outlook in the Books business is mixed. Overall sales of printed books are in many cases falling due to competition from e-books and e-readers like the Apple iPad and the Amazon Kindle. But much of the decline is in the paperback book business, which is more focused on Uncoated Mechanical Papers.

In the book segment that use Woodfree Papers, especially Coated Woodfree Sheets and Uncoated Woodfree Folds in the high-end book segment, e.g. art books, booklets, coffee table books, etc., we believe manufacturers are less of a threat, because they do not compete well in terms of displaying photographs and other pictures that can be a heavy focus of high-end books.

As such, we expect the outlook for high-end books may actually be no worse than stated in the segment, although their success depend on growing wealth/qualitative income, which is not as of good as the other ones.

### 3.3. Annual Eastern Europe Overview

Outlook remains, but still a growth region in long term



The Western Europe, most economic forecasters have downgraded their growth expectations for Eastern Europe this year, mainly due to troubles in the region's main export market. Western Europe (and Western Europe) general economic growth in Eastern Europe is still expected to be at a fairly respectable level (e.g. the Commerce Economic Forecast for Eastern Europe is for +4.4% growth this year, followed by around +3% next year, down from earlier forecasts of around +6% in 2012).

This resilience is due to a combination of fairly robust domestic consumption, together with continued strong income from commodities (Brent Crude Oil prices has been above US\$100/barrel for most of this year).

This is particularly true of Russia (which is not part of our EEurope 14 "region", but which is included as a separate brief section in this report), but also for some parts of the Eastern European economies that trade with Russia.

Many of the economies in our EEurope-14 group having quite healthy, with Poland leading the way amongst the larger markets, with GDP growth expected to be around +4% this year. However, the central and third-largest markets are being less well. The Czech Republic (2<sup>nd</sup> largest) is expected to grow by between +1% and +2% this year, but growth has slowed considerably, and the country is set for a slow recovery (the same applies to the 7<sup>th</sup> largest market, Slovenia). The 3<sup>rd</sup> largest market is by far the worst amongst in the region, as Greece is expected to see its economy decline by -1% or more this year, for well-publicised reasons, including deep government spending cuts. The rest three markets by paper consumption are all performing fairly well, with economic growth roughly in the +2% to +4% band in Hungary, Romania and Slovakia. The emerging economies are underpinning in the Baltic area (which is perhaps no surprise considering how badly these economies were hit during the Credit Crunch), but at only 1<sup>st</sup>, 10<sup>th</sup> and 11<sup>th</sup> largest in our EEurope-14 group, the overall influence of these markets is modest.

Short-term development aside, our long-term forecast for the EEurope-14 region is based on a steady recovery from the trough of the Credit Crunch, with the exception of Greece, where sustained economic growth is predicted to be some years away. For the EEurope-14 region as a whole, we are forecasting that GDP growth in 2013 will average +0.1% pa.

In terms of advertising expenditure, what is forecasting growth of better than +2% last this year and next in Russia, and Zarent Operations is forecasting that Russian growth in the coming few years will be strong enough to take it into the top 10 advertising markets of the world for 2013 (compared with 17<sup>th</sup> spot currently), while for Eastern Europe as a whole, Group 17 and Zarent Operations are forecasting growth either side of the +10% mark. Care should make prior forecasts for the region.

The outlook will for short-term demand for Coated and Uncoated Woodfree News, in particular.

The outlook for Coated paper, newsprint, Woodfree News includes growth in the office and service sectors in general in EEurope, despite high unemployment levels, which are expected to take some time to fall in the EEurope-14 region. In the largest EEurope-14 markets, unemployment appears to be fairly stable at 11-12% (ignoring seasonal fluctuations), but it is not yet showing any clear downward trend, except for in the Czech Republic, and that decline is narrowly gradual.

Woodfree paper demand in EEurope-14 has actually been very weak in 2011, with the Economic crisis in general and Greece in particular weighing down demand. Our updated demand forecasts for 2011 are +0.6% for CWP and +0.3% for UWF.

In the longer term, meanwhile, we are forecasting overall demand growth for both Coated (+4.8% pa average) and Uncoated Woodfree (+4.0% pa average), which includes the big

decline in 2011, based on relatively stronger future advertising expenditures and improving domestic economic conditions.

### Russia

Reports from EEurope14 in Russia state, growth is predicted to be stronger than the average for Eastern Europe as a whole, as Russia's economic situation remains fairly healthy. Despite a downgrade due to high inflation and the European crisis since our last forecast, GDP growth is nevertheless still forecast at +4% in 2011, the country has a budget surplus, and unemployment is on a clear downward path, falling from 8.4% in 2010 towards 6% now, which is a promising indicator for Uncoated Woodfree Coated demand. And WMI is expecting double digit growth in Russia magazine advertising in 2011 and 2012, which is also a positive indicator for Coated Woodfree paper demand. Adverts usually account for something less than half of a magazine's page costs but the expected healthy growth in the sector is nevertheless predicted to contribute to overall long-term growth in (paper) consumption.

Despite all of this, Russia's apparent demand has actually fallen in the CMT since this year, despite growth in demand for the magazine grade (as we would expect), this follows the general decline in CMT is due to printers using more CMT fibre than is made of CMT fibre to reduce costs. We also believe Coated demand has been sluggish, due to inventory reductions this year, following very strong growth in 2010. Taking into account the weak apparent demand in 2011 and the economic downgrade since our last report, we have updated our long-term demand growth forecasts for Russia to +4.0% for Coated Woodfree and +1.4% for Uncoated Woodfree.

## 1.4. Demand: Current

### Debt crises not fully solved yet – economies remain vulnerable

In recent weeks, markets have seemed not worried then previously about the prospects of European economies such as Greece and Italy defaulting on their debts. Furthermore, as reported, the price of euro zone appears to have peaked without more serious thought. Plans of the European Union has agreed to set up a financial stability pact, which is expected to include new financial regulations and bailout funds. It is hoped and expected that these measures will both ease existing worries and also prevent any future crises. In addition, some of the world's major central banks (eg. the US Federal Reserve, the European Central Bank, as well as the central banks of Japan, Switzerland and Canada) are ready to cooperate and assist for each other to borrow from each other. Furthermore, the European Central Bank has guaranteed low-cost loans to banks until 2012. The markets have reacted positively to these developments, and much of the previous panic seems to have disappeared.

This is all in line with our previous expectations and base forecasts, that the Eurozone problems would be resolved without spreading into a broader transatlantic crisis.

Despite the positive reaction, the problems actually remain unresolved so far, and how the markets will react to any concrete agreements remains to be seen. If they feel that the arrangements made by the new pact, if and when it becomes a reality, are not strong enough, the price of sovereign credit could easily deteriorate again. Another risk is rising. The politicians and central bankers have so far acted far too slowly to satisfy credit markets, so it is not impossible that credit markets could get jittery again. If agreements for concrete measures are delayed further.

However, the European economy is in a recession/lowdown, and it is not clear that economic growth will be strong enough to allow participating governments to reduce their debt levels, as their growth may be reduced income, as well as reduced spending.

So although Europe's governments appear to be using various, a sovereign default remains a possibility, and if one or more European economies did default, then it is highly possible that banks would stop lending again, causing a new Credit Crunch.

Furthermore, none of this takes account of the serious debt problems in the USA, or Japan, which will have to be addressed.

Many of the world's economic issues is an extremely complex puzzle.



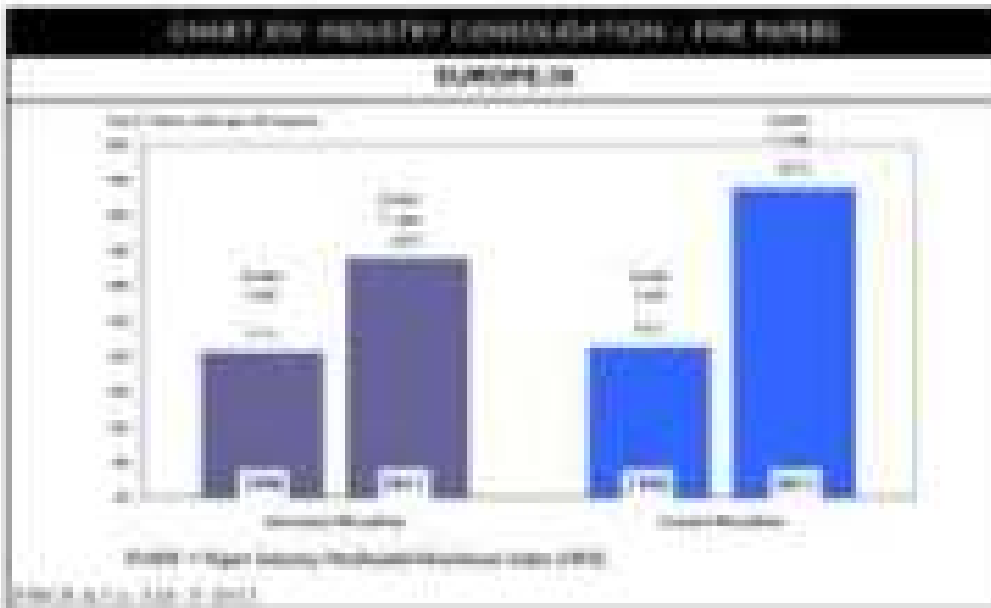
The problems of the 2008-2009 crisis have only been passed down the line, from banks to the governments that rescued them. It's still unclear who owns the difference that was in the countries and which, not just companies/banks. Moreover, these countries are the leading economies in the World - namely Europe, USA and Japan.

If these countries, for whatever reason, are unable to resolve their deep fundamental issues, a new Credit Crunch would occur. Especially if it arises from something unexpected, a new Credit Crunch on this basis could create a whole new level of crisis.

If that happened, we would expect an economic downturn affecting the whole World, on a scale previously unforeseen.

## 2. Consolidation and Capacity

### 2.1. Consolidation Trends, P/EBIT



Consolidation in the Wholesale industry in Europe has produced a capital share to EBIT of 25% in CAGR, while the LMF share is only 18%. The LMF sector has a fairly low P/EBIT ratio of 18% but the CAGR rate of the business remains quite consistent with a P/EBIT of 18%.

Historically, individually with an EBIT of less than 100 has been considered not highly consolidated, which obviously leaves scope for significant consolidation when the LMF sector

The situation is rather different in the CAGR sector, however, as any multiple size merger would push industry consolidation past the level that would attract the attention of competition authorities. However, the combination of LMF and Physical helped to break new ground in Europe, as it originally pushed the P/EBIT level way past the industry average. EBITs were over 200 in the Unconsolidated National sector and above 300 in Consolidated National. Even though capacity showed less than average share last year to 200 and 100.

We have calculated that any merger or acquisition involving any of the 3 Leading Suppliers of CAGR (Agas, LMF, Sars) from Europe would push the EBIT above 300, which may now be a possibility based on the example of Unconsolidated National. However, a merger between the larger producer, Agas, and another of the Top 3 would push the EBIT above 500, which we would expect to draw very close scrutiny from competition authorities.

### 3.2. Consolidation - Leading Companies

The following table highlights the revenues and earnings of Leading Suppliers in each sector in 2011 in table for the Top Ten Leading Suppliers is shown on page 25.

TABLE 3. THE LEADING COMPANIES WITHIN EACH COMPANY					
2011 Income (2011) expenses, Storage Both Sectors only					
Rank	Company	Revenue	Revenue	Revenue	TOTAL
<b>COAL AND PAPER</b>					
1	WALM	10.00	200		210
2	WALM	10.00	200		210
3	WALM	10.00	200		210
4	WALM	10.00	200		210
5	WALM	10.00	200	20	220
<b>Top 5 Companies</b>		<b>50.00</b>	<b>1000</b>		<b>1050</b>
<b>INDUSTRY TOTAL</b>		<b>50.00</b>			<b>1050</b>
<b>COAL AND PAPER (Cont)</b>					
1	WALM	10.00			110
2	WALM	10.00			110
3	WALM	10.00			110
4	WALM	10.00			110
5	WALM	10.00			110
<b>Top 5 Companies</b>		<b>50.00</b>			<b>550</b>
<b>INDUSTRY TOTAL</b>		<b>50.00</b>			<b>550</b>
<b>INDUSTRIES AND OTHERS</b>					
1	WALM	10.00	200		210
2	WALM	10.00	20	20	230
3	WALM	10.00	200		230
4	WALM	10.00	200		230
5	WALM	10.00	20	20	230
<b>Top 5 Companies</b>		<b>50.00</b>	<b>600</b>	<b>40</b>	<b>690</b>
<b>INDUSTRY TOTAL</b>		<b>50.00</b>	<b>600</b>	<b>40</b>	<b>690</b>

2011 Income (2011) expenses, Storage Both Sectors only

### 2.3. Cost-Site Loading Comparison

TABLE 2.3.1 COST-SITE LOADING COMPARISON				
Expense 2010 (2011 Amount)				
Item - Company	% Share of Total Exp.	EXPENSE CATEGORY		
		Personnel	Travel	OTHs
a. Airfare	10.0%	100	100	100
b. Hotel/Travel/Meals/Per Diem	10.0%	100		100
c. Telephone	17.0%	100		100
d. Car	10.0%	100	100	100
e. Other	11.0%	100		100
<b>Total Expenses</b>	<b>68%</b>	<b>500</b>		<b>600</b>
f. Airfare	3.0%	100		100
g. Telephone	3.0%	100		100
Travel/Meals/Per Diem	3.0%	100		100
<b>Total Expense</b>	<b>9%</b>	<b>300</b>		<b>300</b>
<b>Total</b>		<b>100%</b>		<b>100%</b>
<b>Personnel/Travel/OTHs (2011)</b>		<b>100%</b>		<b>100%</b>

*\*Personnel/Travel/OTHs average 20% of Expense Loading Category*

#### Note on the Herfindahl-Hirschman Index (HHI)

The HHI assesses the degree of market concentration that exists to how many participants are offering essentially the same or a similar product in a defined market. The index is now considered to be the most well-established and accepted measure of industry concentration. Essentially, the HHI is the sum of the squares of the market share of all players.

Generally, a HHI of over 1800 would have meant that an industry was Highly Concentrated, whereas below 1800 the industry would be described as Moderately Concentrated, or below 1000, Low-Concentrated.

In the past, a HHI of more than 1800 would have made further mergers/acquisitions difficult, although more data suggest the competition authorities may be prepared to consider deals that push the HHI above 2000 (as it currently is in the US-based Financial sector).

## 2.4. Capacity Projections, CFF - Storage details

Table 11. Capacity Forecast Changes, by MS, CFF								
- CO2-FREE WOODPRODUCT includes Lumber, Heat and Steam (Woodchips) and Pulpwood								
MS	2008	2011	2012	2013	2014	2015	2016	2017
	Cap	Change	Change	Change	Change	Change	Change	Cap
<b>EUROPE</b>	200							200
<b>AUSTRIA</b>	200							200
Capacity	200	200	200	200	200	200		200
Austria/Biopt	180							180
<b>BELGIUM</b>	200							200
Capacity	200	200	200	200	200	200		200
China (Asia)	0							0
<b>DENMARK</b>	0							0
Capacity	0	0	0	0	0	0		0
Finland/Bio	1000							1000
Finland/Biopt	200		200				200	
Latvia	400							400
<b>FINLAND</b>	1400		200				200	1600
Capacity	1400	1400	1600	1600	1600	1600		1600
Finland/Biopt	50							50
Spain/Pyrene	180							180
<b>FRANCE</b>	920							920
Capacity	920	920	920	920	920	920		920
Finland/Biopt	80							80
EUROPE	415		200				200	615
Finland	200		200				200	
Sweden	200		190				190	390
Finland/Biopt	50							50
<b>GERMANY</b>	2000		140				140	2140
Capacity	2000	2000	2140	2140	2140	2140		2140

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**CAPACITY FORECAST (continued) BY REGION - Q4 2011**

Continued									
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Year	Cap	Change	Change	Change	Change	Change	Change	Change	Cap
Europe/Poland	50								50
North Africa	20								20
China/Crossborder	20								20
<b>ITALY</b>	<b>100</b>								<b>100</b>
Continental	100	100	100	100	100	100			100
SOUTH Europe	50								50
<b>MEXICO</b>	<b>20</b>								<b>20</b>
Continental	20	20	20	20	20	20			20
Texas group (Latin)	40								40
<b>SPAIN</b>	<b>40</b>								<b>40</b>
Continental	40	40	40	40	40	40			40
Asian Paper			20					20	20
Yield paper	20								20
Physical Assets			5						
Capital	20		20					20	
<b>SWEDEN</b>	<b>20</b>		5					5	20
Continental	20	20	20	20	20	20			20
Japan	40	20	20					40	
<b>SWITZERLAND</b>	<b>40</b>	<b>20</b>	<b>20</b>					<b>40</b>	
Continental	40	20							
Texas	20								20
<b>USA</b>	<b>20</b>								<b>20</b>
Continental	20	20	20	20	20	20			20
Unreported Capacity					20	40	20		20
<b>TOTAL</b>	<b>670</b>	<b>210</b>	<b>50</b>		<b>20</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>770</b>
Continental	670	670	670	670	700	770			770

2011 & 2012 are in \$MM





CAPACITY FORECAST December 2011 - 2015 (000000)									
Continued									
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Year	Cap	Change	Change	Change	Change	Change	Change	Change	Cap
Foreign Office	100								100
Single Assets	100								100
Other	75	-25	-25					-25	0
<b>ITALY</b>	200	-25	-25					-25	100
Continued	200	0	0	0	0	0	0	0	200
Other	75								75
<b>MEXICO</b>	75								75
Continued	75	0	0	0	0	0	0	0	75
Partners & Related	0	0						0	0
Partners/Related	0								0
Other	75								75
<b>PORTUGAL</b>	1000	0						0	1000
Continued	1000	0	0	0	0	0	0	0	1000
Other	20								20
Partners/Related	0	0						0	0
Other	0								0
Other	0								0
Other	0								0
Other	0								0
Other	0								0
<b>SPAIN</b>	0	-25						-25	0
Continued	0	0	0	0	0	0	0	0	0
Other	0								0
Other	0								0
Other	0								0
Other	0								0
<b>SWEDEN</b>	1000								1000
Continued	1000	0	0	0	0	0	0	0	1000

2011-2012-2013-2014-2015



**Category: potential cumulative effects - with options**

	2010	2011	2012	2013	2014	2015	2016	2017
Value	Cap.	Change	Change	Change	Change	Change	Change	Cap.
<b>Latin Europe</b>	44	-25	-45				-45	25
Spain	35							35
<b>SWITZERLAND</b>	100	-25	-45				-45	25
Conservation	100	75	75	80	85	85		85
MP Sites								
Area/Project	35							35
Totals	40							40
<b>U.K.</b>	95							95
Conservation	95	95	95	95	95	95		95
MP Reserves	420							420
Marine Reserves	155							155
Area/Project	270							270
Black Edge (H.M.)				5	5	5		5
<b>EUROPE-14</b>	1345			5	5	5	45	1345
Conservation	1245	1245	1245	1250	1255	1255		1255
Unspecified Changes				-100	-100	-100	-100	-100
<b>TOTAL</b>	2740	-40	-445	-45	-145	-145	-100	2740
Conservation	2740	2690	2690	2690	2690	2690		2690

Table A.12 (of 2/2)

