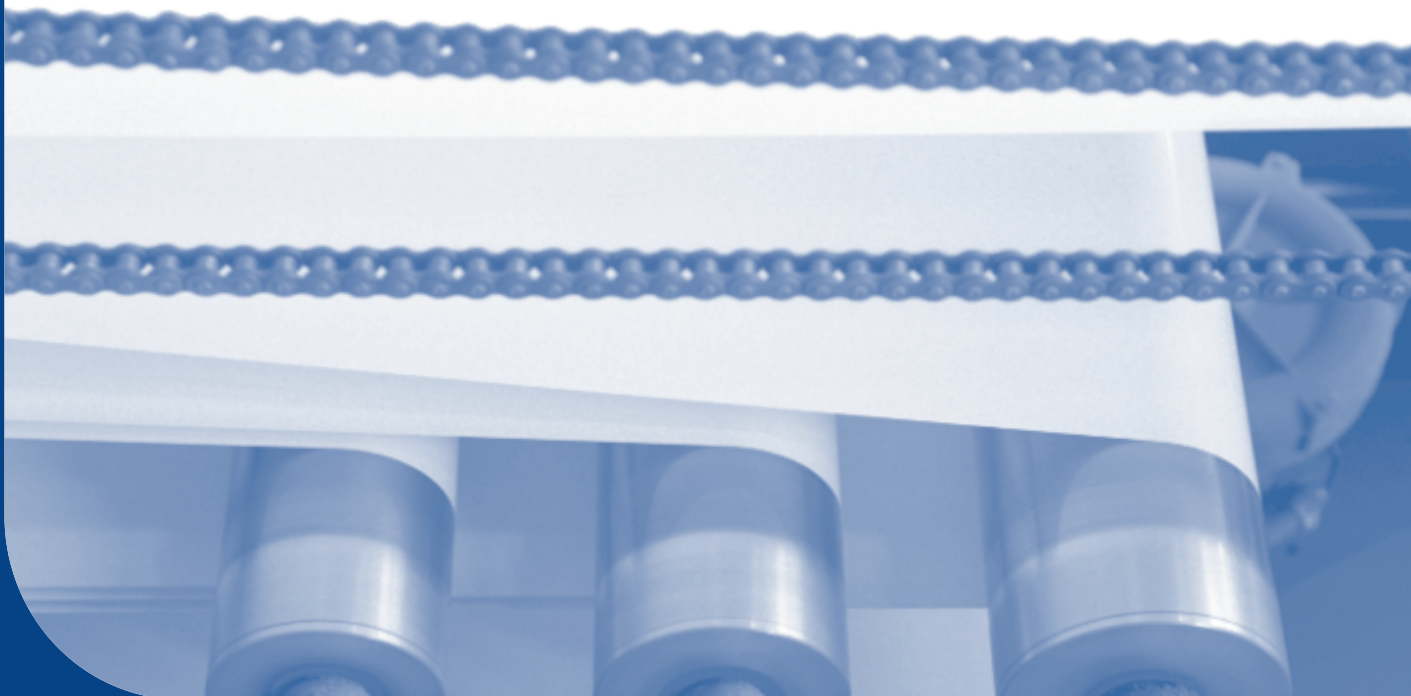




NEWSPRINT

FORECASTS OF DEMAND, TRADE AND SUPPLY



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Sources

To compile these reports we have used an extensive range of sources, including all published information available to EMGE & Co. Ltd.

In addition to published data, we have made reference to much industry data, which companies have been willing to share with us in a non-confidential manner.

Furthermore, we have applied our own market research resources to gather additional information and market intelligence.

This information and that in our databases are updated daily.

We publish the revised World Newsprint Market forecasts twice a year.

Report Contents

Based on comprehensive historical information and extensive, up-to-date market knowledge, the report examines a valuable range of issues that are changing the structure of global markets for Newsprint.

For this report, the base year is 2010. We have integrated statistical information up to October 2011 for the major regions and other countries where available. Market forecasts are to 2015.

Individual country data are provided, and forecasts are grouped by region, as follows:-

- **Western Europe** (EU, Norway and Switzerland)
- **Other Europe** (Eastern Europe/Russia, Greece, Iceland, Cyprus, etc)
- **Total Europe** (Western + Other Europe)
- **North America** (USA & Canada)
- **Latin America**
- **Japan**
- **China/Hong Kong**
- **Other Asia** (All Asia and Oceania **exc.** Japan, China, Hong Kong & Middle East)
- **Total Asia** (Japan + China/HK + Other Asia)
- **Africa/ME** (All Africa & Middle East including Turkey & Israel)

This World Newsprint Markets report provides a critical review of the demand-supply outlook. We provide a comprehensive database of Newsprint demand and supply, which includes a forecast of world capacity by individual country. Importantly, we include extensive tables showing the structure and the investment plans of the industry by company, as well as valuable listings of the Leading Supplier Rankings. A detailed analysis and forecast of the demand-supply balance is included, and the report assesses the outlook for industry operating rates, international trade and self-sufficiency.

The partner to this World Newsprint Markets report is the **EMGE PUBLICATION PAPER PRICE FORECAST**, which is published every quarter, providing a useful price outlook for Newsprint, SC and LWC to 2015, supported by a global assessment of the factors influencing price. As the price of Newsprint is influenced by local as well as global conditions, we have included information and forecasts on prices by region. The analysis is founded upon a large database of information and research.

Definitions & Abbreviations

The definition for Newsprint in this report is Standard Newsprint only. Improved Newsprint has been excluded from the report and is included in Uncoated Mechanical papers, in our **World Graphic Papers** forecast report.

The Newsprint data herein are based on Volumes as sold, measured in metric tonnes.

Newsprint as referred to in this study encompasses Standard Newsprint, between 40 - 52 gsm, up to brightness 59° ISO (*some regional differences in definition do exist*):

Demand / Consumption - calculated as Production + Imports - Exports

Production / Output - paper mill saleable production

Shipments / Deliveries – invoiced mill sale

Trade - Net Exports, i.e. Production minus Consumption, or Exports minus Imports

Capacity - Annual Machine Capacity, based on technical, not market, conditions

Operating Rate - Theoretical Ratio of Production to Capacity

M/c – Machine

gsm – grams per square metre (unit measure of paper weight)

kt – thousands of tonnes

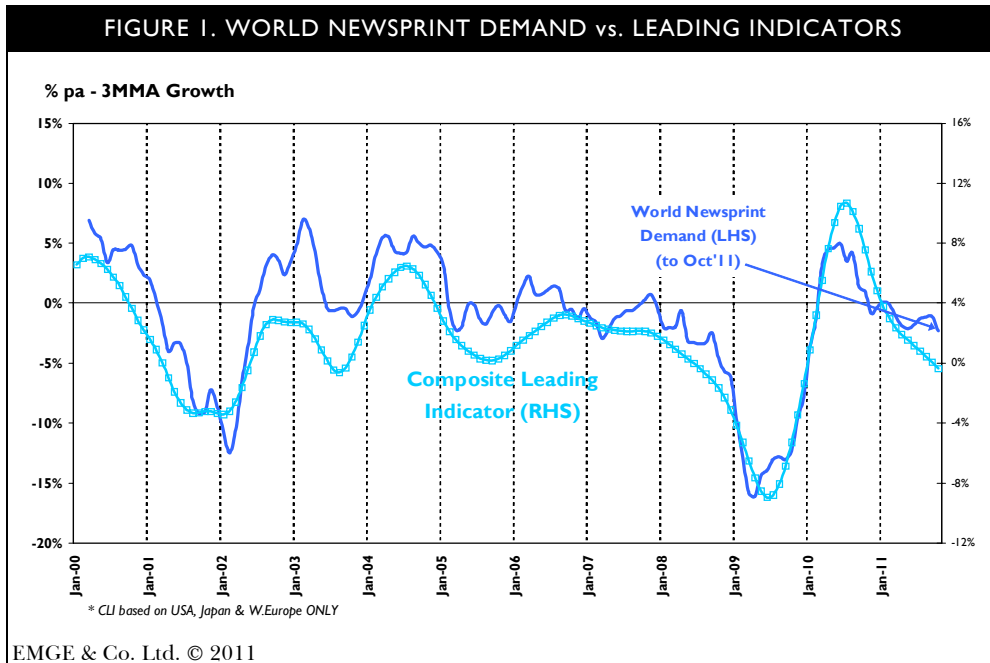
mt – millions tonnes (all volumes are metric)

tpy – tonnes per year (measure of capacity)

% pa – percent increase per annum

Introduction

Global Analysis and Forecasts of the Newsprint Sector – demand, trade and capacities



This report, the latest **EMGE WORLD NEWSPRINT MARKETS (WNM) FORECAST**, examines the key market issues and covers information and forecasts on the outlook for global demand-supply in the Newsprint sector to 2015, including demand, trade, output, capacity, investments and leading suppliers.

A full analysis of **paper prices**, for Newsprint, SC and LWC is covered in the accompanying report – **EMGE'S PUBLICATION PAPER PRICE FORECASTS**.