**2.6. Capacity Projections, CWT - Other Europe**

<b>Table 2. Capacity Projections, CWT - Other Europe - CWT</b>									
<b>OTHER EUROPE - CWT (BY MONTH)</b>									
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cap	Cap	Change	Change	Change	Change	Change	Change	Change	Cap
Contracted	40								40
Options	50								50
Yours (Orig & Reg'd)	40								40
<b>OVERHEAD</b>	<b>100</b>								<b>100</b>
Available	100	(60)	(100)	(100)	(100)	(100)	(100)	(100)	

## 2.2. Capacity Projections, ITWP - Other

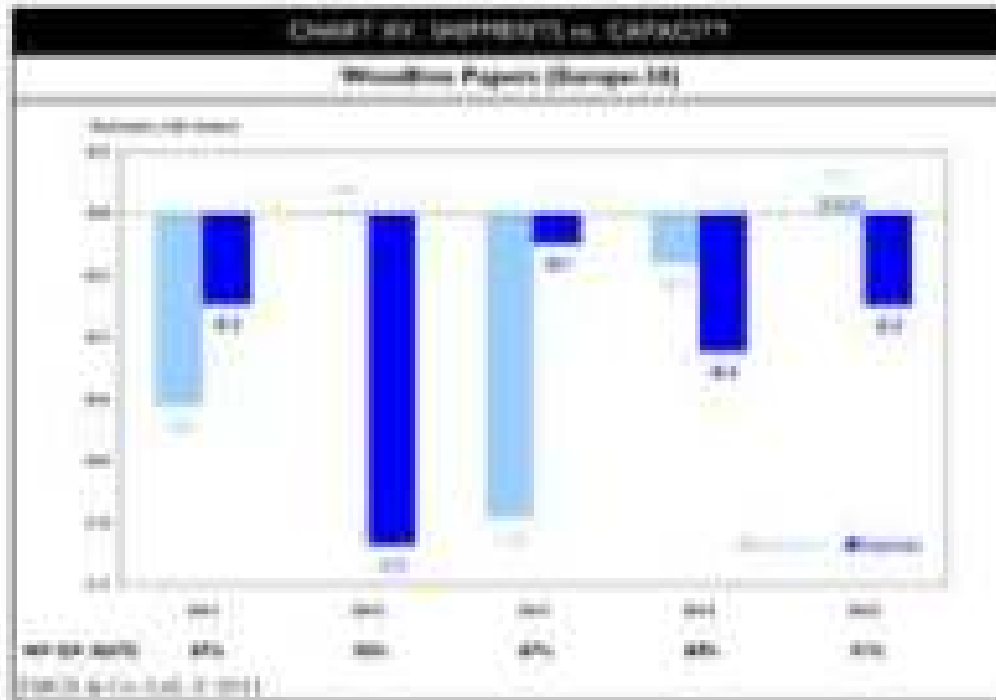
TABLE 2.2 CAPACITY PROJECTIONS, ITWP - OTHER									
OTHER COUNTRIES - UNCLASSIFIED WOODPINE									
Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Year	Cap.	Change	Change	Change	Change	Change	Change	Change	Cap.
<b>CZECH REPUBLIC</b>									
2009	0								0
2010	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0	0
2034	0	0	0	0	0	0	0	0	0
2035	0	0	0	0	0	0	0	0	0
2036	0	0	0	0	0	0	0	0	0
2037	0	0	0	0	0	0	0	0	0
2038	0	0	0	0	0	0	0	0	0
2039	0	0	0	0	0	0	0	0	0
2040	0	0	0	0	0	0	0	0	0
2041	0	0	0	0	0	0	0	0	0
2042	0	0	0	0	0	0	0	0	0
2043	0	0	0	0	0	0	0	0	0
2044	0	0	0	0	0	0	0	0	0
2045	0	0	0	0	0	0	0	0	0
2046	0	0	0	0	0	0	0	0	0
2047	0	0	0	0	0	0	0	0	0
2048	0	0	0	0	0	0	0	0	0
2049	0	0	0	0	0	0	0	0	0
2050	0	0	0	0	0	0	0	0	0
2051	0	0	0	0	0	0	0	0	0
2052	0	0	0	0	0	0	0	0	0
2053	0	0	0	0	0	0	0	0	0
2054	0	0	0	0	0	0	0	0	0
2055	0	0	0	0	0	0	0	0	0
2056	0	0	0	0	0	0	0	0	0
2057	0	0	0	0	0	0	0	0	0
2058	0	0	0	0	0	0	0	0	0
2059	0	0	0	0	0	0	0	0	0
2060	0	0	0	0	0	0	0	0	0
2061	0	0	0	0	0	0	0	0	0
2062	0	0	0	0	0	0	0	0	0
2063	0	0	0	0	0	0	0	0	0
2064	0	0	0	0	0	0	0	0	0
2065	0	0	0	0	0	0	0	0	0
2066	0	0	0	0	0	0	0	0	0
2067	0	0	0	0	0	0	0	0	0
2068	0	0	0	0	0	0	0	0	0
2069	0	0	0	0	0	0	0	0	0
2070	0	0	0	0	0	0	0	0	0
2071	0	0	0	0	0	0	0	0	0
2072	0	0	0	0	0	0	0	0	0
2073	0	0	0	0	0	0	0	0	0
2074	0	0	0	0	0	0	0	0	0
2075	0	0	0	0	0	0	0	0	0
2076	0	0	0	0	0	0	0	0	0
2077	0	0	0	0	0	0	0	0	0
2078	0	0	0	0	0	0	0	0	0
2079	0	0	0	0	0	0	0	0	0
2080	0	0	0	0	0	0	0	0	0
2081	0	0	0	0	0	0	0	0	0
2082	0	0	0	0	0	0	0	0	0
2083	0	0	0	0	0	0	0	0	0
2084	0	0	0	0	0	0	0	0	0
2085	0	0	0	0	0	0	0	0	0
2086	0	0	0	0	0	0	0	0	0
2087	0	0	0	0	0	0	0	0	0
2088	0	0	0	0	0	0	0	0	0
2089	0	0	0	0	0	0	0	0	0
2090	0	0	0	0	0	0	0	0	0
2091	0	0	0	0	0	0	0	0	0
2092	0	0	0	0	0	0	0	0	0
2093	0	0	0	0	0	0	0	0	0
2094	0	0	0	0	0	0	0	0	0
2095	0	0	0	0	0	0	0	0	0
2096	0	0	0	0	0	0	0	0	0
2097	0	0	0	0	0	0	0	0	0
2098	0	0	0	0	0	0	0	0	0
2099	0	0	0	0	0	0	0	0	0
2100	0	0	0	0	0	0	0	0	0

TABLE 2.2 (continued)





### 3. Demand-Supply Balance



The chart compares the total net imports (dark blue bars) against the total capacity (light blue bars) for Europe ME. Capacity is in million tonnes.

While demand is expected to fall by over 400,000 tonnes in 2011, while net capacity will only decline by around 50,000 tonnes. Operating Rates are forecast to fall on an average of 87% from an average of 89% in 2010.

However, there is considerable variation between Coated and Uncoated Woodfree sectors, with Uncoated Woodfree (87%) forecast to be more oversupplied this year than Coated Woodfree (89%), on a Europe ME basis. In line with this, delivery Lead Times have fallen sharply since peaking in 2010 (see page 47).

We expect the demand-supply balance to improve in 2012 however. While shipments are forecast to be more or less constant for the year as a whole, capacity of Coated and Uncoated Woodfree combined is expected to fall by around one million tons, due to additional closures announced since our last report. The continuation of these factors is predicted to lower Operating Rates from 87% to 85%. In 2012, Coated Woodfree are predicted to see quite a strong supply-demand balance, with Operating Rates averaging 94%, while over the Uncoated Woodfree sector is forecast to be balanced, with Operating Rates averaging 81%.

In the longer term, Europe is generally expected to be oversupplied, unless governments close more capacity than is currently planned.

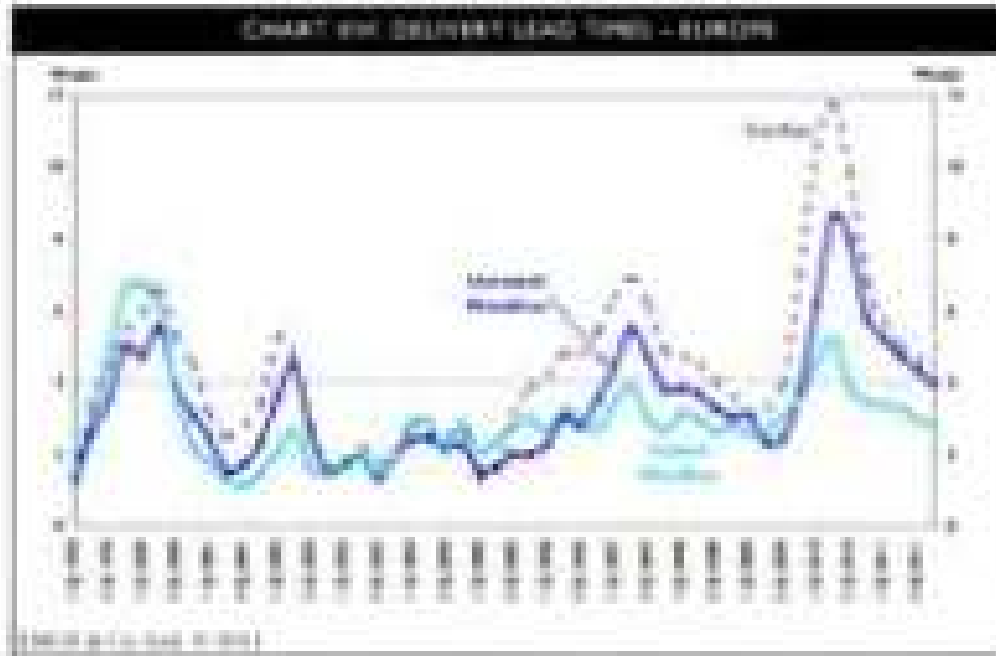
However, we do predict that additional capacity additions will take place in 2013 to 2015 (see page 175-176) which will help ease the oversupply situation.

These additional (unspecified) capacity measures that we are predicting result in what we call our **Forecast Capacity**, which is the basis for our Supply-Demand balance.

In this report, we are forecasting that Operating Ratios will fall to 85% for CWT in the near term. These (unspecified) capacity measures will help to lower these levels up to 87% in 2014 and 92% in 2015. In LWT, Operating Ratios are predicted to fall to 87% in 2013, and new capacity measures helping them to recover to 85% in 2014 and 92% in 2015.

However, if the industry does not make more measures that it is currently planning then we would expect Operating Ratios to fall with our **Base Capacity**, which in 2013 would only be 85% for CWT and 84% for LWT.

### 3.1. Delivery Lead Times



The above chart shows Delivery Lead Times in the Wholesale sector - Lead Times measure the delay between customer placing orders to the mill and receiving delivery.

Lead Times represent the lead between in Europe between demand and supply. But they can often describe a different picture compared to the headline industry Operating Rate due to global.

Historically, the French mill is seen as a specialized first pulp paper mill in a conventional position and means prices are fairly stable.

This has often been a good guide for Global Wholesale prices, which have been falling for some months, while Uncoated Wholesale prices actually moved to 50 below Lead Times for 8 weeks due to falling pulp prices and weak demand.

We expect Lead Times to remain strong until mid-2022, when sustained demand a closed capacity are expected to combine into a tighter supply situation. At the moment, Lead Times could increase even further, for a while in 2022, if cost and prices show signs of strengthening (e.g. progress increase ordering).

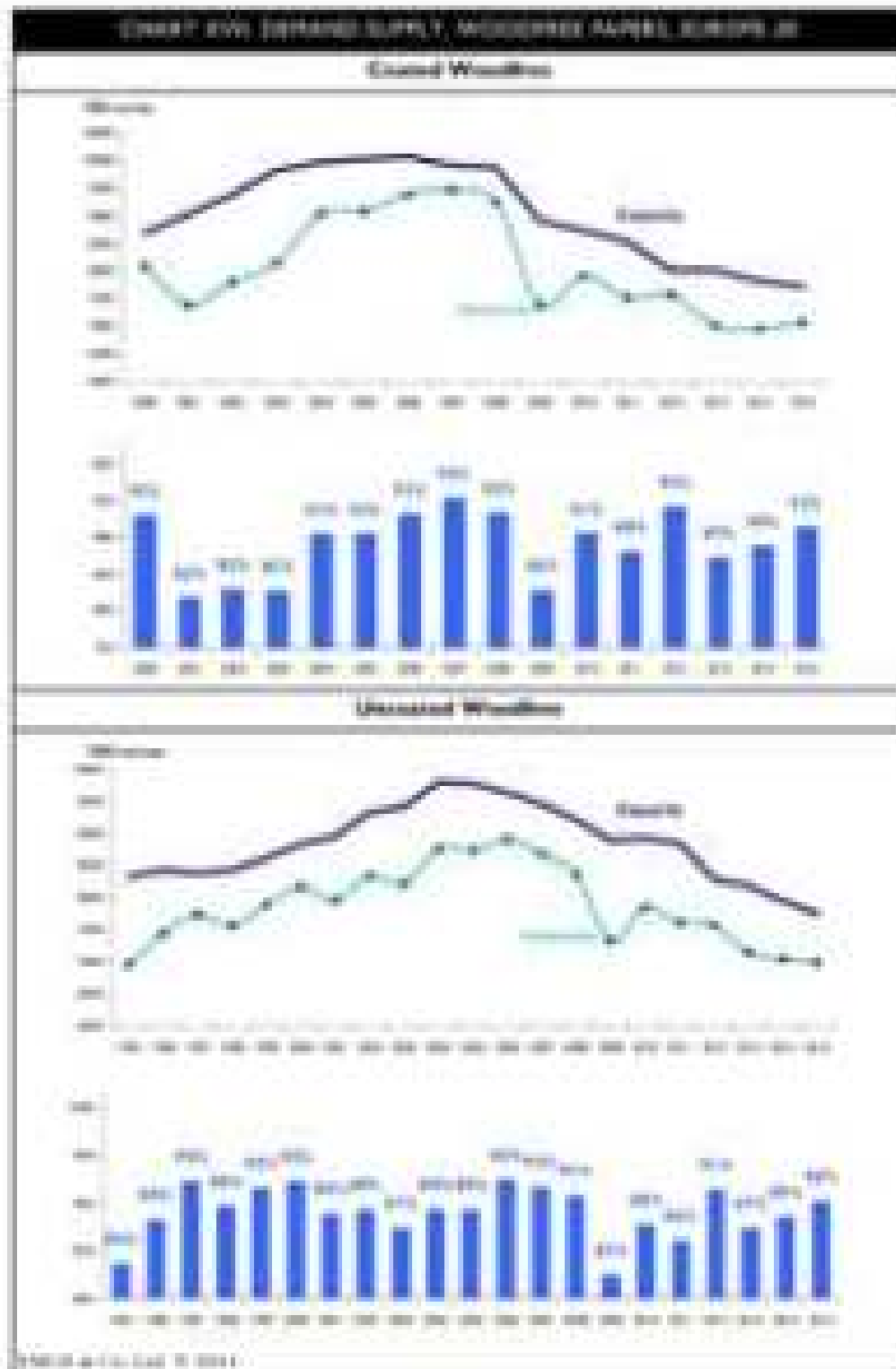
Current  
Forecast  
Historical  
Historical  
Historical



### 3.2. Demand-Supply Analysis

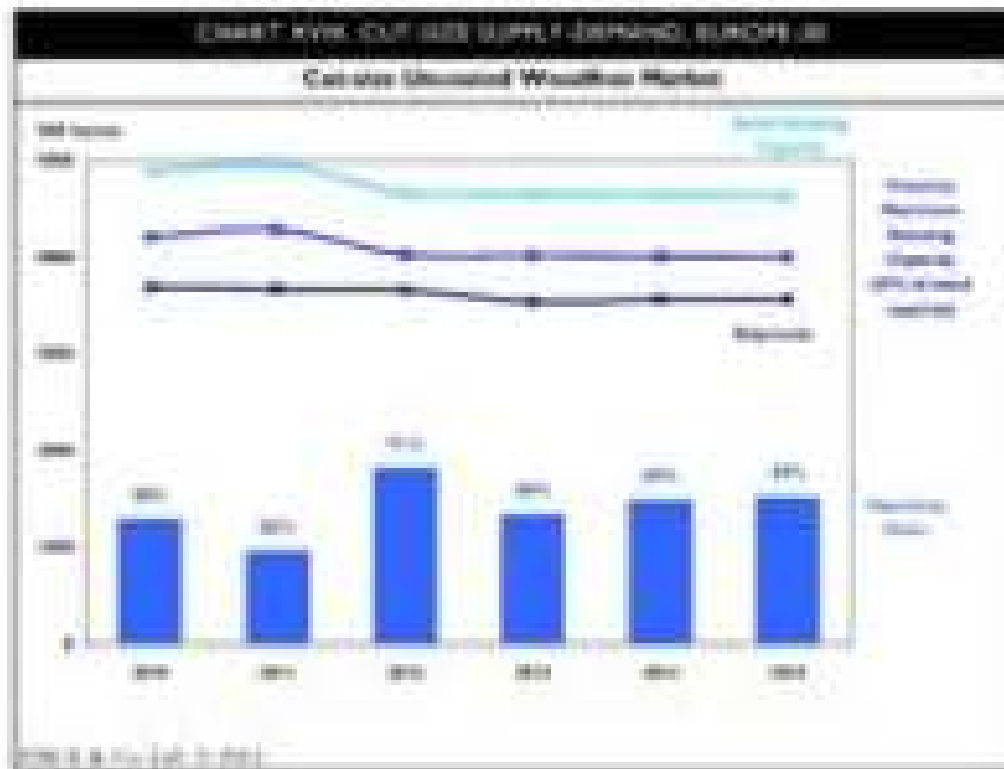
TABLE 3. DEMAND-SUPPLY DEFICIENCY						
Range 18						
MR Issues	2018	2019	2020	2021	2022	2023
<b>FOR THE WOODWORK:</b>						
Defence	100	100	100	100	100	100
Health	470	450	440	430	420	410
Gr. Govt	10	10	10	10	10	10
<b>FOR OTHER WOODWORK:</b>						
Defence	100	100	100	100	100	100
Health	470	450	440	430	420	410
Gr. Govt	10	10	10	10	10	10
<b>TOTAL WOODWORK</b>						
Defence	1100	1100	1100	1100	1100	1100
Health	1340	1300	1280	1270	1260	1250
Gr. Govt	20	20	20	20	20	20
<b>Range 19</b>						
<b>FOR THE WOODWORK:</b>						
Defence	100	100	100	100	100	100
Health	470	450	440	430	420	410
Gr. Govt	10	10	10	10	10	10
<b>FOR OTHER WOODWORK:</b>						
Defence	470	450	440	430	420	410
Health	100	100	100	100	100	100
Gr. Govt	10	10	10	10	10	10
<b>TOTAL WOODWORK</b>						
Defence	1100	1100	1100	1100	1100	1100
Health	1340	1300	1280	1270	1260	1250
Gr. Govt	20	20	20	20	20	20
<b>Range 18 (DWP only)</b>						
MR Issues	2018	2019	2020	2021	2022	2023
Defence	100	100	100	100	100	100
Health	120	120	120	120	120	120
Gr. Govt	20	20	20	20	20	20

2018/2019/2020/2021/2022/2023



Why? Operating Point being below and the surplus for hydrogen regime more often than positive, we adjust the supply demand balance to reflect realness accordingly for most of the forecast period to 2015, with the main exception of 2013.