Furthermore, the sister forecast report – **EMGE'S WORLD GRAPHIC PAPERS** – has recently been published, which covers demand, supply, trade and capacity for the Printing and Writing grades – i.e. Coated Woodfree, Uncoated Woodfree, Coated Mechanical and Uncoated Mechanical (including Improved Newsprint).

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I. FORECAST SUMMARY

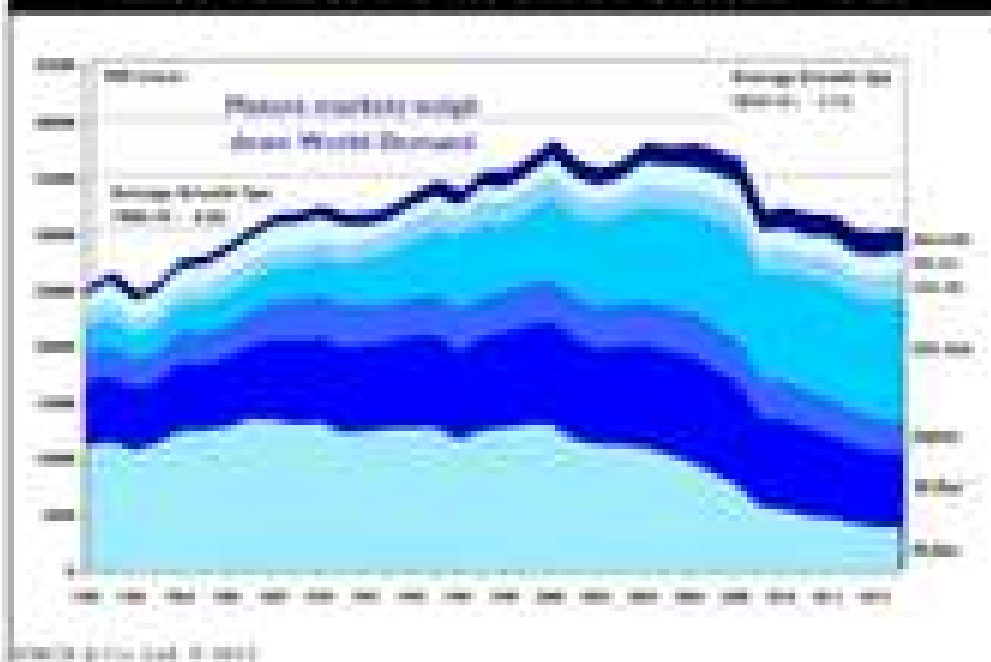
FIGURE 1. MARKET SUMMARY - WORLD GOVERNMENT BOND YTD

NOVEMBER 2011							
YTD change (basis)	2010	2011	2012	2013	2014	2015	2016-25
Duration	3.980	3.980	3.940	3.980	3.980	3.930	-0.75
Yield		3.4%	3.7%	3.7%	3.4%	3.4%	
Supply/Funding	2000	2000	2040	2040	2000	2070	+0.00
Issuance Rate	0%	0%	0%	0%	0%	0%	

FIGURE 1. MARKET SUMMARY - WORLD GOVERNMENT BOND YTD

The global market shows a strong upward trend in government bond yields, particularly in the US, with the 10-year yield rising to 3.4% from 3.0% in 2010. This is driven by a combination of factors, including a strong recovery in the global economy and a shift in market sentiment towards higher yields. The 10-year yield is expected to rise further to 3.7% by 2012, and to 3.4% by 2013. The 5-year yield is also expected to rise to 3.4% by 2013. The 3-month yield is expected to rise to 3.4% by 2013. The 1-year yield is expected to rise to 3.4% by 2013. The 6-month yield is expected to rise to 3.4% by 2013. The 91-day yield is expected to rise to 3.4% by 2013. The 28-day yield is expected to rise to 3.4% by 2013. The 14-day yield is expected to rise to 3.4% by 2013. The 7-day yield is expected to rise to 3.4% by 2013. The 4-day yield is expected to rise to 3.4% by 2013. The 2-day yield is expected to rise to 3.4% by 2013. The 1-day yield is expected to rise to 3.4% by 2013.

FIGURE 2. WORLD DEMAND - HISTORICAL AND FORECAST TRENDS



The global market shows a strong upward trend in government bond yields, particularly in the US, with the 10-year yield rising to 3.4% from 3.0% in 2010. This is driven by a combination of factors, including a strong recovery in the global economy and a shift in market sentiment towards higher yields. The 10-year yield is expected to rise further to 3.7% by 2012, and to 3.4% by 2013. The 5-year yield is also expected to rise to 3.4% by 2013. The 3-month yield is expected to rise to 3.4% by 2013. The 1-year yield is expected to rise to 3.4% by 2013. The 6-month yield is expected to rise to 3.4% by 2013. The 91-day yield is expected to rise to 3.4% by 2013. The 28-day yield is expected to rise to 3.4% by 2013. The 14-day yield is expected to rise to 3.4% by 2013. The 7-day yield is expected to rise to 3.4% by 2013. The 4-day yield is expected to rise to 3.4% by 2013. The 2-day yield is expected to rise to 3.4% by 2013. The 1-day yield is expected to rise to 3.4% by 2013.

The market is expected to continue its upward trend, with the 10-year yield rising to 3.7% by 2012, and to 3.4% by 2013. The 5-year yield is also expected to rise to 3.4% by 2013. The 3-month yield is expected to rise to 3.4% by 2013. The 1-year yield is expected to rise to 3.4% by 2013. The 6-month yield is expected to rise to 3.4% by 2013. The 91-day yield is expected to rise to 3.4% by 2013. The 28-day yield is expected to rise to 3.4% by 2013. The 14-day yield is expected to rise to 3.4% by 2013. The 7-day yield is expected to rise to 3.4% by 2013. The 4-day yield is expected to rise to 3.4% by 2013. The 2-day yield is expected to rise to 3.4% by 2013. The 1-day yield is expected to rise to 3.4% by 2013.

TABLE 6. DEMAND FORECAST, WORLD BY REGION, VOLUMES

Region	2011 volume						2011/2010
	2011	2012	2013	2014	2015	2016	
World	1000	1000	1000	1000	1000	1000	1.00
North America	350	350	350	350	350	350	1.00
Europe	300	300	300	300	300	300	1.00
Asia/Pacific	250	250	250	250	250	250	1.00
Latin America	100	100	100	100	100	100	1.00
Middle East	100	100	100	100	100	100	1.00
Africa	100	100	100	100	100	100	1.00
World Total	1000	1000	1000	1000	1000	1000	1.00
Year	2011	2012	2013	2014	2015	2016	1.00
North America	350	350	350	350	350	350	1.00
World Total	1000	1000	1000	1000	1000	1000	1.00

Source: Emerson, 2011-2016

TABLE 7. DEMAND FORECAST, WORLD BY REGION, GROWTH

Region	growth % per				
	2011	2012	2013	2014	2015
World	0.0%	0.0%	0.0%	0.0%	0.0%
North America	0.0%	0.0%	0.0%	0.0%	0.0%
Europe	0.0%	0.0%	0.0%	0.0%	0.0%
Asia/Pacific	0.0%	0.0%	0.0%	0.0%	0.0%
Latin America	0.0%	0.0%	0.0%	0.0%	0.0%
Middle East	0.0%	0.0%	0.0%	0.0%	0.0%
Africa	0.0%	0.0%	0.0%	0.0%	0.0%
World Total	0.0%	0.0%	0.0%	0.0%	0.0%
North America	0.0%	0.0%	0.0%	0.0%	0.0%
World Total	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Emerson, 2011-2016

The table above shows the main blocks of our demand forecast, including the slope of our demand curve (the current slope is zero or flat being last year, but the average demand growth in 2012) and which regions are expected to see demand rising (e.g., Latin America, Asia, Russia, Europe, Latin America) or falling (Middle America, Western Europe, Japan).

1.1. FORECAST SUMMARY – KEY POINTS

Demand in demand to fall briefly in 2011

Compared to our previous forecast, July 2011, in terms of the forecast market cycle, we are broadly maintaining the shape of our forecast, although with some slight delay in the two main upturns.

We are still predicting a drop in demand in 2011, followed by a slight recovery in 2012, due to recent worries about Eurozone debt, plus factors from the Olympic Games and the Euro 2012 football championships, although we do not expect this temporary upturn to be strong enough or long enough to result in full-year growth. However, we have delayed the start of the non-recovery until early-2012, instead of mid-2011, due to the current weakness in consumer and business confidence, caused by slow resolution of the Eurozone debt worries.

Following this, we continue to forecast a renewed cut-off in 2013, with big spending cuts by the new US government, following the Presidential election in November 2012. With US debt still rising as the Democrats and Republicans disagree about how to reduce the deficit, we are now predicting that the spending cutbacks will be severe enough to lead an impact even into 2014. However, once markets, businesses and consumers have got used to the new situation, we expect a moderate recovery to begin from the new low base in 2013/2014, resulting in growth in 2013. Growth in Asia is expected to be positive throughout the period.

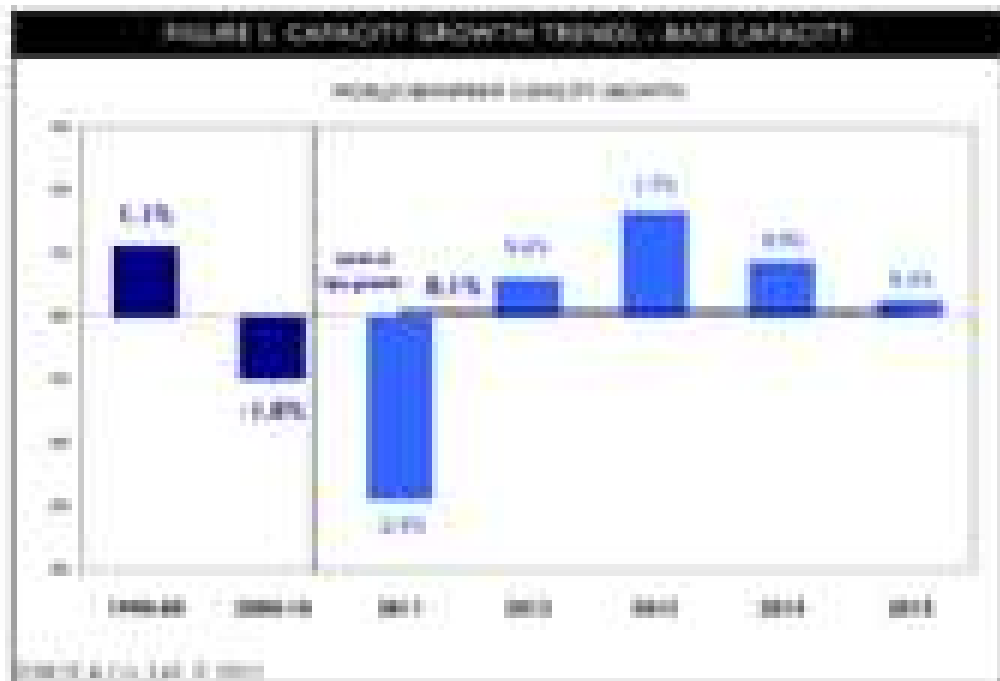
For the whole forecast period, this all adds up to a drop in global demand overall for the 2010-2015 period (by an average of 1.1% p.a).

The outlook for the major mature markets is for declining demand in the long term, with recession and advertising falling in the USA, Japan, Germany, the UK and Australia, for example. Also, with businesses nervous about Eurozone debt, advertising spending is hesitant in these countries, while newspapers are in any case being market driven to other media. As such, there are no reasons to expect any sustained growth in real underlying demand in mature markets.

Demand in emerging markets, meanwhile, is predicted to grow moderately during the forecast period, mainly due to rising advertising, with slightly to moderately positive correlation. However, this growth is not expected to be enough to outweigh declines in the (generally) larger mature markets.

Our forecast for the period 2010-2015 is to be offset by a third year to 2012. However, the impact of Greece's negative growth is not predicted to be over.

The strengthening of the Eurozone is not to be offset by a moderate recovery in 2013, which will not be 2012, followed by a recovery in 2013.



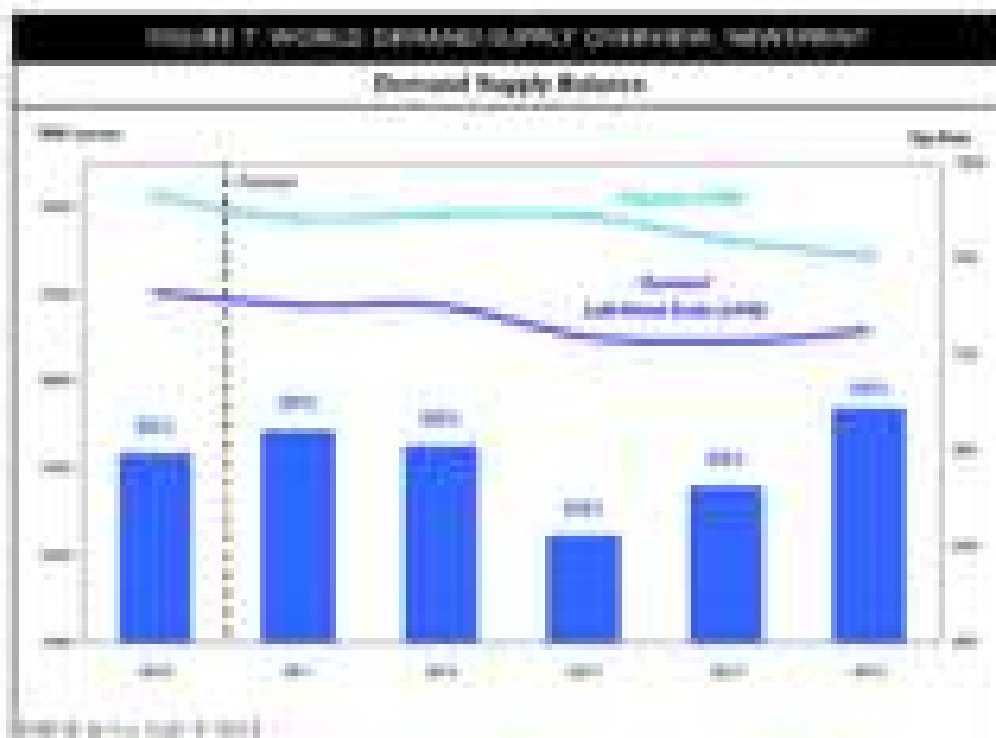
On the supply side, based on known investments and construction plans, Base Capacity is estimated to be almost static over the period 2010 to 2011 (adding capacity negatively by -0.1% per year average). With demand forecast to fall, this would mean the global Non-specified market would be oversupplied, without major new capacity closures.

However, we are actually forecasting that different additional capacity reflects the tone that has yet been announced (Unspecified Capacity) will reduce global capacity by -1.7% within 2010. These Unspecified Capacity changes combined with the Base Capacity further yields our overall Forecast Capacity. This equates to a decline of -1.6% in global capacity between 2010 and 2011, with the biggest falls to take place in North America and Western Europe and to a lesser extent, Japan (i.e. the markets which demand is falling, outweighing growth in other parts of the world).

With no positive help from the Demand side (apart from 2011), Operating Rates from 2010 to 2011 are predicted to vary from 85% to 90%, with generally frequent. And this is only if major new capacity additions (Unspecified) capacity reflects, as per our Forecast Capacity.



The above chart highlights the forecast annual growth of Global Newsprint Demand.



World supply values
 based on capacity utilization of
 all factories. An option
 showing how an extra
 100,000 tons of capacity
 from 2023 onwards will
 affect supply

The above chart summarizes the demand supply forecast outlook.

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2. Demand – Short-Term Outlook

(Based on 2011, but forecast overall demand growth in 2012)

TABLE 2. FORECAST DEMAND-GROWTH, BY REGION - 2011 vs 2012		
	% per growth	
Region	2011	2012
Europe	-1.0%	-1.0%
Asia Pacific	1.0%	1.0%
Americas	0.0%	1.0%
Latin America	-1.0%	1.0%
Middle East	-0.0%	-1.0%
China	1.0%	1.0%
Other Asia	0.0%	1.0%
Australia	1.0%	1.0%
Total	-0.0%	0.0%
Developed	-1.0%	-1.0%
Developing	0.0%	1.0%

Source: EY Global, © 2011

Temporary growth in 2010 (year of extremely poor 2009) gave way to renewed decline in global Purchasing demand in 2010, and it has been falling fairly consistently this year. For the year up to October 2011, demand fell by -1.4% and we are forecasting that it will finish the year down by -1.0%.

Following damaging natural disasters in Japan and Thailand and weak growth in the USA, the very short-term economic outlook is poor, with consumers, companies and banks around the world worried about whether European countries will be able to service their debts or whether they might be forced to default. For our forecasts, this is important in two main ways:

1) The worries are dampening spending, which slows economic activity. This informs our short-term forecasts, at a time when advertising and circulation are already falling in many markets.

2) Unlike the credit and asset markets, which are partly recovering in the wake of defaults (perhaps making a false decision either way), the forecasts in this report are based on no defaults in the short term, with the Europeans solving no-credit problems for now (see [Cover, page 10](#)).

Developing economies are still growing, but at a slower pace than in 2010. However, they are still being hit hard by the recession in Europe and the US. Growth is expected to continue to slow down in 2012, but not to fall below 1% in any region.

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Even without Eurozone defaults driving the world economy into fresh chaos, the situation is troubling. Governments in many countries are cutting their spending at a time when unemployment is already high.

In the newspaper market specifically, we already mentioned falling circulation and advertising in many (mostly mature) markets. In addition, newspaper rates have begun to fall, and newspaper prices have been down or flat, with early signs of discounting in one or two markets. This suggests that inventory building is unlikely in the very short term, and some discounting may even be possible for a time.

However, there are also some positives.

Inflation appears to be picking in many countries, as commodity prices continue to ease progressively back from peaks some months ago. The situation outlook for newspaper circulation and advertising in several emerging markets is positive, and in some cases strongly so. In addition, there appears to be a current recovery taking place in the free newspaper sector; after the disappearance of uncompetitive titles caused a big drop in circulation, the remaining survivors appear to be expanding vigorously again.