### 3.3. Container Market – Demand Supply



**Table 17: CUP 425 MARKET EUROPE 20**

**Europe 20**

Year	Demand	Import	Export	Production	Capacity	Capacity Use Rate
2016	30	0	0	30	90	33%
2017	25	0	0	25	90	28%
2018	45	0	0	45	85	53%
2019	30	0	0	30	85	35%
2020	35	0	0	35	85	41%
2021	35	0	0	35	80	44%

Source: ENGE (2020)

## 4. Trade

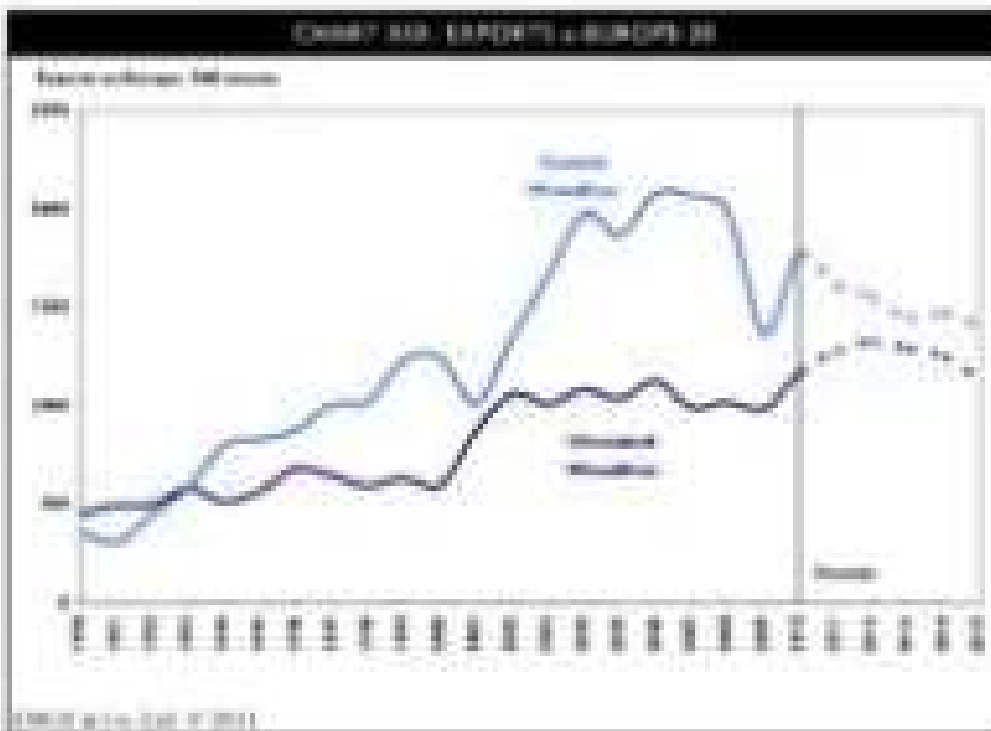
### 4.1. Trade Forecast

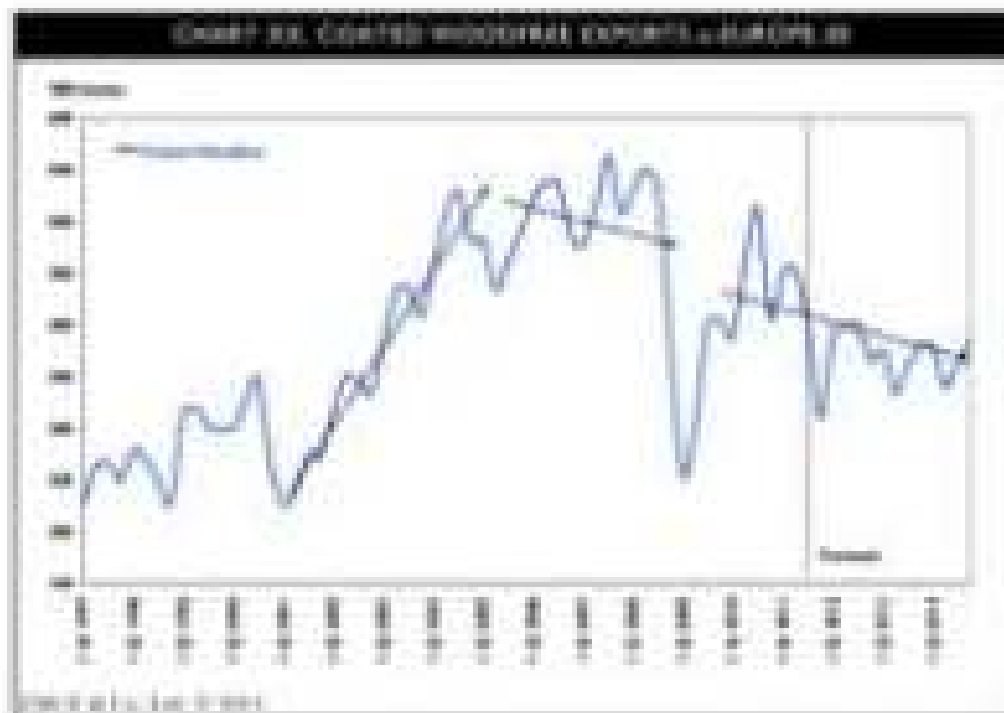
**TABLE 4. WOODPANEL EXPORTS FORECAST, EUROPE 2011**

**WOODPANEL PAPER, Europe 2011**

Year	EXPORTS		IMPORTS		NET EXPORTS	
	Export (Million)	Export (Million)	Import (Million)	Import (Million)	Export (Million)	Import (Million)
2009	1170	1162	100	611	1070	551
2010	1047	1071	100	600	947	671
2011	1000	1070	100	600	900	770
2012	1000	1090	100	670	900	840
2013	1070	1000	100	600	970	600
2014	1000	1100	100	611	900	699

Source: ENCI, based on ENCI

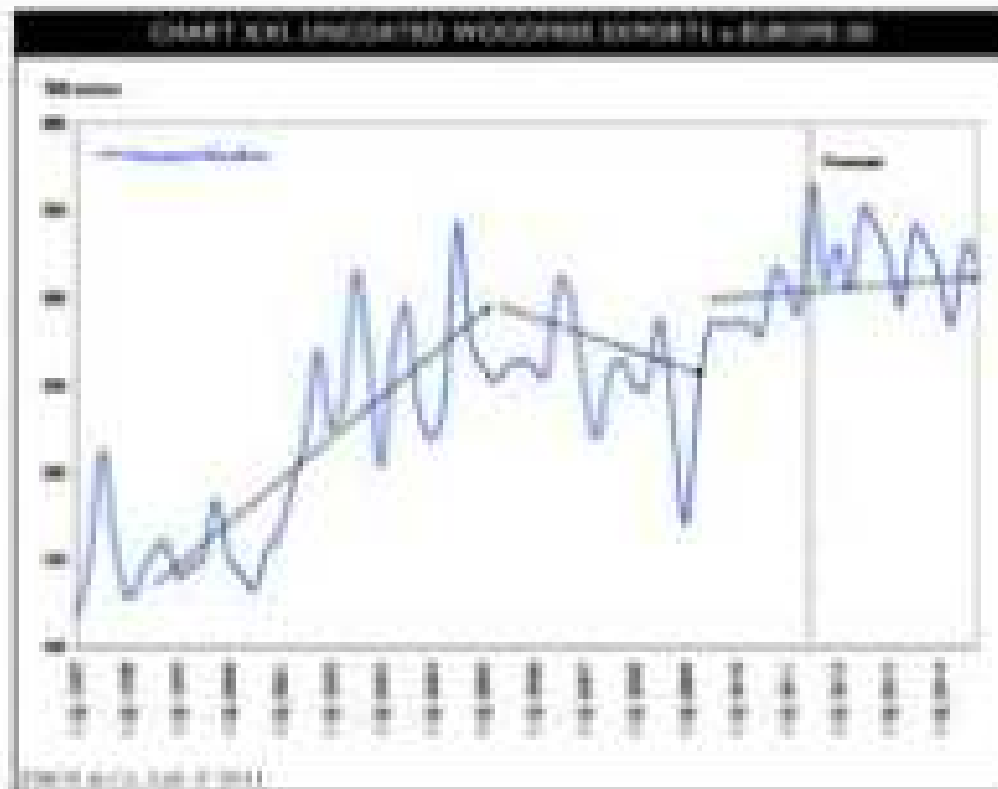




Although European mills will be helped somewhat in their efforts to export by the currency weak Euro, we are nevertheless forecasting more or less flat (Global Woodland) or declining (Global Woodland) exports in the long term. The difference between the forecasts for the two geographies due to several reasons:

Firstly, Global Woodland capacity has grown massively, especially in China, causing heavy overcapacity in the region where demand is expected to grow more strongly. And,

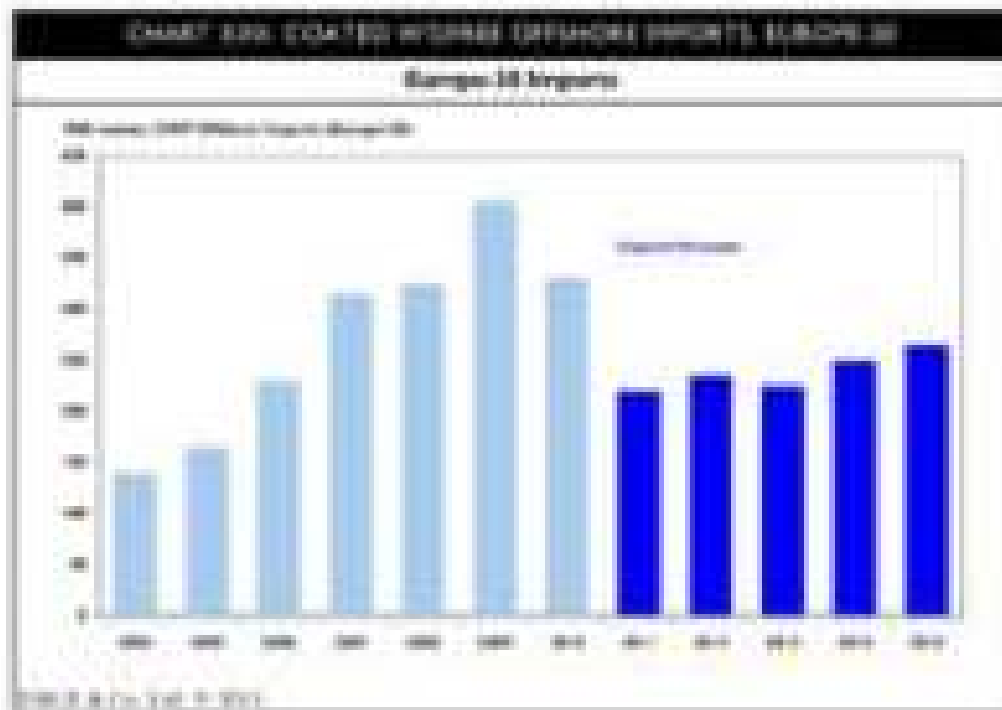
We expect Asian producers, especially those in China, to supply most of the growing demand in that region, not least because those mills have been discouraged by tariffs in the past year from exporting to North America and Europe. Although European mills have increased their exports to North America this year as a result, that is a declining market, so further export growth to North America is expected to be limited, at best. At the same time, the increased capacity available within Asia is predicted to leave European mills largely shut out from the most expanded export opportunities in Asia itself.



In the United Kingdom sector, growth in global capacity (and accordingly) is expected to be less strong than in Central Woodlands, as we are predicting slightly lesser export possibilities. In addition, Europe is forecast to have faster commodity price growth, going European with stronger impacts to exports than in the Central Woodland sector. As a result, we expect the volume and opportunities for European exporters to be slightly stronger in United Woodlands.

This should not be overestimated, however, as we are forecasting that growth in United Woodlands exports this year and next will be followed out by declines in the later parts of the forecast, partly due to falling global demand in 2013, and partly due to capacity increases in Europe reducing the urgency to export.

## 4.2. CIF Import Method



Europe's imports, meanwhile, are not expected to vary much following this year's decline as European demand is mostly forecast to be weak.

Against the background of a long-term rising trend of imports, the slight rise we have predicted for 2012, 2014 and 2015 are mainly due to imports into E-Europe-18 (during forecast growth years for E-Europe-18).

This applies to both *Classed* and *Unsorted Woodframes*.

### 4.3. Forecasted Hydrogen Imports



**Table 14. OFFSHORE IMPORT SOURCES - UNLOCATED HYDROGEN**

**EUROPEAN - OFFSHORE IMPORT SOURCES**

Offshore	West	North Sea	East/Pool	Other	TOTAL
2021	45	20	20	20	105
2022	45	20	20	20	105
2023	45	20	20	20	105
2024	45	20	20	20	105
2025	45	20	20	20	105
2026	45	20	20	20	105
2027	45	20	20	20	105
2028	45	20	20	20	105
2029	45	20	20	20	105
2030	45	20	20	20	105
2031	45	20	20	20	105
2032	45	20	20	20	105
2033	45	20	20	20	105
2034	45	20	20	20	105
2035	45	20	20	20	105

Source: ENGE, 2021

As shown in the chart and table above, European offshore imports of Unlocated Hydrogen have remained relatively stable overall.



### 3.4. UNF Report Details

The following tables show more detailed UNF report projections for European Windfarms.

**TABLE 26: UNF REPORT PROJECTIONS - UNF INVESTMENTS, EUROPE (M)**

EUROPE (M)						
Year	Green	Residual	Acquired	Residual	Other	Total
2010	270	0	0	0	0	270
2011	270	0	0	0	0	270
2012	270	0	0	0	0	270
2013	270	0	0	0	0	270
2014	270	0	0	0	0	270
2015	270	0	0	0	0	270
2016	270	0	0	0	0	270

UNF is a 100% owned subsidiary

**TABLE 27: UNF REPORT PROJECTIONS - UNF REVENUE, EUROPE (M)**

EUROPE (M)							
Year	Green	Residual	Acquired	Residual	Other	Total	Millions
2010	200	0	0	0	0	200	200
2011	210	0	0	0	0	210	210
2012	210	0	0	0	0	210	210
2013	220	0	0	0	0	220	220
2014	230	0	0	0	0	230	230
2015	240	0	0	0	0	240	240
2016	240	0	0	0	0	240	240

UNF is a 100% owned subsidiary

**TABLE 28: UNF REPORT PROJECTIONS - UNF REVENUE, EUROPE (M)**

EUROPE (M)						
Year	Green	Residual	Acquired	Residual	Other	Total
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0

UNF is a 100% owned subsidiary

Although some calls in Russia, Brazil and Asia may have generated arguments to increase efficiency rates into Europe, we expect increased efficiency imports to remain relatively stable in the coming years, due to overcapacity and competition among the leading European suppliers.

The LHV import forecast is not expected to vary by more than 100,000 tpa between the lowest and highest year, during the period to 2035.

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## 5. Paper Prices

Short Delivery Lead Times and falling hardwood pulp prices caused Woodfree Paper prices to fall in recent months, as we forecast in our last European Woodfree report.

Ordinarily, with demand still weak, lower pulp prices and Lead Times on a clear downward trend, we would expect further price declines in the very short term.

However, the Eurozone debt crisis has significantly undermined the value of the Euro, to the extent that pulp prices in Euros have crept up twice in the past four weeks (while falling in the other two weeks), at a time when prices in US dollars have been continuing to fall consistently.

Due to continued weak demand, overcapacity and high inventory levels at ports, among other factors, we are forecasting continued falls in the USD-based pulp price into the first quarter of next year. We do not forecast exchange rates, which means we are not forecasting any further drop in the value of the Euro, and therefore our forecast is for pulp prices to fall further also in Euro-based terms. In line with that, as well as falling Lead Times and demand, Woodfree price weakness has continued to the end of 2011.

However, big capacity cutbacks at the end of 2011, such as at the Norske and Lintas sites (assuming for a net reduction of ~4% in European CWT capacity), coupled with seasonally stronger shipments expected in the first quarter of next year, are predicted to boost Operating Rates in 2012. In addition, there are signs that the downturn in pulp prices may be coming to slow, and we expect Chinese buyers and speculators to play a key role in covering the pulp price decline early next year.

These factors are expected to allow Woodfree paper producers to hit the current drop in prices in Q1 2012. Following that, improving demand and confidence in the second and third quarters of 2012 are predicted to help producers keep edging prices up during much of 2012.

Further ahead, in line with our forecast of a very weak 2013, we are forecasting falling pulp and Woodfree paper prices throughout that year (and very probably into 2014, too, although that is not part of the forecast).

As far as pulp prices are concerned, we are predicting that (NBSK) prices will bottom out at Euro 600/t in Q1 2012, then creep again in 2012, before new declines in the forecast weak year of 2013. For more detail – see Pulp Price commentary on page 16.



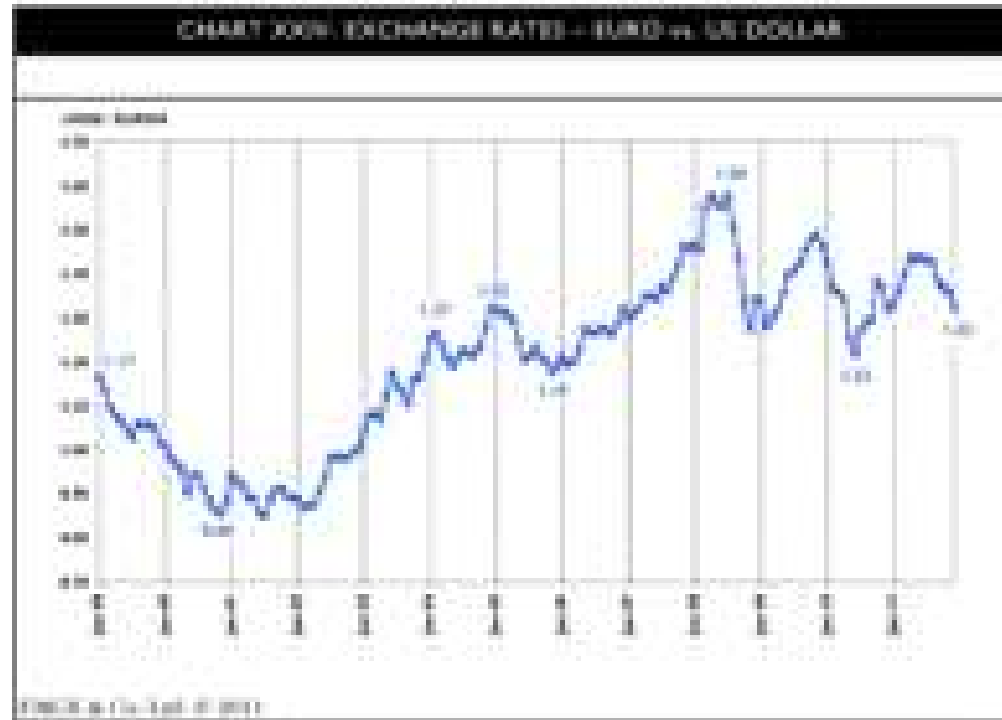
*EU Paper Price Forecast – UK*

This table shows the UK paper price forecast.