However, while economic confidence seems to show, we expect declines (whether in advertising or copy numbers) in many markets, and for the next few months, falling newspaper demand seems likely.

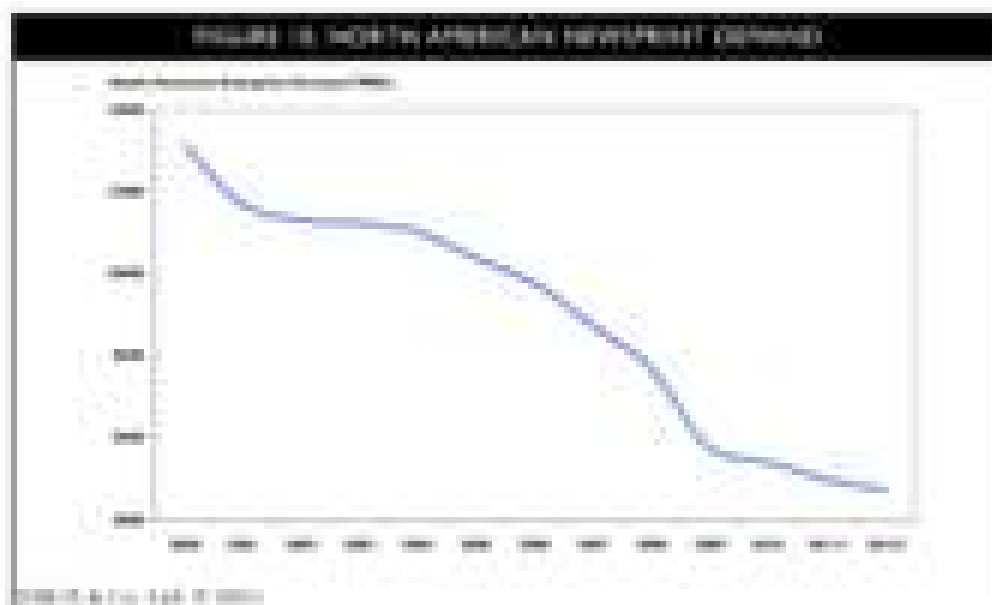
History tells that, no matter how dire a number of reasons why the stock market demand trend will surely not get much worse in the phase of the cycle. Despite the

current difficult underlying situation. In fact, we expect apparent demand to start to improve in the early part of 2012.

This is because we expect the Eurozone to find at least a short-term solution for its debt worries, and that should ease market nervousness (which impacts on consumer and business confidence, and therefore buying of and advertising in newspapers). In addition, we expect a boost from the Olympic Games and the Euro 2012 football championships next summer. 2012 will also, we believe, be the first clear recovery year for Japan and Thailand, following the earthquake/tsunami and flooding that those countries have respectively suffered this year.

If, however, the Eurozone does not solve its problems, then we expect the global newspaper market to head into a second crisis, echoing what happened in 2009 (See "Demand - Forecast", page 11).

2.1 North American demand still declining consistently



It what used to be the largest newspaper market in the World, the drivers of real underlying demand in North America remain negative, and apparent demand is falling steadily.

Advertising in the US newspaper market fell by -8.9% in the first quarter of 2011, followed by a drop of -8.7% in the second quarter, and the signs are that the third quarter will also very weak, with Gannett (-8.7%), McClatchy (-10%) and Media General (-14.7%) reporting big declines in print advertising. Circulation data, meanwhile, are no longer being made available by the US Audit Bureau of Circulation. However, based on our extrapolation of the past trend of decline of around -1%, then the continued fall in advertising and circulation would suggest Newspaper circulation should be falling by between -1% and -1.5%.

And demand is doing exactly that. For the past year demand on a broadest average basis has been falling by roughly -1% to -1% (mid-2011), which broadly reflects the decline in advertising coupled with the continued drop in circulation. For the past 6 months, despite an expected drop in Ad spend of over 10% and we predict that Newspaper demand in the Americas will decline by -1% in 2011.



We predicted in the previous report (July 2010) that the North American Newspaper market would not see any sustained during the forecast the cycle, and we maintain that prediction in this update. There are several reasons for this:

- North American printed newspaper circulation will, in our view, never return to sustained growth. It has already been falling for several years, and although efforts are no longer being provided, it is our expectation that competition from other media (particularly news websites, mobile news apps and e-newspapers) will prevent printed newspapers from returning to sustained growth in circulation.

- North American printed newspaper advertising, which has been falling fairly steeply since 2007, is expected to stay in a similar pattern to that with economic fluctuations during the forecast period. However, given the background of fairly considerable declines in circulation, largely regardless of economic activity, then newspaper advertising trends are going to remain negative.

In addition, paper prices are still fairly high (US Newspaper prices only stopped rising in early-2010, and have not fallen significantly since then). This is expected to be a negative factor in the short term, at least, as publishers try to save money and economize on losses, while their income falls.

In summary, there are no structural positives for demand and North American Newspaper demand will continue to trend negative, in our view.

3.3. Western Europe - North of the World climate starts UK



Following a brief period of growth in 2009, apparent demand in Western Europe has been falling for virtually all of 2011 so far. This is in line with both our forecast and also the negative underlying demand drivers, with digital versions of newspapers increasing their share of total circulation at the expense of print, which affects both circulation and advertising in printed newspapers.

In Germany, printed newspaper advertising has been in slight decline since March 2011, recovering gradually except by month. France reports a drop of 4.7% for the year to October 2011. Circulation is rather weak, with declines that we estimate at around -3.2% in both the second and third quarters of 2011, which would make that the worst forecast period for German newspaper circulation for around a decade.

In the UK, the fall in circulation has (probably enough) worsened considerably since the closure of *The World's Family Newspaper: the News of the World* in July. The title had a circulation of around 2.6-2.7 million, and initially, it seemed that almost 2 million of those readers decided to try out other titles, after the closure of the *World* closed. However, the latest circulation figures suggest those readers are progressively deciding against the alternative titles. The forecast average average (Arms) decline in UK national newspaper circulation in just this year was -4.2% (which was partly due to publishers reducing "bulk" advertising). However, after the closure of *The World* closed, that figure decline worsened to -4.7% in July, -5.0% in August, -5.2% in September and -5.7% in October.

Furthermore, the -7.1% (news drop in circulation in September 2011) would have been even worse, had it not been for the launch of the new daily newspaper, 'T' (circulation around 160,000-170,000, at the start of 2011), leaving total circulation compared with 2010. The previous year circulation based over 2010 will be absent in 2012, however, as the 'T' circulation this will be larger to see.

In addition to this, the inquiry into the News of the World scandal is continuing and this remains a potential threat for confidence in the Newspaper media, potentially affecting all sites and publishers, etc. At the time of writing, there were strong signs that other newspapers and publishers could become involved in accusations of hacking into people's mobile phones (the original source of the scandal) and we have seen from the example of the News of the World what the most extreme outcome can be.

On the advertising side, meanwhile, UK newspapers are believed to be suffering large single-digit declines this year. Ypsilon Advertising Association reported a -7.7% drop in print advertising in the second quarter of 2011, while Trinity Mirror reported an -11% drop in advertising in the first half of 2011, and Daily Mail and General Trust reported the decline of -7% in its regional newspaper business so far in Q3 2011.

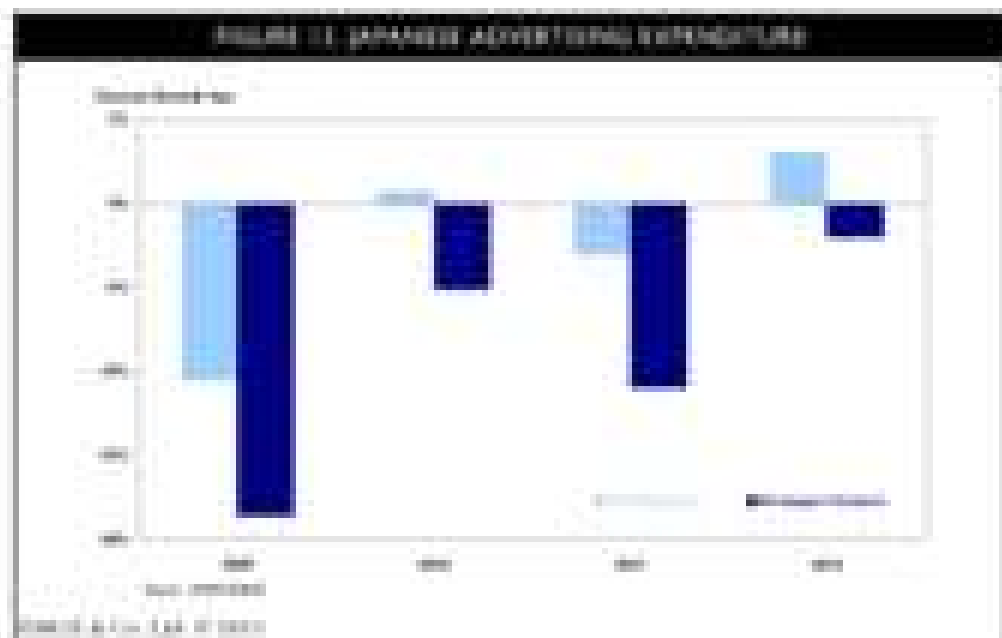
How much of the advertising that would have gone into the News of the World will be picked up by other titles remains to be seen. However, if we presume for now that the advertising money will follow the readers (with circulation now falling faster than before), then total UK Newspaper advertising will continue to fall. Few publishers have reported their third-quarter results yet, although regional newspaper publisher, Newsquest, reported a third-quarter advertising drop of -7.9%. The outlook for UK Newspapers demand therefore appears grim.

However the copyright has agreed to another News Corporation title, via its Dow Jones and Co. subsidiary, the Wall Street Journal Europe (WSJ-E), following controversy over editorial independence relating to both circulation of the title. The Audit Bureau of Circulation in the UK is believed to be considering whether an investigation is necessary, while the WSJE insists the arrangement with its former circulation partner was legitimate. The companies involved do largely have a business arrangement, which we believe could reduce the WSJ-E's circulation by around 12,000 copies per day - a comparatively relatively small amount, in comparison with some of the most successful titles.

So, with advertising and circulation both falling and talk of News International getting out of UK Newspapers altogether, the forecast for UK Newspapers demand is strongly negative.

Although, less evident in Germany and France, the short-term outlook is for continued declines in Western European Newspaper consumption. We continue to forecast a drop in Western European Newspaper demand in 2011. For next year, however, we predict demand to be less weak (although still mainly negative), as worries about European debt calm down and advertising and editorial are boosted by the Euro 2012 football championship in Poland and the Ukraine, as well as the Olympic Games in London.

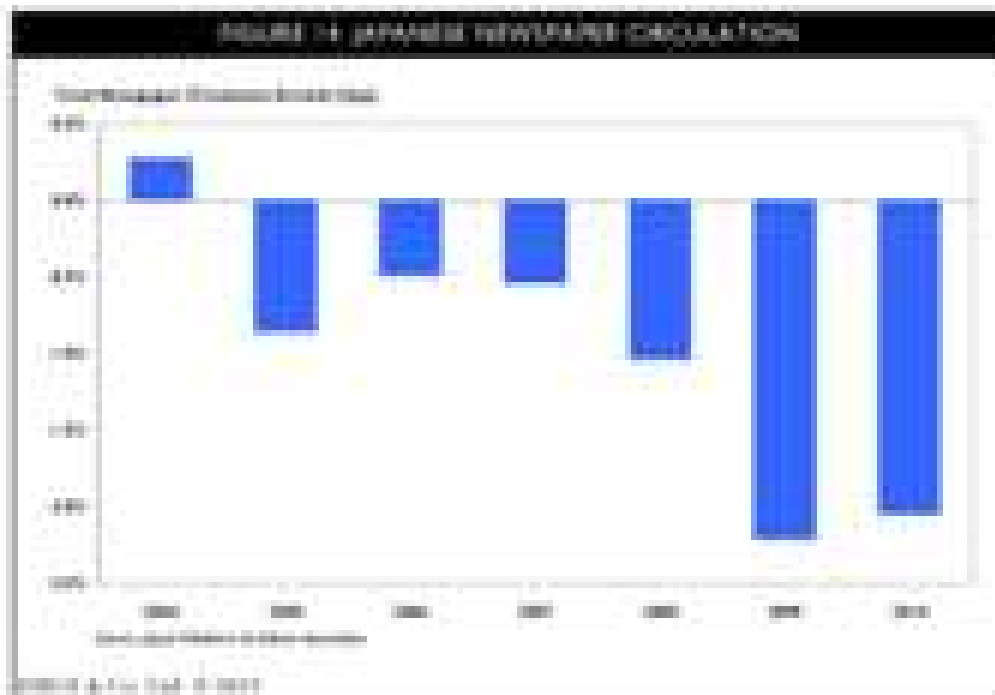
2.3. Japan suffers record Ad, but 2012 should be better



In the other major mature markets, Japan, we use advertising revenue at Dentsu, the country's largest advertising agency as a barometer for monthly advertising movements, and actual newspaper advertising data (as published for the whole of Japan (Dentsu is not also the company which supplies their quasi-official newspaper advertising data))

In our last report, which we published not long after the earthquake and tsunami devastated Japan in March, we noted that the country's economy was expected to remain weak in the very short term, although the massive investment in reconstruction of the areas damaged by the earthquake and tsunami was expected to help the economy return to growth later in year. In line with this, Japanese advertising is generally picked up quite strongly from the summer onwards, with Dentsu now reporting growth in total advertising since August. The spent was dragged newspaper advertising back into positive territory in August, following months of double-digit declines.

However, the upturn has now begun to weaken again, and the decline in newspaper advertising was very stark again in October (-17%), following three above trend months. This was, we believe, partly due to a large number of big Japanese companies being hit by halted production in their off-shore plants in Thailand, due to the heavy flooding and resultant supply-chain problems there. (Japan is the biggest foreign investor in Thailand). The standard initial reaction to any catastrophe is top up spending (as we have seen several times in the past few or three years), and one of the previous strongest spenders on advertising - Japan's car industry - has been hit hard in Thailand.



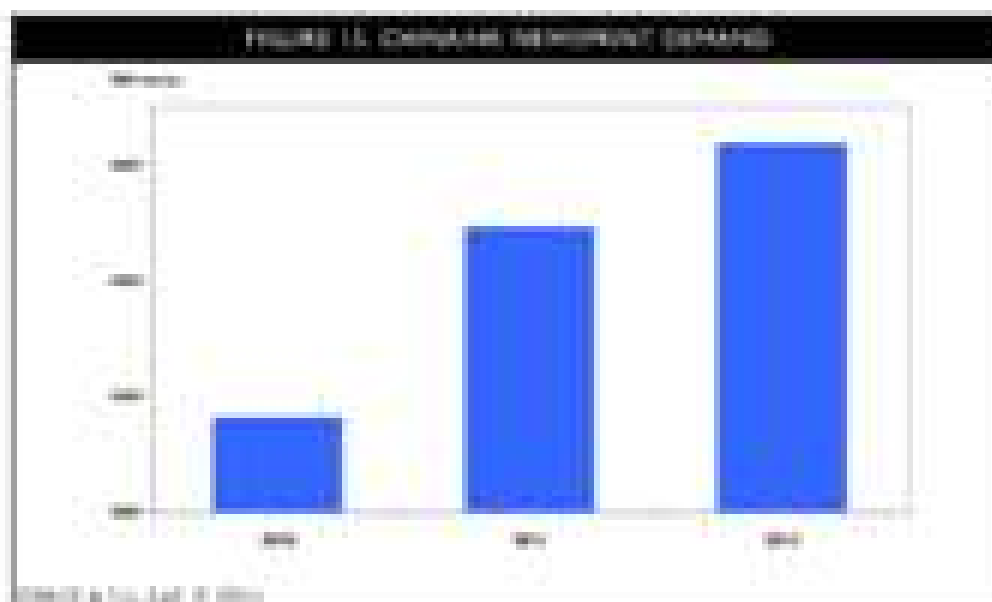
In the very short term, the new disruption is another negative for the Japanese economy in general and as a consequence for newspaper advertising too. However, Japan may finally start to get over many of the supply chain and production-cessation problems caused by the earthquake/tsunami, and we expect a healthy legal recovery from the Thai earthquake.

As such, there is still the potential for a renewed uptick in Japan due to the country's heavy spending on reconstruction, and we expect some improvement in the long-term demand trend once the worries about Japanese operations in Thailand have calmed down. This improvement is now expected from early 2012 onwards.

Japanese newspaper circulation, meanwhile, is believed to be falling fairly gradually (at around -2% in the past range of years – see chart). As such, the major short-term influence on Japanese Newspaper demand is clearly advertising, which makes for a rather volatile market, as there has been savings of around 30% in monthly advertising growth this year alone. This has also been reflected in a certain excess in demand, which has moved monthly from +12% to -2%. In addition, Japan was impacted during the second quarter of this year, and various plant closures will bring profits to a pause due to recent damage. For this reason, combined with the current weak advertising, we expect a year finish at 2011 in Japan.

In 2012, we expect a boost for newspapers from the Olympics (most of which will take place during the low advertising in Japan, so evening newspapers should benefit), as well as from competition with a 2012 that was hit by multiple disasters.

3.4. New Japan Asia after new leadership



Outside of the large mature markets, Asian Newspaper demand has recovered fairly well this year, although there has been a modest improvement in recent months.

According to several sources in the region, Asian demand was actually falling for much of this year, largely due to reduced shipments to China, where newly selected producers away from Newspaper, as newspaper prices rose. We also believe publishers reduced shipment, as Newspaper prices rose. More recently, Chinese mills have been able to persuade publishers to buy more again, which suggests that publishers were using less their inventories earlier in 2011, despite shipment cuts.

In terms of underlying demand drivers, sources disagreed on how circulation is developing but most suggest it is growing, probably at low, single-digit percentages. Advertising, meanwhile, slowed considerably in 2011, following what the China Pulp & Industry Development Report reported was a strong 2010 of double-digit growth. This would have given publishers further reason to be cautious about shipment in 2011.