TABLE 24. PAPER AND PULP PRICE FORECAST – UK						
QRP Q4	UK					
	Pulp (\$/t)	Unbleached Woodfree			Bleached Woodfree	
		News	Other	Container (C)	News	Other
1 Q 2010	140	110	140	110	110	110
2 Q 2010	140	110	140	110	110	110
3 Q 2010	140	110	140	110	110	110
4 Q 2010	140	110	140	110	110	110
1 Q 2011	170	140	170	140	110	110
2 Q 2011	160	140	170	140	110	110
3 Q 2011	160	140	170	140	110	110
4 Q 2011	160	140	170	140	110	110
1 Q 2012	110	110	110	110	110	110
2 Q 2012	110	110	110	110	110	110
3 Q 2012	110	110	110	110	110	110
4 Q 2012	110	110	110	110	110	110
1 Q 2013	110	110	110	110	110	110
2 Q 2013	110	110	110	110	110	110
3 Q 2013	110	110	110	110	110	110
4 Q 2013	110	110	110	110	110	110
2014	110	110	110	110	110	110
2015	110	110	110	110	110	110
2016	110	110	110	110	110	110
2017	110	110	110	110	110	110
2018	110	110	110	110	110	110

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### 3.2. Exchange Rates



The paper price forecasts in this report are based on the exchange rates that are in force at the time of compiling the forecast – Euro/\$ 1.22.

Having continued to weaken in the past few months, the Euro is now back down to around the same level against the USD that it was a year ago, but remains below the Euro/\$ 1.22 level reached mid-2010.

The next table shows the progress of exchange rates in Europe vs. USD.

TABLE 25. EXCHANGE RATES					
	2006			2008	
	EUR/USD	USD/EUR		EUR/USD	USD/EUR
1 Q 1999	1.257	1.030	1 Q 2006	1.252	1.038
2 Q 1999	1.236	1.014	2 Q 2006	1.265	1.028
3 Q 1999	1.261	1.030	3 Q 2006	1.257	1.033
4 Q 1999	1.257	1.030	4 Q 2006	1.275	1.028
1 Q 1997	1.246	1.040	1 Q 2005	1.254	1.032
2 Q 1997	1.169	1.007	2 Q 2005	1.255	1.040
3 Q 1997	1.191	1.001	3 Q 2005	1.255	1.037
4 Q 1997	1.188	1.005	4 Q 2005	1.196	1.049
1 Q 1998	1.205	1.000	1 Q 2004	1.266	1.032
2 Q 1998	1.099	1.000	2 Q 2004	1.257	1.038
3 Q 1998	1.111	1.000	3 Q 2004	1.275	1.023
4 Q 1998	1.103	1.000	4 Q 2004	1.280	1.016
1 Q 1998	1.129	1.001	1 Q 2007	1.255	1.034
2 Q 1998	1.064	1.019	2 Q 2007	1.244	1.038
3 Q 1998	1.099	1.026	3 Q 2007	1.275	1.032
4 Q 1998	1.081	1.022	4 Q 2007	1.407	1.002
1 Q 2000	0.988	1.010	1 Q 2008	1.401	1.010
2 Q 2000	0.910	1.100	2 Q 2008	1.382	1.011
3 Q 2000	0.910	1.090	3 Q 2008	1.388	1.007
4 Q 2000	0.887	1.100	4 Q 2008	1.319	1.010
1 Q 2001	0.921	1.070	1 Q 2009	1.387	1.000
2 Q 2001	0.999	1.010	2 Q 2009	1.366	1.044
3 Q 2001	0.980	1.010	3 Q 2009	1.428	1.044
4 Q 2001	0.960	1.040	4 Q 2009	1.470	1.022
1 Q 2002	0.970	1.020	1 Q 2010	1.380	1.060
2 Q 2002	0.967	1.032	2 Q 2010	1.375	1.040
3 Q 2002	0.980	1.020	3 Q 2010	1.387	1.049
4 Q 2002	0.994	1.007	4 Q 2010	1.387	1.012
1 Q 2003	1.070	1.000	1 Q 2011	1.362	1.000
2 Q 2003	1.120	1.007	2 Q 2011	1.407	1.001
3 Q 2003	1.127	1.010	3 Q 2011	1.410	1.011
4 Q 2003	1.128	1.000	4 Q 2011	1.375	1.012

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The price does not vary based on the value of the flow or the rate of converting the amount.



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## 6. Pulp Price & Paper Margins

### 6.1. Market Pulp Prices

The following tables and charts update our pulp price and paper margin analysis.

TABLE 26. PULP PRICE FORECAST				
BMP & SBMP (CF West Europe)				
Current Prices	BMP (USD)	BMP (EUR)	BMP (USD €)	SBMP 1
1 Q 2010	600	540	610	740
2 Q 2010	740	670	740	880
3 Q 2010	760	690	770	900
4 Q 2010	710	640	720	850
1 Q 2011	700	630	710	840
2 Q 2011	740	670	750	880
3 Q 2011	740	670	750	880
4 Q 2011	800	730	810	940
1 Q 2012	810	740	820	950
2 Q 2012	830	760	840	970
3 Q 2012	830	760	840	970
4 Q 2012	870	800	880	1010
1 Q 2013	880	810	890	1020
2 Q 2013	940	870	950	1080
3 Q 2013	910	840	920	1050
4 Q 2013	940	870	950	1080
Annual Average				
2010	710	650	720	860
2011	740	670	750	880
2012	800	730	810	940
2013	870	800	880	1010
2014	940	870	950	1080

[Source: ENCI, ICF, ENI, © ENCI]



As forecast, Market Pulp prices have been falling again, and our current forecast shows pulp prices falling further to US\$810/t in Q1 2012, which is lower than our previous forecast, mainly due to a stronger US dollar. We do not expect prices to fall below this level, however, due to far higher costs than during the last downturn (in 2008, when all prices fell to around US\$400). The subsequent upturn in 2012 is forecast to be sparked by Chinese buyers, when they realise prices have stopped falling. This is then expected to lead into the forecast improvement in paper demand around mid-2012, keeping pulp prices on an upward trend for most of the year.

All of these inter-dependent factors are then expected to take a back seat in 2013, when the whole market cycle (pulp, paper, energy, wood, the general economy) is predicted to turn down, with prices falling to US\$700/t by the end of 2013.

CHART XVII PULP TO PAPER PRICE RATIO - EUROPE

BLEP / COATED WOODPULP (Pulp)

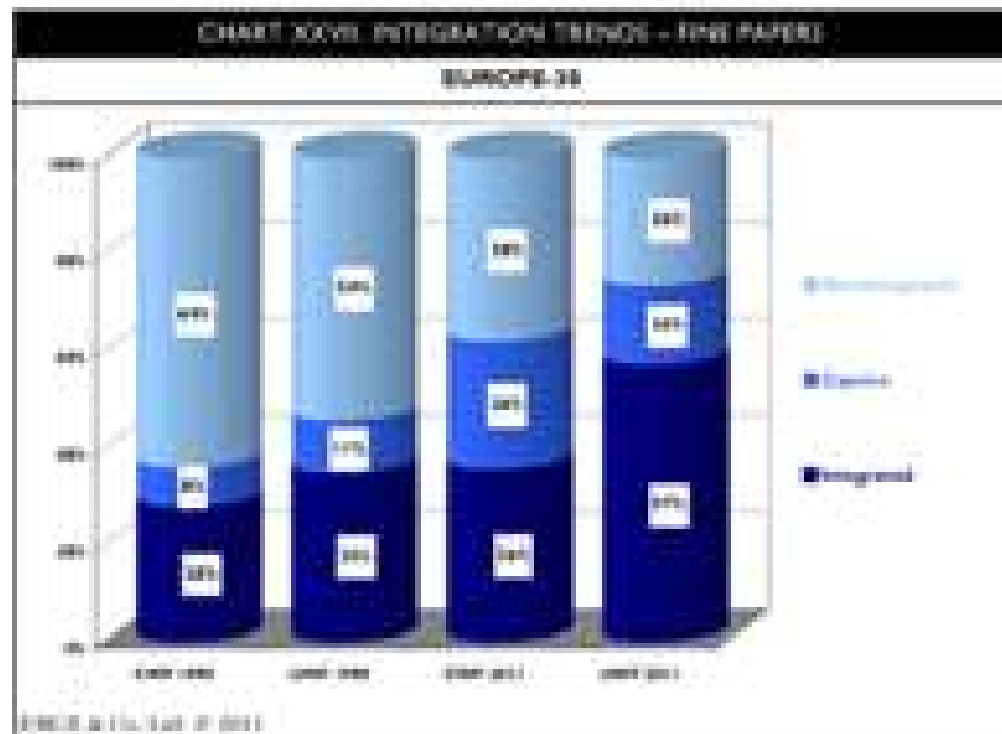


BLEP / UNCOATED WOODPULP (Pulp)



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## 6.2. Integration



The rate of integration in the Europe-28 Woodfree sector is summarised in the chart above.

The share of non-integrated paper production has fallen from 50% in 1990 to 32% in 2011 in the **Coated Woodfree** sector, which demonstrates that, in the Coated Woodfree sector, there has been a significant switch from a heavy reliance on market pulp to much more captive pulp supplies since 1990, as well as an increase in the share of integrated production. Yet, still, only 34% of the European Coated Woodfree paper capacity is fully integrated (in-line) with chemical pulp, leaving a large proportion of the sector relatively vulnerable to fluctuations in the Open Market Pulp price.

**Uncoated Woodfree** mills have also had a big increase in captive pulp use, and even more of a switch to paper production based on mill-integrated pulp supply (reaching 38% of capacity in 2011). In the European Uncoated Woodfree sector only 34% of capacity is independently based on market pulp, compared to 54% in 1990. Integrated and Captive Capacity together account for 74% of European Uncoated Woodfree capacity today, which makes this sector less directly affected by movements in Market Pulp prices.

### 6.3. Paper-Makers' Converting Margins



The above chart compares, for integrated and non-integrated mills respectively, the Converting Margins (i.e. the difference between the price of paper and the cost of pulp) for Coated Woodfree paper producers, over the last few years.

Despite Woodfree paper prices falling since our last report, converting margins for non-integrated paper mills have actually improved slightly, because pulp prices have been falling faster. Non-integrated converting margins, despite the slight improvement, are still quite low, however, suggesting that paper prices will not fall much further unless pulp prices do the same.

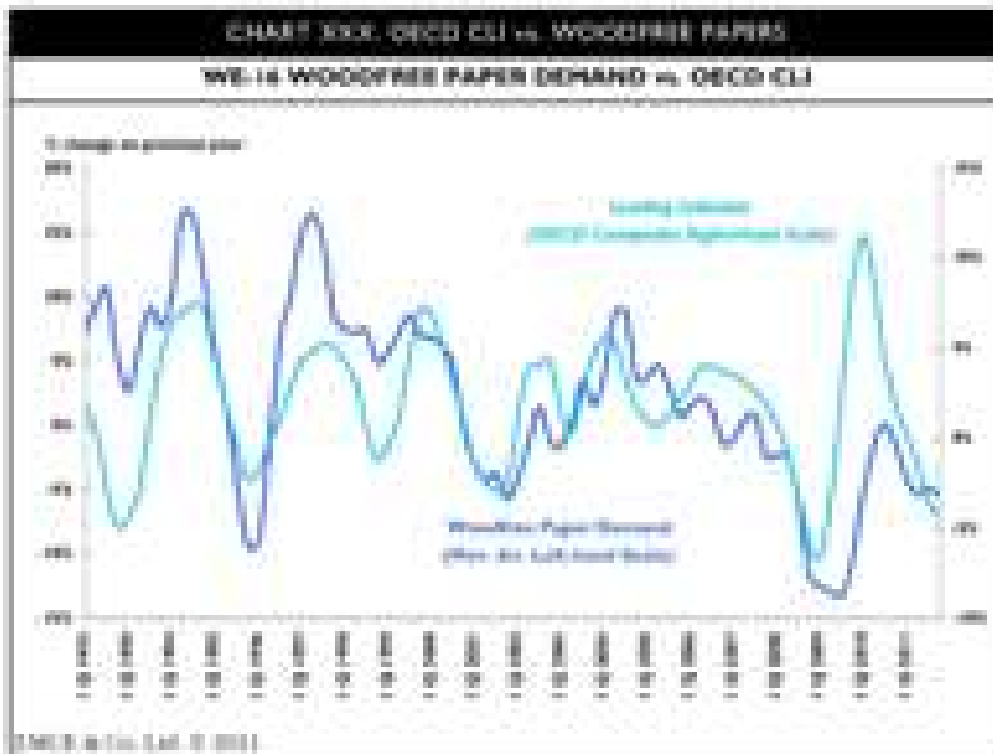


The above chart compares, for integrated and non-integrated mills respectively, the Converting Margins (i.e. the difference between the price of paper and the costs of pulp) for Uncoated Woodfree Cut-Size paper producers, over recent years.

Converting margins remain low for non-integrated paper mills that purchase Market Pulp, despite a slight improvement in recent months.

However, integrated mills have gained a definite advantage over their non-integrated rivals, during the 2010-2011 period.

# Appendix 1 : Market Indicators



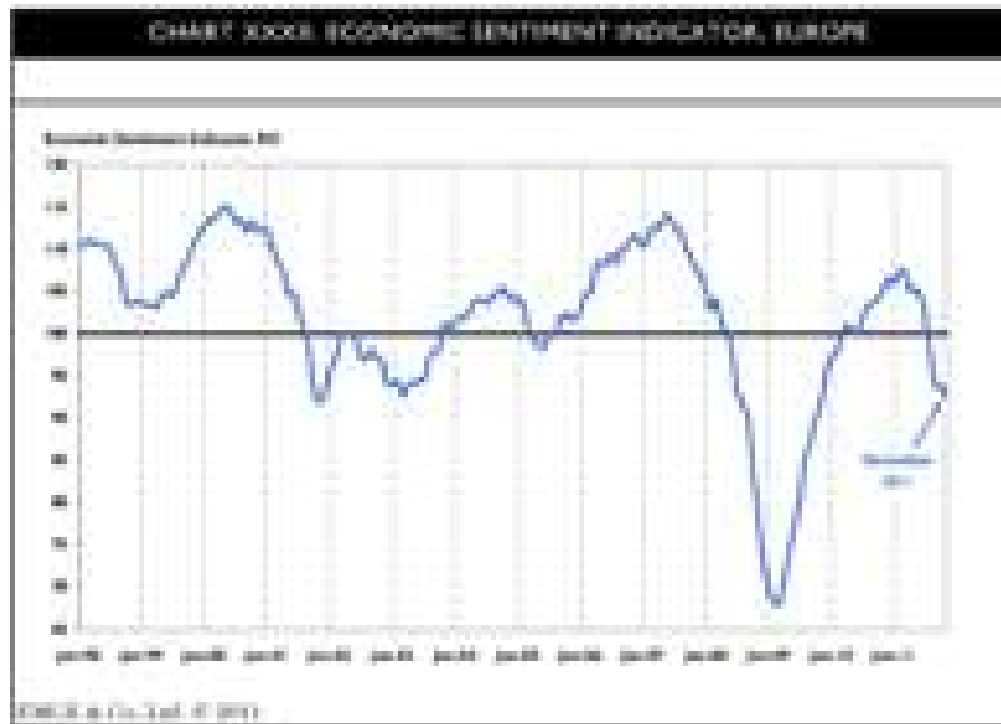
The chart compares the OECD Paper Demand against the OECD Composite Leading Indicator. Leading Indicator Index shows a similar correlation of the growth cycle.



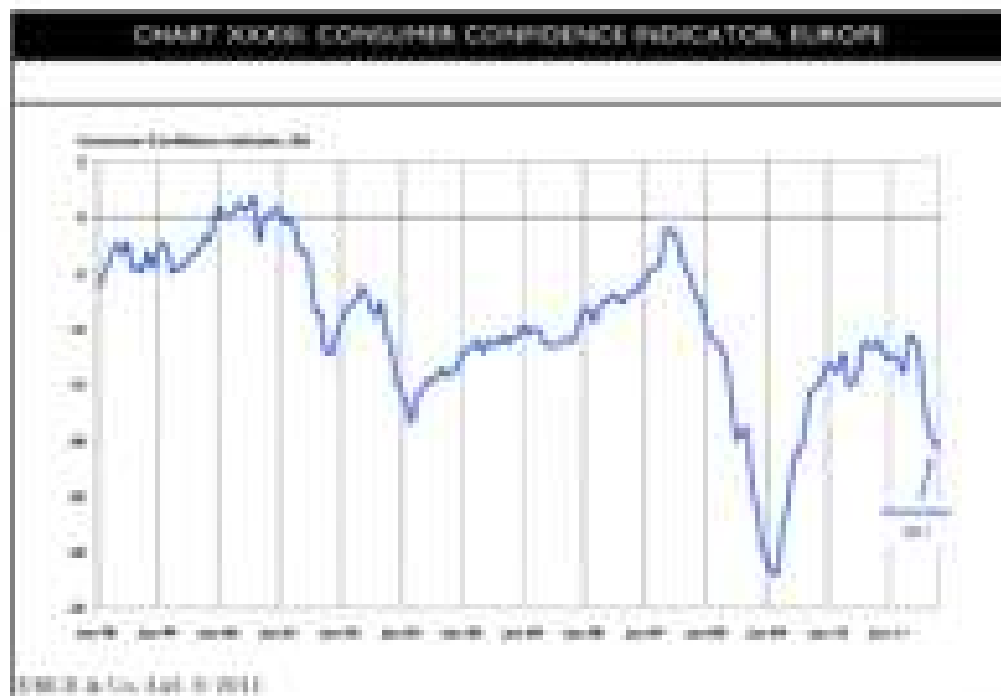
In Europe, the OECD composite leading indicator has continued to be downward sloping and is not likely to register recovery.

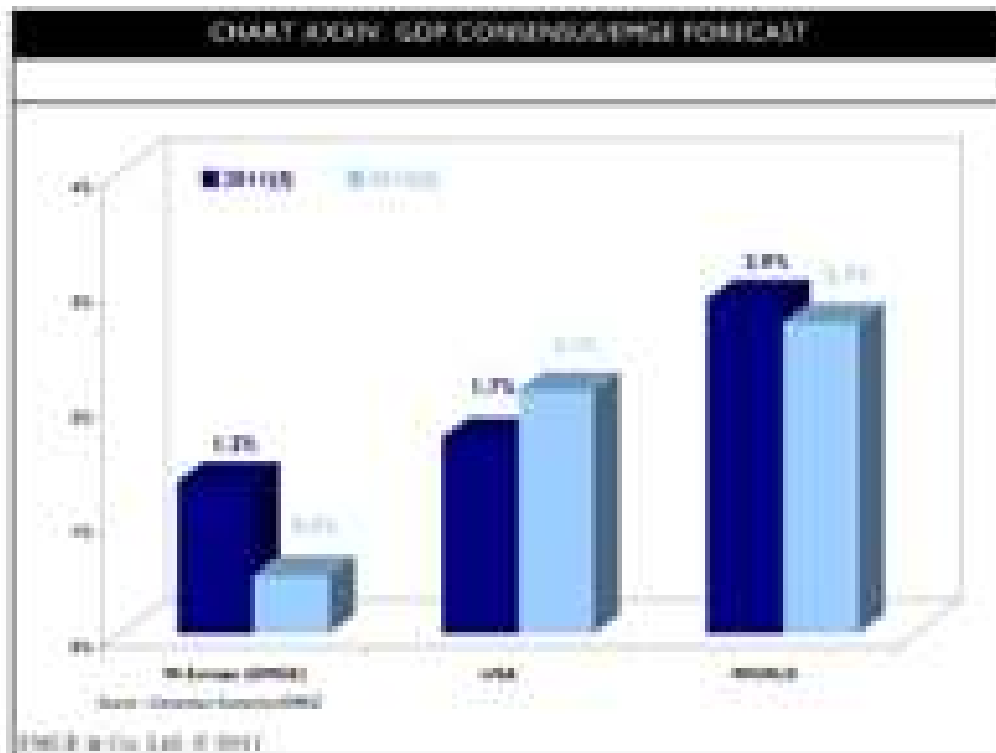


Annual Economic Sentiment in Europe has been volatile since 2007, with a sharp decline in 2009 and a recovery in 2010. The indicator is currently near its long-term average.



The annual Consumer Confidence Indicator in Europe has been volatile since 2007, with a sharp decline in 2009 and a recovery in 2010. The indicator is currently near its long-term average.





The consensus forecast for 2012 shows that growth is generally expected to remain modest, although Europe's 2012 forecast has improved.



Share prices have fluctuated and volatility increased but appear to be particularly low following the crisis.

Reserve increased to cover  
 depreciation rates in the  
 European Union (see below)  
 and because rates are now  
 being paid upwards for the  
 first time since they  
 collapsed in the US and the  
 UK.



Both curves being more volatile  
 than their respective forward  
 curves the present time  
 monetary policy

Both curves have continued to  
 become more volatile, with  
 volatility a direct result  
 tighter monetary policy



## Appendix 2 : Demand Forecast Grade/Region

The tables in the Appendix show detailed forecasts for GDP and Paper Demand Trends, Paper Demand by Grade for Current and Uncovered Woodfree and Grade and regional demand predictions.

These tables supplement those in the main report.

## A2.1 Trends

### A2.1.1 GDP and Paper Demand, Europe-30

TABLE 17. TRENDS – GDP & PAPER DEMAND, EUROPE-30						
Europe-30						
	GDP		Coated W/Sheet		Uncoated W/Sheet	
	Index (1990=100)	Growth	Demand (1000t)	Growth	Demand (1000t)	Growth
1990	100	1.7%	439	-1.0%	6762	-1.7%
1991	100	1.7%	447	-1.0%	6861	1.5%
1992	110	1.0%	459	-1.0%	7027	1.7%
1993	110	1.0%	469	1.0%	7091	1.0%
1994	119	0.8%	483	0.8%	7069	-1.4%
1995	121	1.7%	499	1.0%	6923	-1.0%
1996	120	1.8%	479	-1.8%	6810	-1.6%
1997	127	1.7%	488	1.0%	6846	0.2%
1998	128	1.0%	499	1.0%	6811	-0.4%
1999	130	1.5%	509	0.5%	6863	0.8%
2000	134	0.8%	528	1.7%	6837	-0.4%
2001	138	0.7%	537	1.7%	6838	-0.0%
2002	142	1.1%	553	1.0%	6821	-0.2%
2003	145	0.0%	566	-1.0%	6847	-0.4%
2004	137	-0.8%	611	-0.2%	6766	-0.7%
2005	138	1.8%	648	0.8%	7048	0.4%
2006	141	1.0%	655	-0.4%	6933	-1.6%
2007	142	0.0%	639	-1.0%	6897	-1.0%
2008	144	1.0%	676	-1.4%	6830	-0.9%
2009	146	0.8%	676	-0.0%	6793	-0.5%
2010	148	1.4%	686	1.0%	6876	1.2%
Aug. 2011 (F)	149 (F)	0.7%	686 (F)	0.0%	6876 (F)	0.0%

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The above table shows the historical and forecast development of GDP and the Coated and Uncoated Woodfree paper markets for the Europe-30 region.

### A.3.1.2 GDP and Paper Demand, Europe-16

TABLE 38. TRENDS - GDP & PAPER DEMAND, W-EUROPE-16						
West Europe-16						
	GDP		Coated W/Paper		Unco. W/Paper	
	Index (1990=100)	Growth	Demand (000s)	Growth	Demand (000s)	Growth
1992	100	0.0%	1040	0.0%	4100	-0.0%
1993	100	1.7%	1031	11.0%	4070	0.0%
1994	110	0.4%	1022	10.1%	4050	0.1%
1995	114	0.3%	1013	7.0%	4030	0.0%
1996	119	0.0%	1005	6.0%	4000	0.0%
1997	124	0.1%	997	0.1%	3970	0.0%
1998	124	1.7%	989	-0.2%	3940	-0.0%
1999	127	1.0%	981	0.0%	3910	-0.0%
2000	128	1.1%	973	0.7%	3880	-0.1%
2001	131	0.0%	965	0.7%	3850	0.0%
2002	133	1.0%	957	0.0%	3820	-0.1%
2003	137	0.1%	949	0.0%	3790	-0.1%
2004	141	0.0%	941	0.7%	3760	-0.0%
2005	147	0.1%	933	-0.1%	3730	-0.1%
2006	152	0.1%	925	-0.1%	3700	-0.1%
2007	157	0.0%	917	-0.1%	3670	-0.1%
2008	162	0.0%	909	-0.1%	3640	-0.1%
2009	166	-0.1%	901	-0.0%	3610	-0.0%
2010	168	0.0%	893	0.0%	3580	-0.0%
2011	169	1.0%	885	-0.1%	3550	-0.0%
2012	171	0.0%	877	0.0%	3520	-0.0%
2013	173	1.1%	869	-0.1%	3490	-0.1%
2014	175	1.0%	861	-0.1%	3460	-0.0%
2015	176	0.0%	853	0.0%	3430	0.0%
Av. 2010-15		+0.0%		-0.0%		-0.0%

The above table shows similar data for W-Europe-16, where the demand trend for Woodfree papers is slightly more negative than for Europe-32, as the forecast for W-Europe-16 is not boosted by the better outlook in E-Europe-14.

### A3.1.3 GDP and Paper Demand, Europe 14

TABLE 29. TRENDS - GDP & PAPER DEMAND, EUROPE 14

E. Europe 14						
	GDP		Coated W/Paper		Unco. W/Paper	
	Index (1990=100)	Growth	Demand (Bbil)	Growth	Demand (Bbil)	Growth
1990	100	-	234	-	167	-
1991	101	1.0%	243	3.8%	167	0.0%
1992	101	0.0%	243	0.0%	167	0.0%
1993	102	1.0%	247	1.7%	166	-0.6%
1994	110	7.8%	251	1.6%	168	1.2%
1995	110	0.0%	250	-0.4%	169	0.6%
1996	110	0.0%	250	0.0%	170	0.6%
1997	112	1.8%	257	2.8%	170	0.0%
1998	117	4.5%	260	1.2%	170	0.0%
1999	114	-2.6%	257	-1.2%	169	-0.6%
2000	110	-3.5%	243	-5.1%	163	-3.6%
2001	108	-1.8%	237	-2.5%	159	-2.5%
2002	107	-1.0%	237	0.0%	158	-0.6%
2003	104	-3.0%	227	-4.2%	150	-5.1%
2004	102	-1.9%	213	-6.2%	147	-1.9%
2005	102	0.0%	217	1.9%	143	-2.7%
2006	104	1.9%	227	4.6%	144	0.7%
2007	114	9.6%	243	7.5%	156	8.3%
2008	112	-1.7%	233	-4.1%	157	0.6%
2009	106	-5.4%	201	-13.3%	144	-8.3%
2010	107	0.9%	220	9.5%	149	3.5%
2011	108	0.9%	223	1.4%	149	0.0%
2012	107	-0.9%	217	-2.7%	147	-1.3%
2013	107	0.0%	218	0.5%	147	0.0%
2014	107	0.0%	218	0.0%	147	0.0%
2015	114	6.5%	230	5.5%	153	4.1%
Avg. 2006-15	1.1 Ppts		-0.8 Ppts		1.0 Ppts	

EMGE, 2015, based on Eurostat

The above table shows similar data for E-Europe-14. As mentioned earlier, the demand outlook for E-Europe-14 is more positive than for W-Europe-14.

## A2.2 Grade Demand Forecasts

The following tables and charts provide our grade demand forecasts for Europe to 2015.

TABLE 26. GRADE DEMAND OUTLOOK							
Europe-26							
'000 tonnes	2010	2011	2012	2013	2014	2015	2016-18
OSB A&B	1920	1920	1920	1780	1780	1600	-8.9%
OSB C&D	4330	4330	4330	4000	3900	4000	-1.1%
MSD A&B	2110	1970	1990	1760	1760	1700	-1.9%
MSD C&D	1030	1100	1080	1000	1000	1100	-0.9%
MSD E&F	2780	2820	2820	2880	2410	2500	-1.1%
W. Europe-18							
'000 tonnes	2010	2011	2012	2013	2014	2015	2016-18
OSB A&B	1810	1700	1660	1630	1460	1700	-1.8%
OSB C&D	4000	4000	4000	3330	3400	3400	-1.1%
MSD A&B	1840	1700	1670	1320	1440	1400	-1.1%
MSD C&D	1040	1100	1100	1000	1000	900	-1.1%
MSD E&F	2300	2300	2300	2400	2100	2300	-1.1%
E. Europe-14							
'000 tonnes	2010	2011	2012	2013	2014	2015	2016-18
OSB A&B	100	100	110	110	100	100	1.0%
OSB C&D	300	400	500	400	500	600	0.8%
MSD A&B	270	300	300	340	300	300	-1.1%
MSD C&D	270	300	340	340	300	300	-1.1%
MSD E&F	400	400	470	480	500	500	1.1%

EMGE 2011-2012-2013-2014-2015



TABLE 3. GRADE DEMAND FORECAST - CWF, EUROPE, M

Europe-28			
Year	Boards	Shaves	Total CWF
2010	1933	433	2366
2011	1833	413	2246
2012	1933	413	2346
2013	1783	403	2186
2014	1783	393	2176
2015	1833	403	2236
Annual growth % c/a			
2011	-5.2%	-4.6%	-4.4%
2012	5.2%	4.6%	3.8%
2013	-8.2%	-5.6%	-7.4%
2014	8.2%	-4.6%	-4.7%
2015	2.7%	2.5%	2.6%
2015 (if Spec)	-4.4%	-4.7%	-4.7%

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TABLE 11. GRAIN DEMAND FORECAST - CONT. W. EUROPE 18

W. Europe 18			
Year	Roofs	Sheds	Total CWP
2010	1410	4000	5400
2011	1700	3300	5000
2012	1800	3300	5100
2013	1400	3000	4400
2014	1440	3400	4800
2015	1700	3300	5000
Annual growth %			
2011	2.0%	-1.5%	-0.5%
2012	4.0%	-1.5%	1.0%
2013	-1.0%	-1.5%	-0.5%
2014	0.5%	1.5%	0.5%
2015	3.0%	0.0%	1.0%
2010-17 Avg	-1.0%	-1.1%	-0.8%

Source: ENR, ENR, ENR, ENR

TABLE IX. GRADE DEMAND FORECAST – OVER 6 MONTHS 14'

E. Europe-14'			
Year	Boards	Sheets	Total (MM)
2011	120	300	420
2012	100	280	380
2013	110	300	410
2014	110	290	400
2015	120	300	420
2016	130	320	450
Annual growth % to			
2011	-11.0%	-1.0%	-4.0%
2012	0.0%	0.0%	1.4%
2013	0.0%	-1.0%	-4.0%
2014	1.0%	0.0%	1.0%
2015	0.0%	0.0%	0.0%
2016 (14' Spec)	1.4%	0.0%	0.0%

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TABLE 14. GRADE DEMAND FORECAST – UPM, EUROPE-30

Europe-30				
'000 t	Soft	Hard	Chem	Total
2010	2110	1130	2701	5940
2011	1980	1020	2630	5630
2012	1980	1100	2630	5690
2013	1760	1100	2600	5460
2014	1750	1060	2600	5410
2015	1720	1030	2600	5350
Annual growth % (pt)				
2011	-6.2%	-9.7%	-2.6%	-5.0%
2012	-6.2%	8.9%	2.7%	-1.7%
2013	-7.4%	-9.1%	-1.2%	-4.6%
2014	-1.2%	-3.7%	-1.2%	-2.7%
2015	-1.2%	-3.5%	-1.9%	-3.2%
2016 (E' type)	-0.6%	-4.8%	-1.7%	-3.2%

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TABLE 26. GRADE DEMAND FORECAST – UMEF, IN EUROPE (k)

Year	W. Europe (k)			
	Beak	Pole	Circle	Total
2010	104	120	110	334
2011	100	110	100	310
2012	100	110	100	310
2013	100	100	100	300
2014	100	100	100	300
2015	100	90	100	290
Annual growth (%)				
2010	+2%	+2%	+1%	+2%
2011	+4%	+2%	+2%	+3%
2012	+2%	+2%	+1%	+2%
2013	+2%	+2%	+2%	+2%
2014	+2%	+2%	+2%	+2%
2015	+2%	+2%	+2%	+2%
2015-12 Spa	+2%	+2%	+2%	+2%

UMEF: 0-150, 160, 0-2011

TABLE 26. GRADE DEMAND FORECAST - UFR, E EUROPE 14

E. Europe 14				
Year	Resin	Pulp	Chemicals	Total
2010	270	270	401	940
2011	260	260	401	920
2012	250	240	407	898
2013	240	240	401	880
2014	240	230	390	860
2015	230	220	380	830
Annual growth %				
2011	-4.0%	-4.1%	0.0%	-3.0%
2012	-7.0%	-4.1%	1.0%	-2.7%
2013	-4.0%	0.0%	1.0%	-1.0%
2014	0.0%	0.0%	1.0%	0.7%
2015	0.0%	-1.0%	4.0%	0.0%
2010-15 %	-1.0%	-1.7%	2.7%	0.4%

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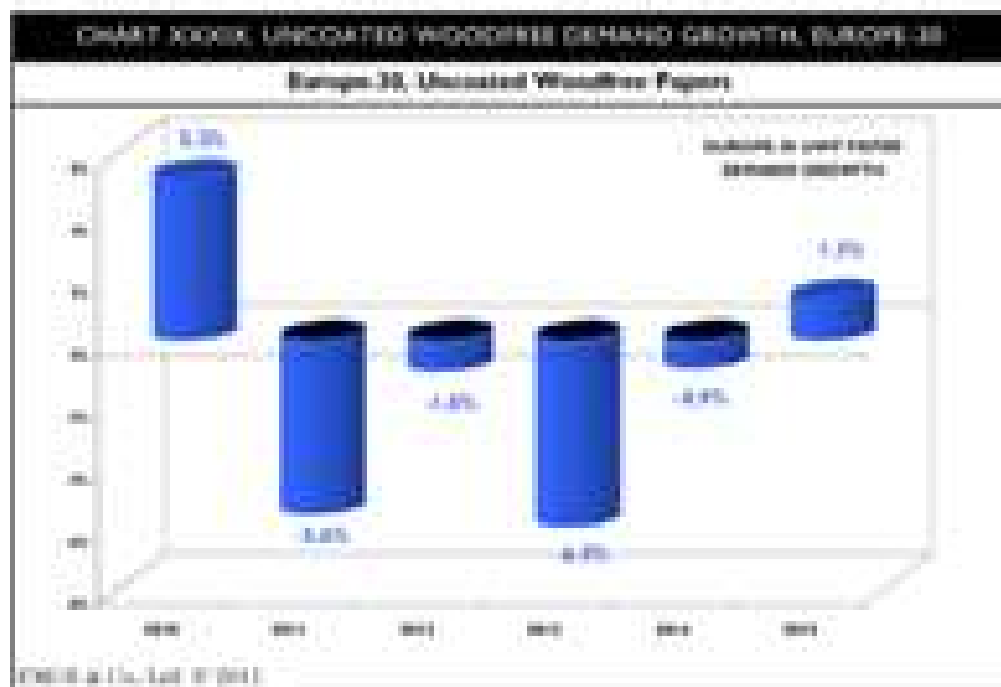
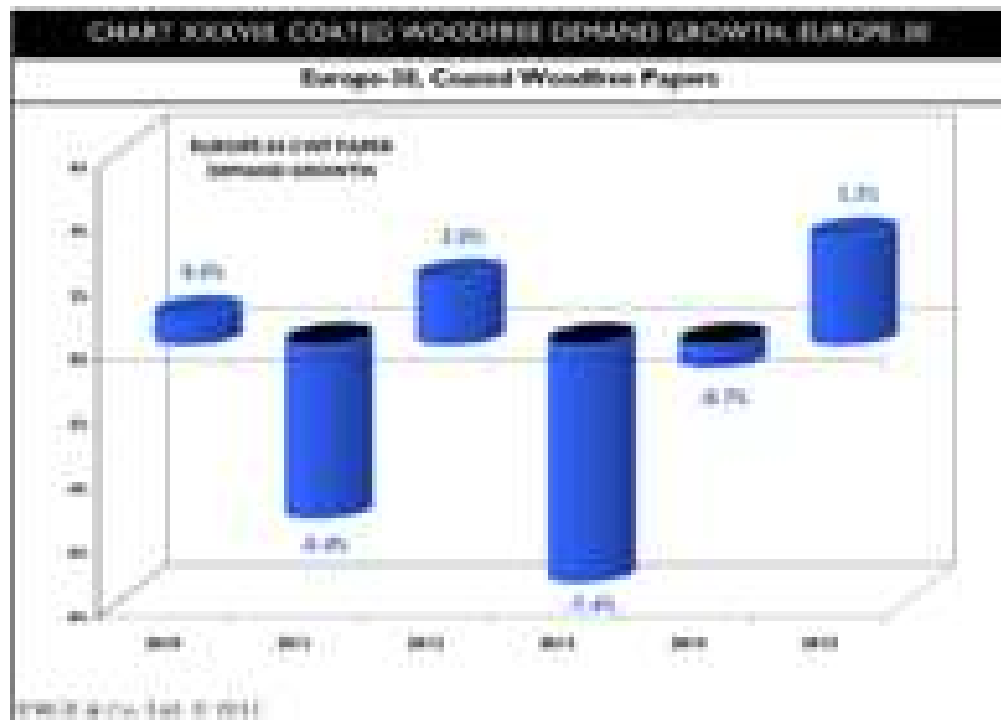