Looking to next year, Group 11 recently forecast that Chinese newspaper advertising would grow by +8% in 2012. Taking these current and near future pointers together, the outlook for the underlying newspaper business in China seems to be for a pickup in 2012, following a slow 2011, especially if advertising growth slows the rate of cutting in prices of paper.



In India, meanwhile, Newspaper demand growth also slowed this year. This was despite strong financial (FI) growth (7.8%) in advertising in the country's print media (which consists mainly of newspapers), according to Adfa India, part of TAMM Media Research, Berlin. Prosumerhouse/Compass forecasts that Indian newspaper advertising would see just such double-digit growth in the medium term.

There are no especially reliable data on newspaper circulation in India, although several studies that we've done have suggested that the sector is in fact in a medium (single-digit) growth. Mobile phones are seen as a bigger challenge for readership than internet news, as India still has quite low internet penetration (less than 10%). A further general threat is cost, especially for newspapers: India's newspaper market is extremely price sensitive, and if rising costs force publishers to raise cover prices (as has been the case), then this will act as a brake on circulation. However, despite rising costs and rising growth in mobile phones, rising literacy and rising trust in newspapers as a medium are immediate reasons to predict continued growth in circulation in the short term at least.

Most other newspaper Adfa markets have experienced a slowdown or even a decline in demand this year, although we expect this to be temporary, with the demand trend forecast to improve in 2012, as advertising in particular picks up in line with our forecast (p19).

2.5 Latin America reducing inventory in 2011



Elsewhere in developing regions, Brazil's circulation population has forecast a +1.2% rise in newspaper circulation this year, up from growth of +1.1% in 2010. This may even turn out to be conservative, as Brazil's growth had already increased to +1.2%, helped by growth in low priced titles. The increase that the country's newspaper circulation has (eventually) recovered from a slight year decline during the global economic crisis in 2009.

On the newspaper advertising front, despite a poor start to the year (-2% for the first 4 months), as well as expectations of a decline for the whole year (Wary forecast: -3.7% for IAB), the reality seems to be turning out rather better, according to the "Program from Place" (from-Place Report). Despite newspaper income was up by +1.7% in the first seven months of the 2011. Although it is not clear how much of this was due to advertising, the rise in income from circulation from low priced titles would be fairly minimal, in our view, suggesting that advertising is likely also to be in growth.

However, very much in contrast with the otherwise fairly healthy newspaper income, appears demand for newspapers in Brazil is actually falling this year (by -4% to -5%). With circulation and publisher income rising, the drop in advertising newspaper demand suggests one of two things: a period of inventory reduction by publishers following a hectic year which included a football World Cup and/or reduced pagination due to high newspaper prices, which are at a 13 year high, having risen by +25% since 2008.



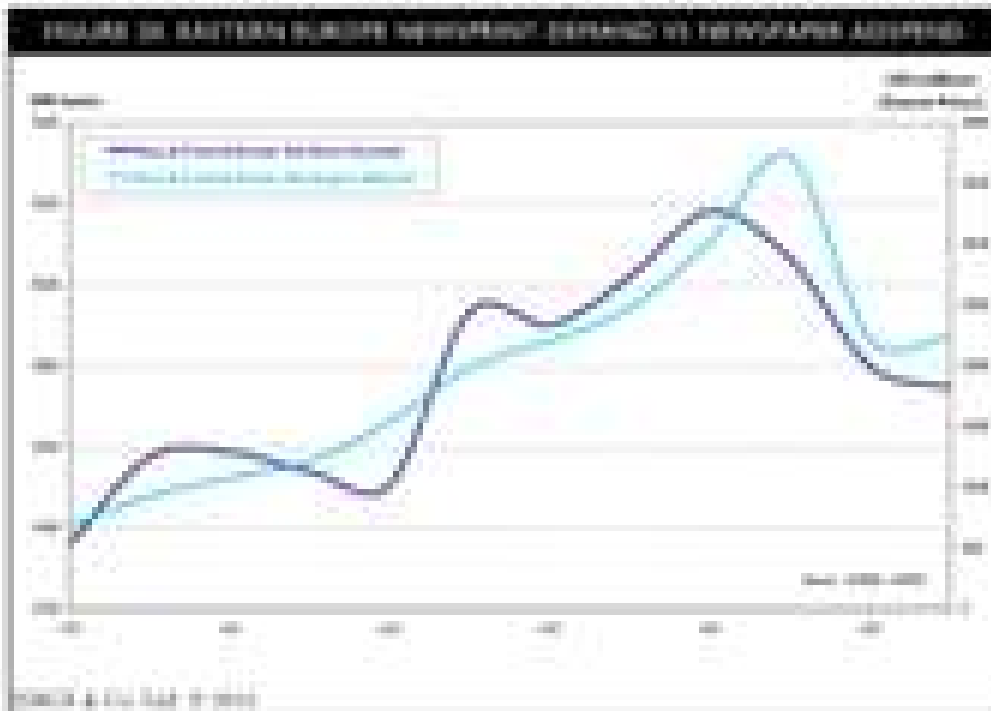
“We believe inventory reduction is the main cause, following a massive jump of +10% in apparent demand in 2009. The growth in 2010 far outstripped the underlying drivers, and strongly suggested that publishers were building inventory last year, as prices rose.

With upward newspaper price pressure now fading, while publishers’ income and newspaper circulation are rising, we would expect advertising to end 2010. As we are forecasting a cyclical upturn in the first part of 2011, we are predicting that Brazilian demand will return to growth again, and soon.



For the moment, though, the stark news outlook for advertising in all media in Latin America as a whole has resulted in recent months, according to David Quintana, which downgraded its forecast for 2011 from +7.8% to +6.7%. This is still very healthy growth, nonetheless. With print media generally underperforming the advertising market, we expect growth in Latin American newspaper advertising to be in the low single figure percentage, this year. Continued uncertainty is believed to be markedly present in the region. However, the main influence on demand in 2011 is the correction from the inventory holding of 2010. Latin American operators demand grew by +5.8%, and we are forecasting a consequent moderate drop in the print demand this year. Inevitably with the underlying growth in the newspaper sector, plus the typical lagged effect we have explained, we expect to return Latin American demand to growth in 2012.

3.6. Eastern Europe

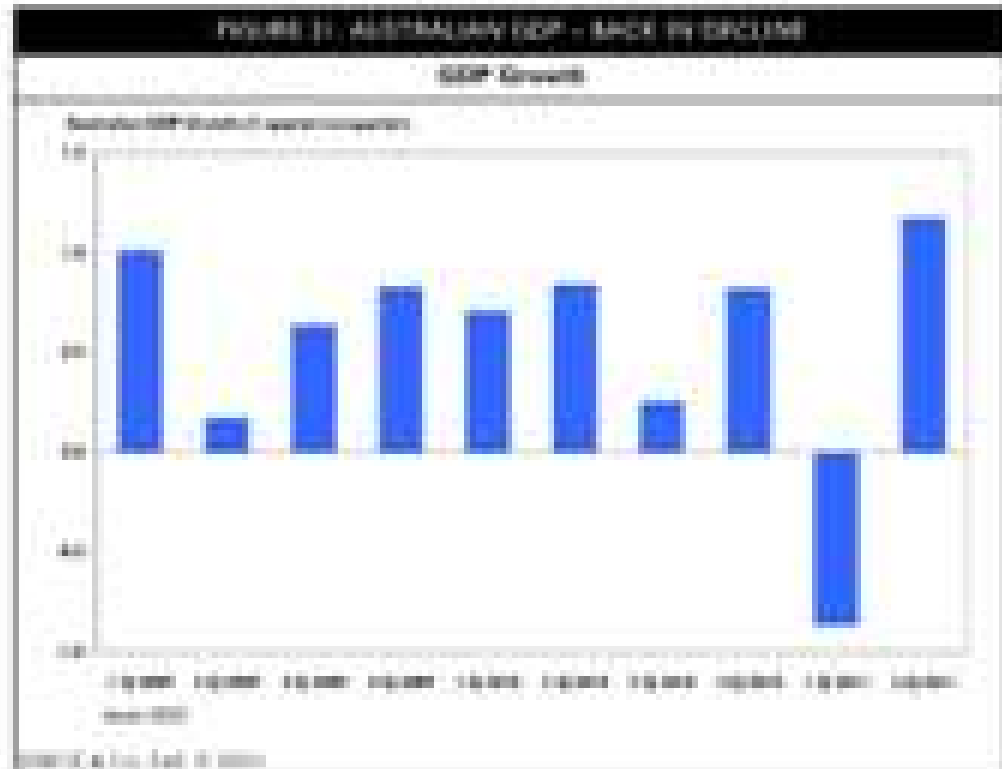


In Eastern Europe, meanwhile, following a partial recovery in the advertising market in 2010, Eastern Europe has downgraded its forecast growth for 2011, from +10% to +8%, but this is still very strong growth and enough broadly to regain the top of the ground lost in 2009. This growth is also predicted to strengthen further to +11% in 2012, helped partly by the June 2011 budget strengthening in Poland and the Ukraine.