CHART XI: LWFP PAPER DEMAND, EUROPE-16 BY REGION



CHART XII: CUT-OUT PAPER DEMAND, EUROPE-16 BY REGION





CHART 313. UWF BILLS PAPER DEMAND, EUROPE, BY REGION

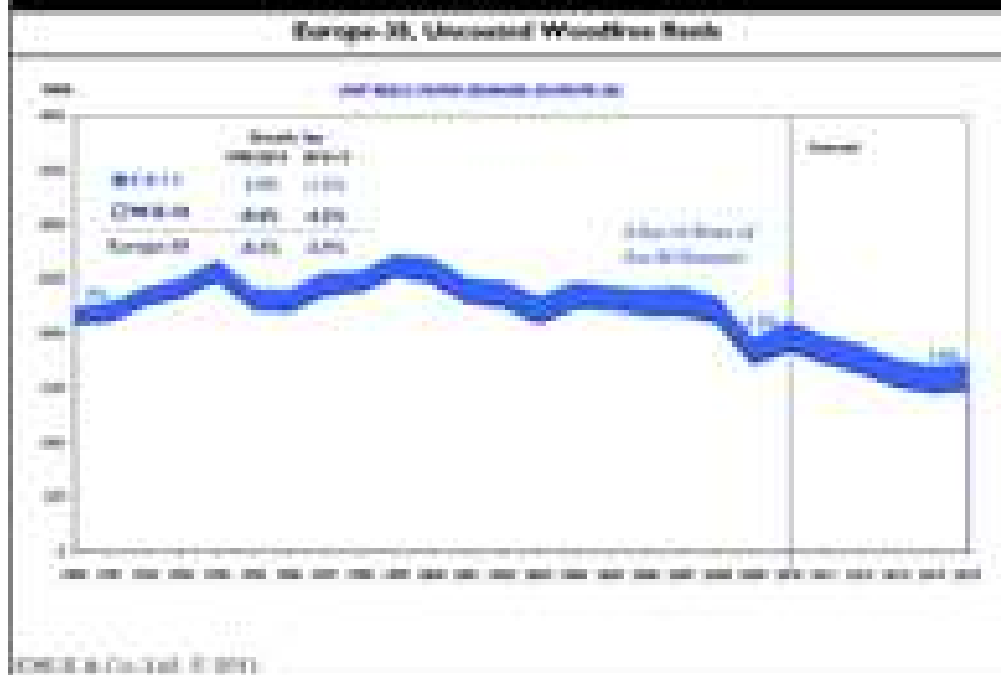


CHART 314. UWF FOLD SHEETS PAPER DEMAND, EUROPE, BY REGION



CHART KEY: COATED WOODPULP PAPER DEMAND, EUROPE-30 BY REGION



CHART KEY: OAT SHEETS PAPER DEMAND, EUROPE-30 BY REGION





## A2.3 Grade Demand Forecasts, by region

### A2.3.1 Grade Demand Forecasts, by region - Coastal Woodfree

TABLE 37. DEMAND FORECAST - CWF SHEETS						
Europe-20						
'000 t	Germany	France	UK	Italy	Russia	Europe-20
2010	1100	400	200	100	1100	4000
2011	1100	400	200	110	1100	4000
2012	1100	400	200	110	1100	4000
2013	1110	400	200	100	1100	4000
2014	1100	400	200	100	1100	3900
2015	1100	400	200	100	1100	4000
'000 t	Norfolk	Benelux	Russia	CHINA	EU-15	Europe-20
2010	170	200	200	270	200	4000
2011	160	200	200	260	200	4000
2012	170	200	200	260	200	4000
2013	160	200	200	250	200	4000
2014	160	200	200	250	200	3900
2015	160	200	200	260	200	4000
Growth %p	Germany	France	UK	Italy	Russia	Europe-20
2011	-0.0%	0.0%	0.0%	-1.0%	0.0%	-0.0%
2012	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	-0.7%	0.0%	-1.0%	-0.7%	-0.0%	-0.6%
2014	-1.0%	0.0%	-1.0%	-1.0%	-0.0%	-1.0%
2015	1.7%	2.4%	1.7%	1.0%	2.4%	0.0%
2010-15 Avg	-1.0%	-0.0%	-0.0%	-0.7%	-0.0%	-0.7%
Growth %p	Norfolk	Benelux	Russia	CHINA	EU-15	Europe-20
2011	-0.7%	0.0%	-1.0%	-0.7%	-0.0%	-0.6%
2012	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	-0.6%	-0.0%	-0.0%	-0.7%	-0.0%	-0.6%
2014	-0.7%	-0.0%	-1.0%	-0.6%	0.0%	-1.0%
2015	0.7%	1.0%	1.0%	1.0%	0.0%	0.0%
2010-15 Avg	-0.6%	-0.0%	-0.0%	-0.6%	0.0%	-0.7%

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TABLE 36. DEMAND FORECAST - OVP KILN

Europe-20						
Year	Germany	France	UK	Italy	Russ	Europe-20
2010	300	200	240	140	100	1000
2011	400	300	330	120	400	1800
2012	500	300	300	100	100	1900
2013	600	300	340	100	400	1700
2014	600	300	340	100	400	1700
2015	400	300	300	100	100	1600
Year	Month	Quarter	Half	3Q/4Q	EU-14	Europe-20
2010	30	100	100	100	100	1000
2011	30	100	100	90	100	1800
2012	30	100	100	100	100	1900
2013	30	100	110	90	100	1700
2014	30	100	110	90	100	1700
2015	30	100	100	90	100	1600
Month Type	Germany	France	UK	Italy	Russ	Europe-20
2011	-0.2%	-0.2%	-0.2%	0.2%	-0.2%	-0.2%
2012	2.0%	0.2%	1.0%	0.2%	0.2%	0.2%
2013	-0.2%	0.2%	-0.2%	-0.2%	-0.2%	-0.2%
2014	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2015	2.2%	2.0%	0.2%	0.2%	0.2%	0.2%
3Q/4Q Type	-0.4%	-0.4%	-0.2%	-0.2%	-0.2%	-0.2%
Month Type	Month	Quarter	Half	3Q/4Q	EU-14	Europe-20
2011	0.0%	0.0%	-1.1%	-0.2%	-0.2%	-0.2%
2012	0.0%	0.2%	0.0%	0.2%	0.2%	0.2%
2013	0.0%	0.2%	-1.1%	-0.2%	0.0%	-0.2%
2014	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
2015	0.0%	0.2%	0.2%	0.0%	0.2%	0.2%
3Q/4Q Type	0.0%	-0.2%	-0.2%	-0.2%	0.2%	-0.2%

EMGE as of 1st Oct 2011

TABLE 19. DEMAND FORECAST - CWP 1.004

Europe-20						
'000 t	Germany	France	UK	Italy	Russia	Europe-20
2010	1310	760	890	880	2120	4860
2011	1440	790	890	740	2130	4990
2012	1700	760	870	750	2180	4960
2013	1690	680	790	680	2240	4980
2014	1680	670	770	670	2240	4960
2015	1630	670	810	700	2110	4920
'000 t	Norway	Sweden	Spain	Denmark	Poland	Europe-20
2010	320	400	510	490	620	2340
2011	210	400	500	270	390	2170
2012	180	400	510	360	410	2060
2013	180	400	430	340	410	1960
2014	180	420	450	340	420	1910
2015	180	420	460	330	430	1920
Growth %p	Germany	France	UK	Italy	Russia	Europe-20
2011	1.0%	0.4%	0.0%	-0.8%	0.0%	0.4%
2012	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	0.0%	-0.0%	-0.0%	-0.0%	0.0%	-0.0%
2014	0.0%	-0.0%	-0.0%	-0.0%	0.0%	-0.0%
2015	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2010-15 Avg	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%
Growth %p	Norway	Sweden	Spain	Denmark	Poland	Europe-20
2011	-0.0%	0.0%	0.0%	-0.0%	-0.0%	-0.0%
2012	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	-0.0%	0.0%	-0.0%	-0.0%	0.0%	-0.0%
2014	0.0%	-0.0%	-0.0%	0.0%	0.0%	-0.0%
2015	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2010-15 Avg	-0.0%	-0.0%	-0.0%	-0.0%	0.0%	-0.0%

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## A3.3.2 Crude Demand Forecasts, by region – Uncoated Hardfire

TABLE 40. DEMAND FORECAST – UNYR MILL

Europe-20						
Year	Germany	France	UK	Italy	Russia	Europe-20
2010	205	210	225	112	200	2750
2011	200	205	220	100	210	2700
2012	170	190	200	100	210	2600
2013	180	200	200	100	200	2700
2014	200	200	220	100	200	2700
2015	200	200	230	100	200	2750
Year	Benelux	Sweden	Spain	EEA/WE	EE-14	Europe-20
2010	140	120	100	100	270	2700
2011	130	120	110	110	290	2600
2012	90	110	100	110	290	2600
2013	90	110	100	100	290	2700
2014	70	100	100	100	290	2700
2015	70	100	100	100	290	2700
Growth rate	Germany	France	UK	Italy	Russia	Europe-20
2011	-2.5%	-4.7%	-12.0%	-8.7%	-5.2%	-6.2%
2012	-2.0%	-4.7%	-12.0%	-7.0%	-3.2%	-6.2%
2013	-1.6%	-1.4%	-11.0%	-10.0%	-3.0%	-2.1%
2014	-2.0%	-2.5%	-6.0%	-2.0%	-5.0%	-3.4%
2015	1.0%	1.0%	2.0%	0.0%	2.0%	1.0%
2016-18 Avg	-2.7%	-3.0%	-8.7%	-2.7%	-3.7%	-3.4%
Growth rate	Benelux	Sweden	Spain	EEA/WE	EE-14	Europe-20
2011	-7.1%	-6.0%	-1.0%	-6.0%	0.0%	-6.2%
2012	-10.0%	-4.0%	-1.0%	-6.0%	2.0%	-6.2%
2013	-11.1%	-4.0%	-1.0%	-6.0%	-2.0%	-7.1%
2014	-6.0%	-1.0%	-6.0%	-6.0%	0.0%	-6.0%
2015	0.0%	0.0%	1.0%	0.0%	2.0%	1.0%
2016-18 Avg	-7.4%	-3.4%	-4.2%	-6.4%	-1.0%	-5.4%

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TABLE 41. DEMAND FORECAST - UNF FOLG

Europe-28						
'000 t	Germany	France	UK	Italy	Russia	Europe
2010	280	170	221	221	491	1383
2011	270	170	210	221	491	1402
2012	270	170	210	221	491	1402
2013	260	160	191	221	491	1383
2014	240	140	171	221	491	1303
2015	240	140	171	221	491	1303
'000 t	Norway	Sweden	Spain	Central	EEA-14	Europe-28
2010	60	100	121	100	281	662
2011	60	100	120	100	281	661
2012	60	100	120	100	281	661
2013	60	100	120	90	281	651
2014	60	100	120	90	281	651
2015	60	90	120	90	281	641
Growth Type	Germany	France	UK	Italy	Russia	Europe-28
2011	-3.6%	0.0%	-4.5%	0.0%	0.0%	-1.2%
2012	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	-3.6%	-5.9%	-1.4%	-1.4%	0.0%	-2.0%
2014	-8.0%	-14.7%	-4.3%	-1.4%	0.0%	-5.0%
2015	-8.0%	-14.7%	-4.3%	-1.4%	0.0%	-5.0%
2010-15 Type	-4.0%	-4.0%	-3.0%	-1.4%	-0.0%	-2.0%
Growth Type	Norway	Sweden	Spain	Central	EEA-14	Europe-28
2011	-16.7%	-16.7%	-11.6%	-4.0%	-11.6%	-7.2%
2012	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2013	-11.7%	-6.7%	-11.6%	-10.0%	0.0%	-8.0%
2014	-11.7%	-6.7%	-11.6%	-10.0%	0.0%	-8.0%
2015	-16.7%	-16.7%	-11.6%	-10.0%	0.0%	-10.0%
2010-15 Type	-8.0%	-8.0%	-8.0%	-6.7%	-11.7%	-8.0%

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TABLE 41: DEMAND FORECAST - LIFT CUTSIDE

Europe-20						
Year	Germany	France	UK	Italy	Russ	Europe-20
2010	400	300	300	300	1000	2600
2011	380	280	310	300	1000	2670
2012	370	280	310	300	1000	2660
2013	350	270	300	300	1000	2620
2014	330	260	290	300	1000	2580
2015	320	260	280	300	1000	2560
Year	Monthly	Quarter	Half	Oct/Nov	Dec-14	Europe-20
2010	100	300	300	300	400	1700
2011	100	280	300	300	400	1780
2012	100	280	310	300	400	1810
2013	100	270	300	300	400	1770
2014	100	260	290	300	400	1750
2015	100	260	280	300	400	1740
Forecast Type	Germany	France	UK	Italy	Russ	Europe-20
2011	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%
2012	-0.5%	0.0%	-0.5%	-0.5%	0.0%	-0.5%
2013	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%
2014	0.0%	0.0%	-0.5%	-0.5%	0.0%	0.0%
2015	-0.5%	0.0%	-0.5%	-0.5%	0.0%	0.0%
Forecast Type	Monthly	Quarter	Half	Oct/Nov	Dec-14	Europe-20
2011	0.0%	-1.0%	-0.5%	0.0%	0.0%	-0.5%
2012	0.0%	0.0%	-0.5%	0.0%	0.0%	-0.5%
2013	-0.5%	0.0%	-0.5%	-0.5%	0.0%	-0.5%
2014	0.0%	0.0%	-0.5%	-0.5%	0.0%	0.0%
2015	0.0%	0.0%	-0.5%	0.0%	0.0%	0.0%
Forecast Type	Monthly	Quarter	Half	Oct/Nov	Dec-14	Europe-20
2011	-0.5%	-0.5%	-0.5%	-0.5%	0.0%	-0.5%

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TABLE 43 - DEMAND FORECAST - LWR PAPER

Europe-28						
'000 t	Germany	France	UK	Italy	Russ	Europe-28
2010	1210	1120	1090	740	2000	7160
2011	1200	1080	1070	730	2000	6980
2012	1210	1070	960	730	2000	6870
2013	1180	1060	950	680	2100	6870
2014	1180	950	870	660	2100	6800
2015	1180	950	890	670	2100	6870
'000 t	Norway	Sweden	Spain	Denmark	Poland	Europe-28
2010	310	400	600	660	900	7160
2011	300	390	570	660	900	6980
2012	290	380	560	660	900	6870
2013	280	380	510	620	900	6870
2014	280	360	500	620	900	6800
2015	280	360	510	620	900	6870
Growth Type	Germany	France	UK	Italy	Russ	Europe-28
2011	-0.7%	-0.7%	-1.1%	-1.0%	-0.7%	-0.4%
2012	-1.0%	-0.9%	-0.7%	-1.7%	-0.2%	-0.2%
2013	-0.7%	-0.7%	-0.6%	-0.7%	-0.2%	-0.6%
2014	-0.7%	-0.9%	-1.1%	-0.7%	-0.2%	-0.7%
2015	0.0%	0.0%	0.0%	0.0%	1.0%	1.0%
2010-15 Type	-0.6%	-0.7%	-0.6%	-0.8%	-0.2%	-0.2%
Growth Type	Norway	Sweden	Spain	Denmark	Poland	Europe-28
2011	-0.9%	-0.7%	-0.6%	-1.1%	-1.7%	-0.6%
2012	-0.7%	0.0%	-0.6%	-1.7%	0.7%	-0.2%
2013	0.0%	0.0%	0.0%	-1.0%	1.0%	-0.6%
2014	-0.0%	0.0%	-1.0%	-1.7%	1.7%	-0.7%
2015	0.0%	0.0%	1.0%	1.7%	0.0%	1.0%
2010-15 Type	-0.6%	-0.2%	-0.6%	-0.8%	0.0%	-0.2%

[Source: ENR, Ltd. Ltd. © 2011]

### A2.4 Woodfibre Grade Demand Forecasts by country/region

(including Offshore Imports)

TABLE 44. DEMAND FORECAST – GERMANY							
Germany							
Year	Shore	Roofs	CWP	Roofs	Falls	Carries	UWP
2010	1200	300	1110	110	200	310	1610
2011	1180	400	1400	100	170	300	1550
2012	1160	300	1160	100	170	310	1540
2013	1110	300	1400	100	170	300	1480
2014	1100	400	1300	100	160	300	1460
2015	1100	400	1420	100	160	300	1480
Annual growth % vs							
2011	-1.7%	33%	-24%	-9%	-15%	-3%	-4.2%
2012	-1.7%	33%	1.8%	-9%	3%	3%	-1.3%
2013	-4.2%	0%	-16%	0%	-7%	-3%	-5.2%
2014	-1.7%	0%	-8%	0%	-2%	0%	-6.0%
2015	-1.7%	0%	8%	0%	-6%	0%	6.0%
2016-15 Avg	-1.8%	-6.4%	-1.2%	-6.7%	-6.4%	-3.2%	-1.4%

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TABLE 4L. DEMAND FORECAST - FRANCE

France							
'000 t	Stone	Soft	CHP	Soft	Fast	Conifer	CHP
2008	66	26	54	23	17	66	172
2011	66	26	54	23	17	66	168
2012	66	26	54	24	17	66	169
2013	67	26	60	25	18	67	168
2014	67	27	63	26	18	67	168
2015	67	27	64	27	18	67	168
<i>Annual growth %</i>							
2011	-1%	-1%	-4%	-1%	0%	-1%	-3%
2012	0%	1%	1%	-2%	0%	0%	-2%
2013	-1%	-1%	-6%	-1%	-1%	-1%	-6%
2014	0%	1%	-6%	-1%	-1%	0%	-1%
2015	1%	1%	1%	1%	-1%	0%	0%
<b>2008-15 Avg</b>	<b>-0.2%</b>	<b>-0.4%</b>	<b>-1.1%</b>	<b>-0.7%</b>	<b>-0.6%</b>	<b>-0.2%</b>	<b>-0.7%</b>

[Source: ENCI, July 2011]

TABLE 4L. DEMAND FORECAST - UK

UK							
'000 t	Stone	Soft	CHP	Soft	Fast	Conifer	CHP
2008	10	33	66	22	22	50	100
2011	9	33	66	20	20	50	100
2012	9	30	63	20	20	50	92
2013	9	33	66	20	20	50	90
2014	9	34	70	22	22	50	90
2015	9	30	64	20	20	50	88
<i>Annual growth %</i>							
2011	-10%	-1%	-6%	-10%	-6%	-1%	-2%
2012	0%	-10%	-5%	-10%	0%	0%	-8%
2013	0%	1%	-6%	-10%	-1%	0%	-6%
2014	1%	0%	-6%	-6%	0%	1%	-1%
2015	1%	-1%	-6%	-1%	0%	1%	-6%
<b>2008-15 Avg</b>	<b>-0.2%</b>	<b>-0.4%</b>	<b>-1.0%</b>	<b>-0.7%</b>	<b>-0.7%</b>	<b>-0.2%</b>	<b>-0.7%</b>

[Source: ENCI, July 2011]

TABLE 47. DEMAND FORECAST – ITALY

Italy							
Year	News	Books	CWF	Books	Pulp	Containers	LWFF
2010	300	140	300	110	100	200	500
2011	310	130	300	100	100	200	500
2012	310	140	300	100	100	200	500
2013	300	130	300	100	100	200	500
2014	300	130	300	100	100	200	500
2015	300	130	300	100	100	200	500
Annual growth % on							
2011	+3.3%	-7.1%	+0.0%	-9.1%	0.0%	+0.0%	+0.0%
2012	0.0%	+7.1%	0.0%	-9.1%	0.0%	+0.0%	+0.0%
2013	-3.3%	-7.1%	0.0%	-10.0%	-10.0%	+0.0%	+0.0%
2014	-3.3%	0.0%	+0.0%	-9.1%	-10.0%	+0.0%	+0.0%
2015	-3.3%	0.0%	+0.0%	-9.1%	-10.0%	+0.0%	+0.0%
2016-17 Avg	-3.3%	-3.7%	-0.0%	-9.1%	-10.0%	+0.0%	+0.0%

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TABLE 48. DEMAND FORECAST – NORDIC

Nordic							
Year	News	Books	CWF	Books	Pulp	Containers	LWFF
2010	100	50	100	100	50	100	200
2011	100	50	110	100	50	100	200
2012	100	50	100	90	50	100	200
2013	100	50	100	90	50	100	200
2014	100	50	100	90	50	100	200
2015	100	50	100	90	50	100	200
Annual growth % on							
2011	0.0%	0.0%	+10.0%	0.0%	+0.0%	0.0%	+0.0%
2012	0.0%	0.0%	0.0%	-10.0%	0.0%	0.0%	+0.0%
2013	0.0%	0.0%	0.0%	-11.1%	-10.0%	0.0%	+0.0%
2014	0.0%	0.0%	0.0%	-10.0%	-10.0%	0.0%	+0.0%
2015	0.0%	0.0%	0.0%	-10.0%	-10.0%	0.0%	+0.0%
2016-17 Avg	-0.0%	0.0%	-0.0%	-9.0%	-10.0%	0.0%	+0.0%

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TABLE 08. DEMAND FORECAST - MPELUX