In recent years, Eastern European newspaper advertising has performed fairly well in comparison with the average for all media, and Newspaper demand growth suggests this is continuing, with apparent Newspaper demand up by +8% in the year to October 2011. Our observations indicate that demand growth in Eastern Europe is continue through 2011 and 2012.

2.7. Southern markets review

FIGURE 2: AUSTRALIAN GDP – BACK IN DECLINE



In Australia, the declines in newspaper circulation were rather modest in the last 3 months than in the previous year of 1%. Following fairly consistent falls of around -0.2% to -0.3% in the rate of printed daily newspapers in the previous 3 quarters, the declines in the second and third quarters of 2011 were rather worse at -0.5% and -0.5%, although the industry argued that the non-competition in the third quarter was a good sign.

On the advertising side, we believe newspaper advertising has been in decline this year. And although this market has been a lot stronger than other mature markets in recent years, Processmedia/Comcast appears to have turned bearish on the Australian market, downgrading its long-term advertising growth forecast from around +0.5% to zero. While it would be naive to think that the overall story would only be thanks to growth in digital advertising.

We believe this is probably somewhat premature, and West agrees forecasting a decline in 2011, followed by modest growth in 2012. However, with circulating falling, the overall outlook for the Australian printed newspaper sector is that the short and medium term is rather lower than it has been in the past.

In South Africa, following modest declines in the first and second quarters of 2011, total newspaper circulation increased in the third quarter of 2011.

In the third quarter of 2011, daily newspapers saw circulation fall by -1.7% (year on year), and weekend newspapers suffered a drop of -1.2%. However, these hits were outweighed by growth in weekly newspaper circulation, which was up by a massive +20%, thanks mostly to strong growth in one title in particular, while new startups boosted circulation of free newspapers by +18.6%.

Taking the ups and downs of 2011 into account, the overall circulation trend is usually still on a growth path in the long term. However, just as in 2011, there has been considerable fluctuation in recent years, partly due to launches and closures of free newspapers, which makes consistent growth particularly achievable, as shown in the first and second quarters of 2011.

This is compounded by the outlook for newspaper advertising in South Africa, with the national Audit Bureau of Circulation warning "We're expecting 2012 to be the toughest year in memory." This is due to a range of reasons, including advertisers' budgets not keeping pace with inflation in advertising rates.

Despite the circulation successes in the weekly and free sectors in the third quarter of 2011, the short-term outlook is fragile, in our view – as shown by the declines earlier this year. Added to the expected tough advertising market next year, we believe the risk for South African Newspapers demand is on the downside in both the short and longer term, although temporary periods of growth are still possible in the short term.

2.3: Free Newspapers still playing a role

Declining circulation in the free newspaper sector halted in 2009, partly due to growth in Asia and Latin America (and to a lesser extent, South Africa), and it may now have returned to growth, against many expectations and also some analysts' beliefs.

Dr. Paul Bellini, an expert on free newspapers and other media, reports that, following an -18% drop in global circulation of free newspapers in the economic crisis year of 2009, circulation was then almost stable in 2010 and that the downward trend has reversed this year, with circulation recovering by +4%. Thus, this doesn't make up for the ground lost in 2009, but it is a very interesting development that many would not have expected.

We have already shown that free newspapers are one of the factors that kept South African newspaper circulation growing in the third quarter of this year, and it seems that this may also be true in some other markets, too. And it is not just developing markets, either – according to Dr. Bellini, free newspaper circulation is up in 2011 in the mature markets of Austria, Canada, France, Luxembourg, the Netherlands and the UK, as well as the developing markets of Argentina, Brazil, China, the Dominican Republic, Guatemala, Hong Kong, Peru and Thailand. The growth in the mature markets is especially interesting, as it suggests that the decline that many experts expect in this sector may take time to play out. While the number of free titles in circulation is continuing to fall, this is usually lagged following the initial growth phase (the period for more competitors than the available advertising budget could support). The disappearance of the losers also means a rise in advertising market share for the surviving titles, which could even mean income growth, even if overall advertising is falling. This implies that future declines in circulation could be more gradual than the steep collapse seen when titles simply disappear, rather than slowing down.

Coupled with this is the potential for short-term advertising growth to flow with our forecast cycle in 2011, as well as continued early-stage sector growth in developing markets. All of which suggests that in the short term, we could yet see more growth from the free newspaper sector, at the global level. In the longer term, however, the outlook will be for the free newspaper sector to slow down to sustainable size in developing markets too, while newspaper advertising budgets in mature markets are not expected to show sustainable growth in the longer term.

3. Demand – Long-Term Outlook

Weakness in primary markets is being demand is derided most of the time

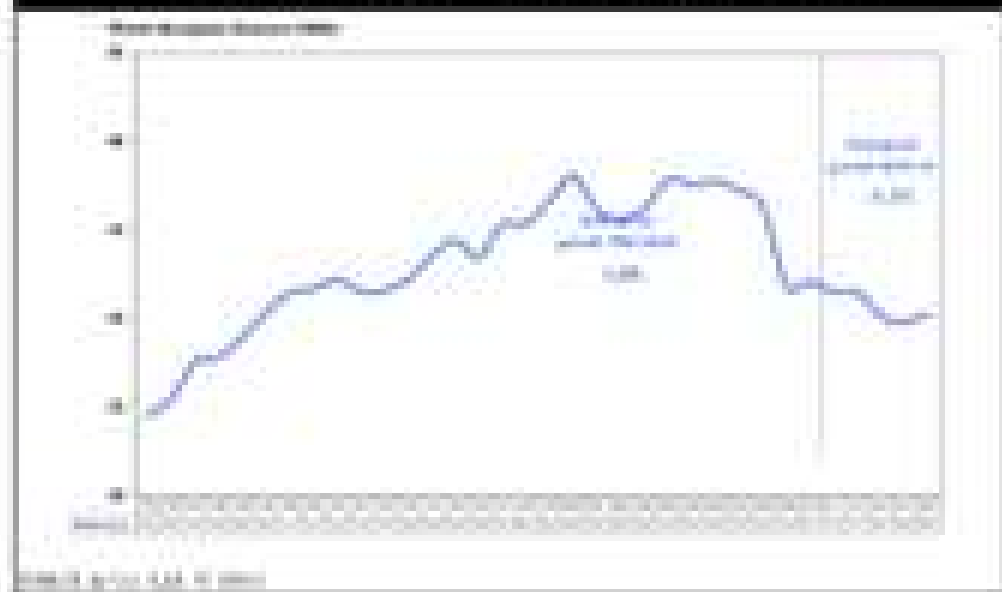


The chart shows demand growth falling around -1.8% during the Great Recession

Our long-term forecast is based on a business cycle including a slowdown in 2011, then a temporary recovery in 2012. This will be followed by a weak 2013 (for a number of reasons, including big spending cuts by the new US government after the Presidential election in November 2012). This is expected to return to downturn, being into 2014, which we expect to bottom out during the year, with 2015 showing some growth over the low point of 2014.

As mentioned earlier, consumer confidence and advertising are falling in the USA, Western Europe and Japan, and we see no reason to expect any sustained reversal of these declines (although there may be temporary respite at local high points). The outlook is rather bleak in many emerging markets, with consumer and advertising both in growth in many markets.

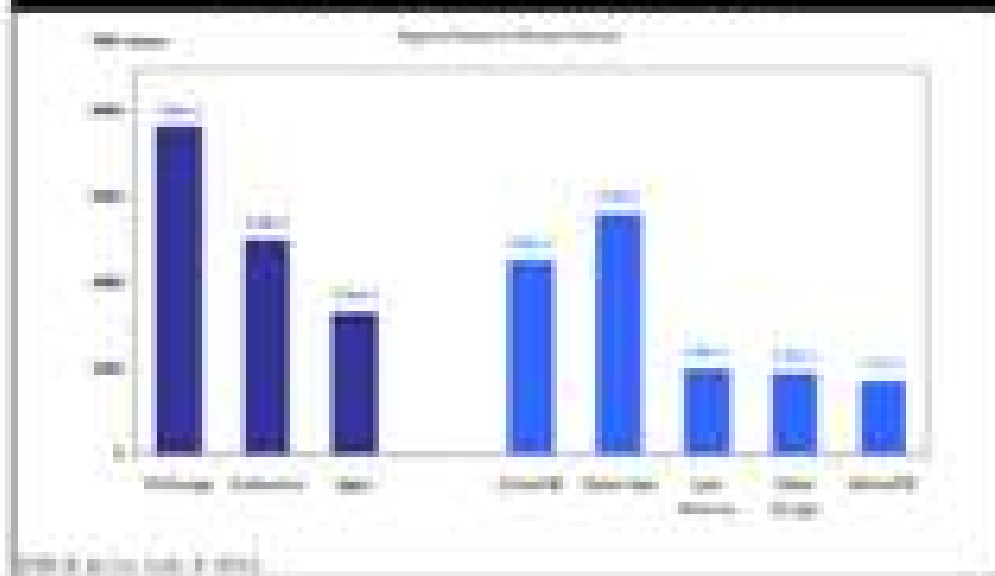
FIGURE 21. (HOLD IN Q4) DEMAND GROWTH IN REGISTERED



From the global and regional up and down trends noted at the global level to, we believe, slightly declining consumer and broadly flat or marginally negative advertising the advertising businesses such as *Journal Opinions* and *PageClick* more or less agree on this view.