Mpelux							
'000 e	Woods	Boards	CWP	Boards	Falls	Coarse	CWP
2010	330	732	480	732	132	192	480
2011	330	732	480	732	132	192	480
2012	330	732	480	732	132	192	480
2013	327	718	468	718	129	187	468
2014	312	696	432	696	126	180	432
2015	307	678	420	678	123	176	420
Annual growth % (e)							
2011	-0.3%	-0.3%	-0.3%	-0.3%	-10.6%	-1.7%	-0.3%
2012	0.0%	0.1%	0.1%	0.1%	-0.7%	0.0%	0.0%
2013	-0.9%	-0.7%	-0.4%	-0.7%	-0.7%	-0.3%	-0.4%
2014	-4.8%	-3.0%	-2.3%	-3.0%	-0.8%	-1.3%	-0.8%
2015	-1.6%	-0.7%	-2.6%	-0.8%	-0.8%	-1.0%	-0.8%
2016-18 Avg	-0.7%	-0.7%	-0.7%	-0.8%	-0.8%	-0.8%	-0.8%

(Source: ENCE, July 2011)

TABLE 09. DEMAND FORECAST - BERRA

Berra							
'000 e	Woods	Boards	CWP	Boards	Falls	Coarse	CWP
2010	312	672	432	672	126	180	432
2011	300	630	400	630	120	168	400
2012	290	600	380	600	115	160	380
2013	280	570	360	570	110	153	360
2014	270	540	340	540	105	147	340
2015	260	510	320	510	100	140	320
Annual growth % (e)							
2011	-3.8%	-4.6%	-4.4%	-4.6%	-11.9%	-0.7%	-0.8%
2012	-3.3%	-4.1%	-3.8%	-4.1%	-0.8%	-0.4%	-3.4%
2013	-3.6%	-4.7%	-4.8%	-4.7%	-1.3%	-1.3%	-0.7%
2014	-3.7%	-5.0%	-5.1%	-5.0%	-0.6%	-1.0%	-0.8%
2015	-3.7%	-5.1%	-5.3%	-5.0%	-0.6%	-1.0%	-3.4%
2016-18 Avg	-0.4%	-2.3%	-0.7%	-0.3%	-0.8%	-0.7%	-0.8%

(Source: ENCE, July 2011)

TABLE 11. DEMAND FORECAST – OTHER W EUROPE

Other W.E. Countries (Austria, Serbia, Denmark & Ireland)							
Year	News	Recs	CWP	Recs	Folds	Contra	CWP
2010	271	101	499	119	100	290	440
2011	280	95	270	110	100	240	440
2012	280	100	280	110	100	240	430
2013	281	99	280	100	99	230	420
2014	281	99	280	100	99	230	420
2015	280	95	280	100	95	220	420
Annual growth % p.a.							
2011	+3.3%	+9.9%	-4.2%	+9.2%	+0.0%	-3.4%	+1.1%
2012	0.0%	-5.0%	-2.0%	+0.0%	0.0%	-1.0%	-1.2%
2013	+0.4%	-10.0%	-0.4%	-0.9%	-10.0%	-4.2%	-0.4%
2014	0.0%	0.0%	0.0%	+0.0%	-1.0%	-1.7%	-1.2%
2015	-0.4%	-5.0%	-0.4%	0.0%	0.0%	0.0%	-1.2%
2016-17 Spec	-0.7%	-4.0%	-0.7%	-0.6%	-0.7%	-0.4%	-1.0%

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TABLE 12. DEMAND FORECAST – W EUROPE 14

W Europe 14							
Year	News	Recs	CWP	Recs	Folds	Contra	CWP
2010	1020	1015	1040	1040	1020	1010	1010
2011	1030	1110	1040	1120	1100	1040	1040
2012	1030	1050	1040	1020	1100	1040	1040
2013	1030	1070	1040	1110	1080	1050	1010
2014	1040	1040	1110	1040	1000	1010	1040
2015	1040	1120	1100	1080	1100	1080	1040
Annual growth % p.a.							
2011	+0.9%	+9.9%	-0.0%	+9.6%	+6.9%	-0.1%	+0.0%
2012	0.0%	-5.4%	-0.0%	-1.8%	0.0%	0.0%	-1.0%
2013	+0.0%	-7.7%	-0.0%	-0.9%	-10.0%	0.0%	-7.2%
2014	+1.0%	0.0%	+1.7%	+0.0%	-1.7%	-1.7%	+1.0%
2015	+0.0%	+7.1%	+0.9%	+1.9%	-1.0%	+1.0%	0.0%
2016-17 Spec	-0.0%	-1.0%	-0.0%	-0.0%	-0.7%	-0.7%	-0.0%

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TABLE 13: DEMAND FORECAST – EUROPE 14

Europe 14							
Year	Stone	Roofs	CWP	Roofs	Falls	Concrete	CWP
2010	100	100	440	210	210	400	600
2011	90	100	390	240	240	400	600
2012	80	110	340	280	240	470	600
2013	80	110	300	240	240	480	600
2014	80	100	280	240	230	500	600
2015	80	100	280	230	230	500	600
Annual growth % (vs)							
2011	-10%	+10%	-10%	+10%	+10%	0%	0%
2012	-10%	+10%	-10%	+20%	-10%	10%	0%
2013	-10%	0%	-10%	-10%	0%	10%	0%
2014	0%	+0%	-10%	0%	-10%	10%	0%
2015	0%	0%	-10%	-10%	0%	0%	0%
2016-17 % (vs)	0%	0%	0%	-10%	-10%	0%	0%

EMGE 2011, last 10/2011

TABLE 14: DEMAND FORECAST – EUROPE 20

Europe 20							
Year	Stone	Roofs	CWP	Roofs	Falls	Concrete	CWP
2010	1000	1000	4000	2100	2100	1700	7000
2011	900	1000	3600	2400	2400	1800	6800
2012	800	1100	3200	2800	2400	2000	6800
2013	800	1100	2800	2400	2400	2000	6800
2014	800	1100	2600	2300	2300	2100	6800
2015	800	1000	2400	2300	2300	2100	6800
Annual growth % (vs)							
2011	-10%	+10%	-10%	+10%	+10%	+10%	-10%
2012	-10%	+10%	-10%	+20%	-10%	+10%	-10%
2013	-10%	0%	-10%	-10%	0%	0%	-10%
2014	0%	+0%	-10%	0%	-10%	0%	-10%
2015	0%	0%	-10%	-10%	0%	0%	-10%
2016-17 % (vs)	-10%	-10%	-10%	-10%	-10%	-10%	-10%

EMGE 2011, last 10/2011



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## Appendix 3 : Quarterly Forecasts

### 3.1.1 Market Forecast – Quarterly – Central Windows

Here, we summarize the following quarterly market forecast for Central Windows (Total, followed by East and West) in Europe-20, W Europe-10 and E Europe-10.

#### a) Central Window Market (Quarterly Forecast, EUMPC-10)

TABLE 10: THE 2022 QUARTERLY MARKET FORECAST						
Europe-20						
Year	Revenue	Imports	Exports	Deficiency	Capacity	Op. Rate
2022 Q1	100	10	0	90	100	90%
2022 Q2	100	0	0	100	100	100%
2022 Q3	100	0	0	100	100	100%
2022 Q4	100	0	0	100	100	100%
2023 Q1	100	0	0	100	100	100%
2023 Q2	100	0	0	100	100	100%
2023 Q3	100	0	0	100	100	100%
2023 Q4	100	0	0	100	100	100%
2024 Q1	100	0	0	100	100	100%
2024 Q2	100	0	0	100	100	100%
2024 Q3	100	0	0	100	100	100%
2024 Q4	100	0	0	100	100	100%
2025 Q1	100	0	0	100	100	100%
2025 Q2	100	0	0	100	100	100%
2025 Q3	100	0	0	100	100	100%
2025 Q4	100	0	0	100	100	100%
2026 Q1	100	0	0	100	100	100%
2026 Q2	100	0	0	100	100	100%
2026 Q3	100	0	0	100	100	100%
2026 Q4	100	0	0	100	100	100%
2027 Q1	100	0	0	100	100	100%
2027 Q2	100	0	0	100	100	100%
2027 Q3	100	0	0	100	100	100%
2027 Q4	100	0	0	100	100	100%
2028 Q1	100	0	0	100	100	100%
2028 Q2	100	0	0	100	100	100%
2028 Q3	100	0	0	100	100	100%
2028 Q4	100	0	0	100	100	100%
2029 Q1	100	0	0	100	100	100%
2029 Q2	100	0	0	100	100	100%
2029 Q3	100	0	0	100	100	100%
2029 Q4	100	0	0	100	100	100%
2030 Q1	100	0	0	100	100	100%
2030 Q2	100	0	0	100	100	100%
2030 Q3	100	0	0	100	100	100%
2030 Q4	100	0	0	100	100	100%
2031 Q1	100	0	0	100	100	100%
2031 Q2	100	0	0	100	100	100%
2031 Q3	100	0	0	100	100	100%
2031 Q4	100	0	0	100	100	100%
2032 Q1	100	0	0	100	100	100%
2032 Q2	100	0	0	100	100	100%
2032 Q3	100	0	0	100	100	100%
2032 Q4	100	0	0	100	100	100%
2033 Q1	100	0	0	100	100	100%
2033 Q2	100	0	0	100	100	100%
2033 Q3	100	0	0	100	100	100%
2033 Q4	100	0	0	100	100	100%
2034 Q1	100	0	0	100	100	100%
2034 Q2	100	0	0	100	100	100%
2034 Q3	100	0	0	100	100	100%
2034 Q4	100	0	0	100	100	100%
2035 Q1	100	0	0	100	100	100%
2035 Q2	100	0	0	100	100	100%
2035 Q3	100	0	0	100	100	100%
2035 Q4	100	0	0	100	100	100%
2036 Q1	100	0	0	100	100	100%
2036 Q2	100	0	0	100	100	100%
2036 Q3	100	0	0	100	100	100%
2036 Q4	100	0	0	100	100	100%
2037 Q1	100	0	0	100	100	100%
2037 Q2	100	0	0	100	100	100%
2037 Q3	100	0	0	100	100	100%
2037 Q4	100	0	0	100	100	100%
2038 Q1	100	0	0	100	100	100%
2038 Q2	100	0	0	100	100	100%
2038 Q3	100	0	0	100	100	100%
2038 Q4	100	0	0	100	100	100%
2039 Q1	100	0	0	100	100	100%
2039 Q2	100	0	0	100	100	100%
2039 Q3	100	0	0	100	100	100%
2039 Q4	100	0	0	100	100	100%
2040 Q1	100	0	0	100	100	100%
2040 Q2	100	0	0	100	100	100%
2040 Q3	100	0	0	100	100	100%
2040 Q4	100	0	0	100	100	100%
2041 Q1	100	0	0	100	100	100%
2041 Q2	100	0	0	100	100	100%
2041 Q3	100	0	0	100	100	100%
2041 Q4	100	0	0	100	100	100%
2042 Q1	100	0	0	100	100	100%
2042 Q2	100	0	0	100	100	100%
2042 Q3	100	0	0	100	100	100%
2042 Q4	100	0	0	100	100	100%
2043 Q1	100	0	0	100	100	100%
2043 Q2	100	0	0	100	100	100%
2043 Q3	100	0	0	100	100	100%
2043 Q4	100	0	0	100	100	100%
2044 Q1	100	0	0	100	100	100%
2044 Q2	100	0	0	100	100	100%
2044 Q3	100	0	0	100	100	100%
2044 Q4	100	0	0	100	100	100%
2045 Q1	100	0	0	100	100	100%
2045 Q2	100	0	0	100	100	100%
2045 Q3	100	0	0	100	100	100%
2045 Q4	100	0	0	100	100	100%
2046 Q1	100	0	0	100	100	100%
2046 Q2	100	0	0	100	100	100%
2046 Q3	100	0	0	100	100	100%
2046 Q4	100	0	0	100	100	100%
2047 Q1	100	0	0	100	100	100%
2047 Q2	100	0	0	100	100	100%
2047 Q3	100	0	0	100	100	100%
2047 Q4	100	0	0	100	100	100%
2048 Q1	100	0	0	100	100	100%
2048 Q2	100	0	0	100	100	100%
2048 Q3	100	0	0	100	100	100%
2048 Q4	100	0	0	100	100	100%
2049 Q1	100	0	0	100	100	100%
2049 Q2	100	0	0	100	100	100%
2049 Q3	100	0	0	100	100	100%
2049 Q4	100	0	0	100	100	100%
2050 Q1	100	0	0	100	100	100%
2050 Q2	100	0	0	100	100	100%
2050 Q3	100	0	0	100	100	100%
2050 Q4	100	0	0	100	100	100%
2051 Q1	100	0	0	100	100	100%
2051 Q2	100	0	0	100	100	100%
2051 Q3	100	0	0	100	100	100%
2051 Q4	100	0	0	100	100	100%
2052 Q1	100	0	0	100	100	100%
2052 Q2	100	0	0	100	100	100%
2052 Q3	100	0	0	100	100	100%
2052 Q4	100	0	0	100	100	100%
2053 Q1	100	0	0	100	100	100%
2053 Q2	100	0	0	100	100	100%
2053 Q3	100	0	0	100	100	100%
2053 Q4	100	0	0	100	100	100%
2054 Q1	100	0	0	100	100	100%
2054 Q2	100	0	0	100	100	100%
2054 Q3	100	0	0	100	100	100%
2054 Q4	100	0	0	100	100	100%
2055 Q1	100	0	0	100	100	100%
2055 Q2	100	0	0	100	100	100%
2055 Q3	100	0	0	100	100	100%
2055 Q4	100	0	0	100	100	100%
2056 Q1	100	0	0	100	100	100%
2056 Q2	100	0	0	100	100	100%
2056 Q3	100	0	0	100	100	100%
2056 Q4	100	0	0	100	100	100%
2057 Q1	100	0	0	100	100	100%
2057 Q2	100	0	0	100	100	100%
2057 Q3	100	0	0	100	100	100%
2057 Q4	100	0	0	100	100	100%
2058 Q1	100	0	0	100	100	100%
2058 Q2	100	0	0	100	100	100%
2058 Q3	100	0	0	100	100	100%
2058 Q4	100	0	0	100	100	100%
2059 Q1	100	0	0	100	100	100%
2059 Q2	100	0	0	100	100	100%
2059 Q3	100	0	0	100	100	100%
2059 Q4	100	0	0	100	100	100%
2060 Q1	100	0	0	100	100	100%
2060 Q2	100	0	0	100	100	100%
2060 Q3	100	0	0	100	100	100%
2060 Q4	100	0	0	100	100	100%
2061 Q1	100	0	0	100	100	100%
2061 Q2	100	0	0	100	100	100%
2061 Q3	100	0	0	100	100	100%
2061 Q4	100	0	0	100	100	100%
2062 Q1	100	0	0	100	100	100%
2062 Q2	100	0	0	100	100	100%
2062 Q3	100	0	0	100	100	100%
2062 Q4	100	0	0	100	100	100%
2063 Q1	100	0	0	100	100	100%
2063 Q2	100	0	0	100	100	100%
2063 Q3	100	0	0	100	100	100%
2063 Q4	100	0	0	100	100	100%
2064 Q1	100	0	0	100	100	100%
2064 Q2	100	0	0	100	100	100%
2064 Q3	100	0	0	100	100	100%
2064 Q4	100	0	0	100	100	100%
2065 Q1	100	0	0			

TABLE 16: CMT 2 (cont.) QUARTERLY MARKET WEIGHTING						
EU Europe 14						
Year	Market	Europe	Europe	Market	Europe	By Size
2011	100	0	0	100	0	100
2012	100	0	0	100	0	100
2013	100	0	0	100	0	100
2014	100	0	0	100	0	100
2015	100	0	0	100	0	100
2016	100	0	0	100	0	100
2017	100	0	0	100	0	100
2018	100	0	0	100	0	100
2019	100	0	0	100	0	100
2020	100	0	0	100	0	100
2021	100	0	0	100	0	100
2022	100	0	0	100	0	100
2023	100	0	0	100	0	100
2024	100	0	0	100	0	100
2025	100	0	0	100	0	100
2026	100	0	0	100	0	100
2027	100	0	0	100	0	100
2028	100	0	0	100	0	100
2029	100	0	0	100	0	100
2030	100	0	0	100	0	100
2031	100	0	0	100	0	100
2032	100	0	0	100	0	100
2033	100	0	0	100	0	100
2034	100	0	0	100	0	100
2035	100	0	0	100	0	100
2036	100	0	0	100	0	100
2037	100	0	0	100	0	100
2038	100	0	0	100	0	100
2039	100	0	0	100	0	100
2040	100	0	0	100	0	100
2041	100	0	0	100	0	100
2042	100	0	0	100	0	100
2043	100	0	0	100	0	100
2044	100	0	0	100	0	100
2045	100	0	0	100	0	100
2046	100	0	0	100	0	100
2047	100	0	0	100	0	100
2048	100	0	0	100	0	100
2049	100	0	0	100	0	100
2050	100	0	0	100	0	100
2051	100	0	0	100	0	100
2052	100	0	0	100	0	100
2053	100	0	0	100	0	100
2054	100	0	0	100	0	100
2055	100	0	0	100	0	100
2056	100	0	0	100	0	100
2057	100	0	0	100	0	100
2058	100	0	0	100	0	100
2059	100	0	0	100	0	100
2060	100	0	0	100	0	100
2061	100	0	0	100	0	100
2062	100	0	0	100	0	100
2063	100	0	0	100	0	100
2064	100	0	0	100	0	100
2065	100	0	0	100	0	100
2066	100	0	0	100	0	100
2067	100	0	0	100	0	100
2068	100	0	0	100	0	100
2069	100	0	0	100	0	100
2070	100	0	0	100	0	100
2071	100	0	0	100	0	100
2072	100	0	0	100	0	100
2073	100	0	0	100	0	100
2074	100	0	0	100	0	100
2075	100	0	0	100	0	100
2076	100	0	0	100	0	100
2077	100	0	0	100	0	100
2078	100	0	0	100	0	100
2079	100	0	0	100	0	100
2080	100	0	0	100	0	100
2081	100	0	0	100	0	100
2082	100	0	0	100	0	100
2083	100	0	0	100	0	100
2084	100	0	0	100	0	100
2085	100	0	0	100	0	100
2086	100	0	0	100	0	100
2087	100	0	0	100	0	100
2088	100	0	0	100	0	100
2089	100	0	0	100	0	100
2090	100	0	0	100	0	100
2091	100	0	0	100	0	100
2092	100	0	0	100	0	100
2093	100	0	0	100	0	100
2094	100	0	0	100	0	100
2095	100	0	0	100	0	100
2096	100	0	0	100	0	100
2097	100	0	0	100	0	100
2098	100	0	0	100	0	100
2099	100	0	0	100	0	100
2100	100	0	0	100	0	100

(14) Europe includes all delivery assets in EU Europe 14, including those in EU Europe 14.

Key CMT Items of Risk Demand (Quantity) Forecast

TABLE 17. CMT RISK & MEETS DEMAND - Q. DEMAND, EUROPE IN						
Europe IN						
Year	Q1	Q2	Q3	Q4	Year CMT	Yearly %
2010	100	100	100	100	100	100
2011	100	100	100	100	100	100
2012	100	100	100	100	100	100
2013	100	100	100	100	100	100
2014	100	100	100	100	100	100
2015	100	100	100	100	100	100
2016	100	100	100	100	100	100
2017	100	100	100	100	100	100
2018	100	100	100	100	100	100
2019	100	100	100	100	100	100
2020	100	100	100	100	100	100
2021	100	100	100	100	100	100
2022	100	100	100	100	100	100
2023	100	100	100	100	100	100
2024	100	100	100	100	100	100
2025	100	100	100	100	100	100
2026	100	100	100	100	100	100
2027	100	100	100	100	100	100
2028	100	100	100	100	100	100
2029	100	100	100	100	100	100
2030	100	100	100	100	100	100
2031	100	100	100	100	100	100
2032	100	100	100	100	100	100
2033	100	100	100	100	100	100
2034	100	100	100	100	100	100
2035	100	100	100	100	100	100
2036	100	100	100	100	100	100
2037	100	100	100	100	100	100
2038	100	100	100	100	100	100
2039	100	100	100	100	100	100
2040	100	100	100	100	100	100
2041	100	100	100	100	100	100
2042	100	100	100	100	100	100
2043	100	100	100	100	100	100
2044	100	100	100	100	100	100
2045	100	100	100	100	100	100
2046	100	100	100	100	100	100
2047	100	100	100	100	100	100
2048	100	100	100	100	100	100
2049	100	100	100	100	100	100
2050	100	100	100	100	100	100

Source: ENGE, 2010-2011

TABLE 16: CWT RATES & WEIGHTS (kg) - BY DESIGN, BY GROUP, 18						
By Design 18						
Year	CWT type	Wheat	Barley	Total CWT	Weight (kg)	
2018	W1	0.7%	1000	0%	1000	100
	W2	0.7%	1000	0%	1000	100
	W3	0.7%	0%	0%	0%	0%
	W4	0.7%	0%	0%	0%	0%
	<b>Total W1-4</b>	<b>2.8%</b>	<b>1000</b>	<b>0%</b>	<b>1000</b>	<b>100</b>
2019	W1	0.7%	1000	0%	1000	100
	W2	1.0%	0%	0%	1000	100
	W3	1.7%	0%	0%	1000	100
	W4	0.6%	0%	0%	1000	100
	<b>Total W1-4</b>	<b>4.0%</b>	<b>1000</b>	<b>0%</b>	<b>1000</b>	<b>100</b>
2020	W1	0.7%	1000	0%	1000	100
	W2	0.7%	0%	0%	1000	100
	W3	0.7%	0%	0%	1000	100
	W4	1.7%	0%	0%	1000	100
	<b>Total W1-4</b>	<b>3.8%</b>	<b>1000</b>	<b>0%</b>	<b>1000</b>	<b>100</b>
2021	W1	0.6%	0%	0%	1000	100
	W2	1.1%	0%	0%	1000	100
	W3	0.6%	0%	0%	1000	100
	W4	1.7%	0%	0%	1000	100
	<b>Total W1-4</b>	<b>4.0%</b>	<b>0%</b>	<b>0%</b>	<b>4000</b>	<b>400</b>
2022		0.6%	0%	0%	0%	0%
2023		0.6%	0%	0%	0%	0%
	<b>Total W1-4</b>	<b>0.2%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

Source: The Food Agency

Table 14. DWV Manhole and Inlets (1) using 12" DIPIPAC 1 and DIPIPAC 11

Manhole	12" DIPIPAC 11			Flow (MGD)	Velocity (ft/s)
	Flow (MGD)	Depth (ft)	Velocity (ft/s)		
Manhole 1	0.05	1.0	1.0	0.05	1.0
Manhole 2	0.05	1.0	1.0	0.05	1.0
Manhole 3	0.05	1.0	1.0	0.05	1.0
Manhole 4	0.05	1.0	1.0	0.05	1.0
Manhole 5	0.05	1.0	1.0	0.05	1.0
Manhole 6	0.05	1.0	1.0	0.05	1.0
Manhole 7	0.05	1.0	1.0	0.05	1.0
Manhole 8	0.05	1.0	1.0	0.05	1.0
Manhole 9	0.05	1.0	1.0	0.05	1.0
Manhole 10	0.05	1.0	1.0	0.05	1.0
Manhole 11	0.05	1.0	1.0	0.05	1.0
Manhole 12	0.05	1.0	1.0	0.05	1.0
Manhole 13	0.05	1.0	1.0	0.05	1.0
Manhole 14	0.05	1.0	1.0	0.05	1.0
Manhole 15	0.05	1.0	1.0	0.05	1.0
Manhole 16	0.05	1.0	1.0	0.05	1.0
Manhole 17	0.05	1.0	1.0	0.05	1.0
Manhole 18	0.05	1.0	1.0	0.05	1.0
Manhole 19	0.05	1.0	1.0	0.05	1.0
Manhole 20	0.05	1.0	1.0	0.05	1.0
Manhole 21	0.05	1.0	1.0	0.05	1.0
Manhole 22	0.05	1.0	1.0	0.05	1.0
Manhole 23	0.05	1.0	1.0	0.05	1.0
Manhole 24	0.05	1.0	1.0	0.05	1.0
Manhole 25	0.05	1.0	1.0	0.05	1.0
Manhole 26	0.05	1.0	1.0	0.05	1.0
Manhole 27	0.05	1.0	1.0	0.05	1.0
Manhole 28	0.05	1.0	1.0	0.05	1.0
Manhole 29	0.05	1.0	1.0	0.05	1.0
Manhole 30	0.05	1.0	1.0	0.05	1.0
Manhole 31	0.05	1.0	1.0	0.05	1.0
Manhole 32	0.05	1.0	1.0	0.05	1.0
Manhole 33	0.05	1.0	1.0	0.05	1.0
Manhole 34	0.05	1.0	1.0	0.05	1.0
Manhole 35	0.05	1.0	1.0	0.05	1.0
Manhole 36	0.05	1.0	1.0	0.05	1.0
Manhole 37	0.05	1.0	1.0	0.05	1.0
Manhole 38	0.05	1.0	1.0	0.05	1.0
Manhole 39	0.05	1.0	1.0	0.05	1.0
Manhole 40	0.05	1.0	1.0	0.05	1.0
Manhole 41	0.05	1.0	1.0	0.05	1.0
Manhole 42	0.05	1.0	1.0	0.05	1.0
Manhole 43	0.05	1.0	1.0	0.05	1.0
Manhole 44	0.05	1.0	1.0	0.05	1.0
Manhole 45	0.05	1.0	1.0	0.05	1.0
Manhole 46	0.05	1.0	1.0	0.05	1.0
Manhole 47	0.05	1.0	1.0	0.05	1.0
Manhole 48	0.05	1.0	1.0	0.05	1.0
Manhole 49	0.05	1.0	1.0	0.05	1.0
Manhole 50	0.05	1.0	1.0	0.05	1.0
Manhole 51	0.05	1.0	1.0	0.05	1.0
Manhole 52	0.05	1.0	1.0	0.05	1.0
Manhole 53	0.05	1.0	1.0	0.05	1.0
Manhole 54	0.05	1.0	1.0	0.05	1.0
Manhole 55	0.05	1.0	1.0	0.05	1.0
Manhole 56	0.05	1.0	1.0	0.05	1.0
Manhole 57	0.05	1.0	1.0	0.05	1.0
Manhole 58	0.05	1.0	1.0	0.05	1.0
Manhole 59	0.05	1.0	1.0	0.05	1.0
Manhole 60	0.05	1.0	1.0	0.05	1.0
Manhole 61	0.05	1.0	1.0	0.05	1.0
Manhole 62	0.05	1.0	1.0	0.05	1.0
Manhole 63	0.05	1.0	1.0	0.05	1.0
Manhole 64	0.05	1.0	1.0	0.05	1.0
Manhole 65	0.05	1.0	1.0	0.05	1.0
Manhole 66	0.05	1.0	1.0	0.05	1.0
Manhole 67	0.05	1.0	1.0	0.05	1.0
Manhole 68	0.05	1.0	1.0	0.05	1.0
Manhole 69	0.05	1.0	1.0	0.05	1.0
Manhole 70	0.05	1.0	1.0	0.05	1.0
Manhole 71	0.05	1.0	1.0	0.05	1.0
Manhole 72	0.05	1.0	1.0	0.05	1.0
Manhole 73	0.05	1.0	1.0	0.05	1.0
Manhole 74	0.05	1.0	1.0	0.05	1.0
Manhole 75	0.05	1.0	1.0	0.05	1.0
Manhole 76	0.05	1.0	1.0	0.05	1.0
Manhole 77	0.05	1.0	1.0	0.05	1.0
Manhole 78	0.05	1.0	1.0	0.05	1.0
Manhole 79	0.05	1.0	1.0	0.05	1.0
Manhole 80	0.05	1.0	1.0	0.05	1.0
Manhole 81	0.05	1.0	1.0	0.05	1.0
Manhole 82	0.05	1.0	1.0	0.05	1.0
Manhole 83	0.05	1.0	1.0	0.05	1.0
Manhole 84	0.05	1.0	1.0	0.05	1.0
Manhole 85	0.05	1.0	1.0	0.05	1.0
Manhole 86	0.05	1.0	1.0	0.05	1.0
Manhole 87	0.05	1.0	1.0	0.05	1.0
Manhole 88	0.05	1.0	1.0	0.05	1.0
Manhole 89	0.05	1.0	1.0	0.05	1.0
Manhole 90	0.05	1.0	1.0	0.05	1.0
Manhole 91	0.05	1.0	1.0	0.05	1.0
Manhole 92	0.05	1.0	1.0	0.05	1.0
Manhole 93	0.05	1.0	1.0	0.05	1.0
Manhole 94	0.05	1.0	1.0	0.05	1.0
Manhole 95	0.05	1.0	1.0	0.05	1.0
Manhole 96	0.05	1.0	1.0	0.05	1.0
Manhole 97	0.05	1.0	1.0	0.05	1.0
Manhole 98	0.05	1.0	1.0	0.05	1.0
Manhole 99	0.05	1.0	1.0	0.05	1.0
Manhole 100	0.05	1.0	1.0	0.05	1.0

Source: EMGE, Inc. (2011)



TABLE 11. LOW FLOWS (CFS) MONTHLY WEATHER

Year	Water Temperature					Capacity (CFS)
	January	February	March	April	May	
1950	30	30	30	30	30	30
1951	30	30	30	30	30	30
1952	30	30	30	30	30	30
1953	30	30	30	30	30	30
1954	30	30	30	30	30	30
1955	30	30	30	30	30	30
1956	30	30	30	30	30	30
1957	30	30	30	30	30	30
1958	30	30	30	30	30	30
1959	30	30	30	30	30	30
1960	30	30	30	30	30	30
1961	30	30	30	30	30	30
1962	30	30	30	30	30	30
1963	30	30	30	30	30	30
1964	30	30	30	30	30	30
1965	30	30	30	30	30	30
1966	30	30	30	30	30	30
1967	30	30	30	30	30	30
1968	30	30	30	30	30	30
1969	30	30	30	30	30	30
1970	30	30	30	30	30	30
1971	30	30	30	30	30	30
1972	30	30	30	30	30	30
1973	30	30	30	30	30	30
1974	30	30	30	30	30	30
1975	30	30	30	30	30	30
1976	30	30	30	30	30	30
1977	30	30	30	30	30	30
1978	30	30	30	30	30	30
1979	30	30	30	30	30	30
1980	30	30	30	30	30	30
1981	30	30	30	30	30	30
1982	30	30	30	30	30	30
1983	30	30	30	30	30	30
1984	30	30	30	30	30	30
1985	30	30	30	30	30	30
1986	30	30	30	30	30	30
1987	30	30	30	30	30	30
1988	30	30	30	30	30	30
1989	30	30	30	30	30	30
1990	30	30	30	30	30	30
1991	30	30	30	30	30	30
1992	30	30	30	30	30	30
1993	30	30	30	30	30	30
1994	30	30	30	30	30	30
1995	30	30	30	30	30	30
1996	30	30	30	30	30	30
1997	30	30	30	30	30	30
1998	30	30	30	30	30	30
1999	30	30	30	30	30	30
2000	30	30	30	30	30	30
2001	30	30	30	30	30	30
2002	30	30	30	30	30	30
2003	30	30	30	30	30	30
2004	30	30	30	30	30	30
2005	30	30	30	30	30	30
2006	30	30	30	30	30	30
2007	30	30	30	30	30	30
2008	30	30	30	30	30	30
2009	30	30	30	30	30	30
2010	30	30	30	30	30	30
2011	30	30	30	30	30	30
2012	30	30	30	30	30	30
2013	30	30	30	30	30	30
2014	30	30	30	30	30	30
2015	30	30	30	30	30	30
2016	30	30	30	30	30	30
2017	30	30	30	30	30	30
2018	30	30	30	30	30	30
2019	30	30	30	30	30	30
2020	30	30	30	30	30	30
2021	30	30	30	30	30	30
2022	30	30	30	30	30	30
2023	30	30	30	30	30	30
2024	30	30	30	30	30	30
2025	30	30	30	30	30	30
2026	30	30	30	30	30	30
2027	30	30	30	30	30	30
2028	30	30	30	30	30	30
2029	30	30	30	30	30	30
2030	30	30	30	30	30	30
2031	30	30	30	30	30	30
2032	30	30	30	30	30	30
2033	30	30	30	30	30	30
2034	30	30	30	30	30	30
2035	30	30	30	30	30	30
2036	30	30	30	30	30	30
2037	30	30	30	30	30	30
2038	30	30	30	30	30	30
2039	30	30	30	30	30	30
2040	30	30	30	30	30	30
2041	30	30	30	30	30	30
2042	30	30	30	30	30	30
2043	30	30	30	30	30	30
2044	30	30	30	30	30	30
2045	30	30	30	30	30	30
2046	30	30	30	30	30	30
2047	30	30	30	30	30	30
2048	30	30	30	30	30	30
2049	30	30	30	30	30	30
2050	30	30	30	30	30	30

(continued on next page)





to E-WF Starts, Falls of Cut for Downed Quantity Forecast

Example 10					
Year	Rate	Falls	Cut/Day	Forecast	Percentage
2011	100	100	100	100	100
2012	75	100	75	100	133
2013	50	100	50	100	200
2014	25	100	25	100	300
2015	10	100	10	100	375
2016	5	100	5	100	400
2017	2	100	2	100	500
2018	1	100	1	100	500
2019	0	100	0	100	500
2020	0	100	0	100	500
2021	0	100	0	100	500
2022	0	100	0	100	500
2023	0	100	0	100	500
2024	0	100	0	100	500
2025	0	100	0	100	500
2026	0	100	0	100	500
2027	0	100	0	100	500
2028	0	100	0	100	500
2029	0	100	0	100	500
2030	0	100	0	100	500
2031	0	100	0	100	500
2032	0	100	0	100	500
2033	0	100	0	100	500
2034	0	100	0	100	500
2035	0	100	0	100	500
2036	0	100	0	100	500
2037	0	100	0	100	500
2038	0	100	0	100	500
2039	0	100	0	100	500
2040	0	100	0	100	500
2041	0	100	0	100	500
2042	0	100	0	100	500
2043	0	100	0	100	500
2044	0	100	0	100	500
2045	0	100	0	100	500
2046	0	100	0	100	500
2047	0	100	0	100	500
2048	0	100	0	100	500
2049	0	100	0	100	500
2050	0	100	0	100	500
2051	0	100	0	100	500
2052	0	100	0	100	500
2053	0	100	0	100	500
2054	0	100	0	100	500
2055	0	100	0	100	500
2056	0	100	0	100	500
2057	0	100	0	100	500
2058	0	100	0	100	500
2059	0	100	0	100	500
2060	0	100	0	100	500
2061	0	100	0	100	500
2062	0	100	0	100	500
2063	0	100	0	100	500
2064	0	100	0	100	500
2065	0	100	0	100	500
2066	0	100	0	100	500
2067	0	100	0	100	500
2068	0	100	0	100	500
2069	0	100	0	100	500
2070	0	100	0	100	500
2071	0	100	0	100	500
2072	0	100	0	100	500
2073	0	100	0	100	500
2074	0	100	0	100	500
2075	0	100	0	100	500
2076	0	100	0	100	500
2077	0	100	0	100	500
2078	0	100	0	100	500
2079	0	100	0	100	500
2080	0	100	0	100	500
2081	0	100	0	100	500
2082	0	100	0	100	500
2083	0	100	0	100	500
2084	0	100	0	100	500
2085	0	100	0	100	500
2086	0	100	0	100	500
2087	0	100	0	100	500
2088	0	100	0	100	500
2089	0	100	0	100	500
2090	0	100	0	100	500
2091	0	100	0	100	500
2092	0	100	0	100	500
2093	0	100	0	100	500
2094	0	100	0	100	500
2095	0	100	0	100	500
2096	0	100	0	100	500
2097	0	100	0	100	500
2098	0	100	0	100	500
2099	0	100	0	100	500
2100	0	100	0	100	500

EMGE & Associates, Inc.





**TABLE 11. UNIT BRICK ROAD & CUT INLET - Q DEMAND (EQU. 1)**

Time	Q (cfs)				
	Peak	Flow	Curb In	Flow/Inlet	Storage
00	0	0	0	0	0
05	0	0	0	0	0
10	0	0	0	0	0
15	0	0	0	0	0
20	0	0	0	0	0
25	0	0	0	0	0
30	0	0	0	0	0
35	0	0	0	0	0
40	0	0	0	0	0
45	0	0	0	0	0
50	0	0	0	0	0
55	0	0	0	0	0
60	0	0	0	0	0
65	0	0	0	0	0
70	0	0	0	0	0
75	0	0	0	0	0
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0
95	0	0	0	0	0
100	0	0	0	0	0
105	0	0	0	0	0
110	0	0	0	0	0
115	0	0	0	0	0
120	0	0	0	0	0
125	0	0	0	0	0
130	0	0	0	0	0
135	0	0	0	0	0
140	0	0	0	0	0
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0
185	0	0	0	0	0
190	0	0	0	0	0
195	0	0	0	0	0
200	0	0	0	0	0
205	0	0	0	0	0
210	0	0	0	0	0
215	0	0	0	0	0
220	0	0	0	0	0
225	0	0	0	0	0
230	0	0	0	0	0
235	0	0	0	0	0
240	0	0	0	0	0
245	0	0	0	0	0
250	0	0	0	0	0
255	0	0	0	0	0
260	0	0	0	0	0
265	0	0	0	0	0
270	0	0	0	0	0
275	0	0	0	0	0
280	0	0	0	0	0
285	0	0	0	0	0
290	0	0	0	0	0
295	0	0	0	0	0
300	0	0	0	0	0
305	0	0	0	0	0
310	0	0	0	0	0
315	0	0	0	0	0
320	0	0	0	0	0
325	0	0	0	0	0
330	0	0	0	0	0
335	0	0	0	0	0
340	0	0	0	0	0
345	0	0	0	0	0
350	0	0	0	0	0
355	0	0	0	0	0
360	0	0	0	0	0
365	0	0	0	0	0
370	0	0	0	0	0
375	0	0	0	0	0
380	0	0	0	0	0
385	0	0	0	0	0
390	0	0	0	0	0
395	0	0	0	0	0
400	0	0	0	0	0
405	0	0	0	0	0
410	0	0	0	0	0
415	0	0	0	0	0
420	0	0	0	0	0
425	0	0	0	0	0
430	0	0	0	0	0
435	0	0	0	0	0
440	0	0	0	0	0
445	0	0	0	0	0
450	0	0	0	0	0
455	0	0	0	0	0
460	0	0	0	0	0
465	0	0	0	0	0
470	0	0	0	0	0
475	0	0	0	0	0
480	0	0	0	0	0
485	0	0	0	0	0
490	0	0	0	0	0
495	0	0	0	0	0
500	0	0	0	0	0

EMGE & CONSULTANTS



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