All of the above has influenced and contributed to our long-term negative (or flat) demand forecast for *Newsprint* worldwide past 2012.

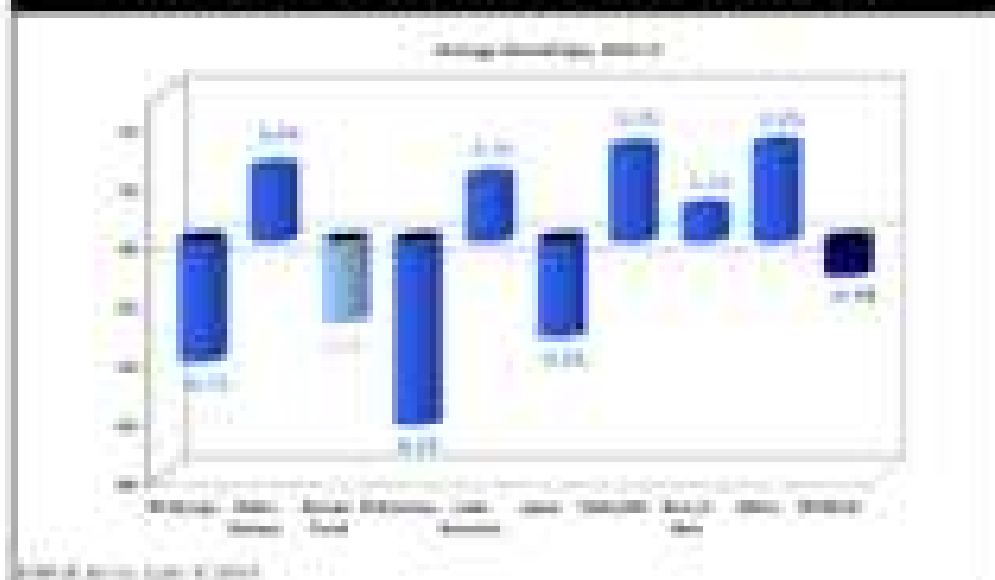
FIGURE 24. REGIONAL DEMAND VOLUMES (2011)



As mentioned, newspaper advertising and circulation are expected to decline as less use is made of these media in mature markets, although brief recovery of growth rates may be seen. It is likely that the death of the printed newspaper is probably still some time off – beyond the immediate horizon of this forecast.

The decline of the newspaper business due to these media companies is not confined to emerging regions but the large size of the mature markets (see chart above) means that continued losses in mature regions will result in a decline in the global total (see chart below).

FIGURE 25. REGIONAL DEMAND-GROWTH OUTLOOK (2011-15)



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4. Demand - Caveats

Structural and cyclical risks could cause big, new demand drops

1. Fear of Greek default / Threat of new Credit Crunch

The worry about Greece defaulting on its debt has now spread to other European economies, with Italy and Spain seeing record costs of borrowing recently, while Greece, Italy and Spain have now all replaced their political leaders with economic technocrats.

The financial sector remains worried, as it waits to see concrete action from the countries concerned, but more importantly, what fine solutions the Europeans will come up with.

There have been doubts raised that any European/International Monetary Fund (IMF) bailout fund may not be enough to prevent one or more countries defaulting, and the credit and asset markets are behaving very nervously, as they wait impatiently for a clear political signal. Our forecasts are based on their reasoning, and being satisfied by, such a signal rather than helping to bring down the cost of borrowing for the stricken countries and preventing any defaults. However, the risk of default is very real and there are absolutely no guarantees that the Europeans will be able to bankers' fears in time (or at all).

With borrowing costs high for the stricken countries, there is a real risk of a default. And that itself would cause even tighter credit, i.e. a new Credit Crunch.

When the 2008-2009 crisis will first hit in people's minds (global Newspaper paper demand slumped by -1.1% in 2009), the potential downside of a new Credit Crunch would already be severe. In fact, they could be even worse than last time. After all, the very serious consequences of the last Credit Crunch have not yet been resolved, as can be clearly seen in Greece, Portugal, Ireland, the USA and many other countries.

During the last financial crisis, bad debts were passed on from financial companies (e.g. Bank) to other financial companies, which then had to be rescued by their countries. Some of those countries are now themselves at risk, and the bad debts are being passed on to other countries and the IMF. But there isn't much room left to manoeuvre. Countries like Germany seem unwilling to lend any more and the IMF has said it may not have enough funds to bail out one of the larger service economies, as there may be nowhere left to pass the bad debts on to.

In the worst case scenario, if the fears turn out to be correct and Greece (and/or another country) did actually default, then it would most probably cause the credit markets to freeze up again. In which case, we would expect a downturn on a whole new scale. The crisis will not be compared, but countries. Double-digit falls in Newspaper demand might be the least we should expect.

2. UK newspapers hit by spreading scandal The furore of the World phone-hacking scandal continues to rumble on, and the so-called "Lawson Enquiry" into newspaper behaviour is ongoing at the time of writing.

As part of the enquiry, there have already been accusations that several newspaper titles and publishers, as well as the Papers of the World and News International, were involved in phone-hacking and inappropriate harassment.

Our forecasts are based on a relatively strong decline for UK Newspapers demand arising partly from the downward of these scandals, partly due to the loss of Papers of the World readers who have not switched to other newspapers, partly due to a weak Advertising sector in the UK generally, but also due to a loss of confidence for Newspapers in the Advertising sector.

Should these issues not be resolved to the satisfaction of the Advertisers, and these scandals lead to a severe restriction for the UK Newspaper industry, the decline of the UK Newspapers demand would accelerate. Given that the UK was one of the two largest markets in Europe, the impact on the whole of European Newspapers demand would be very significant.

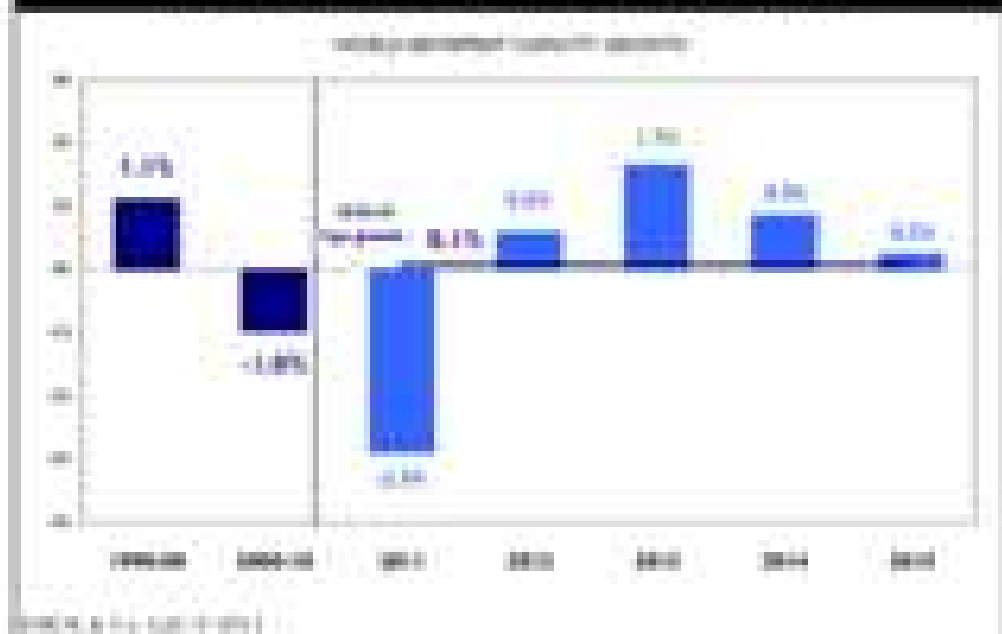
5. Supply – Base Capacity

Although capacity is hardly required in the demand side, still some base capacity

FIGURE 16. BASE CAPACITY DEMAND BY REGION							
Capacity - TWh capacity							
Year	2019	2021	2023	2025	2027	2029	2030-35
Europe	1100	1050	1100	1100	1100	1100	100
Asia Pacific	1000	1000	1000	1000	1000	1000	50
America	800	800	800	800	800	800	0
Latin America	200	200	200	200	200	200	20
Africa	100	100	100	100	100	100	0
Middle East	100	100	100	100	100	100	10
Worldwide	3300	3300	3300	3300	3300	3300	180
Europe	1000	1000	1000	1000	1000	1000	100
Asia	1000	1000	1000	1000	1000	1000	20

Based on known plans and projects both for capacity increases and closures (i.e. what we call **Base Capacity**), global Newspaper capacity is projected to hit the zero, before rising in subsequent years. The future will be strongly stable global Newspaper paper capacity for the 2019-2035 period (+0.1% p.a. on average).

FIGURE 17: CAPACITY GROWTH THROUGH 2015 – GAS CAPACITY

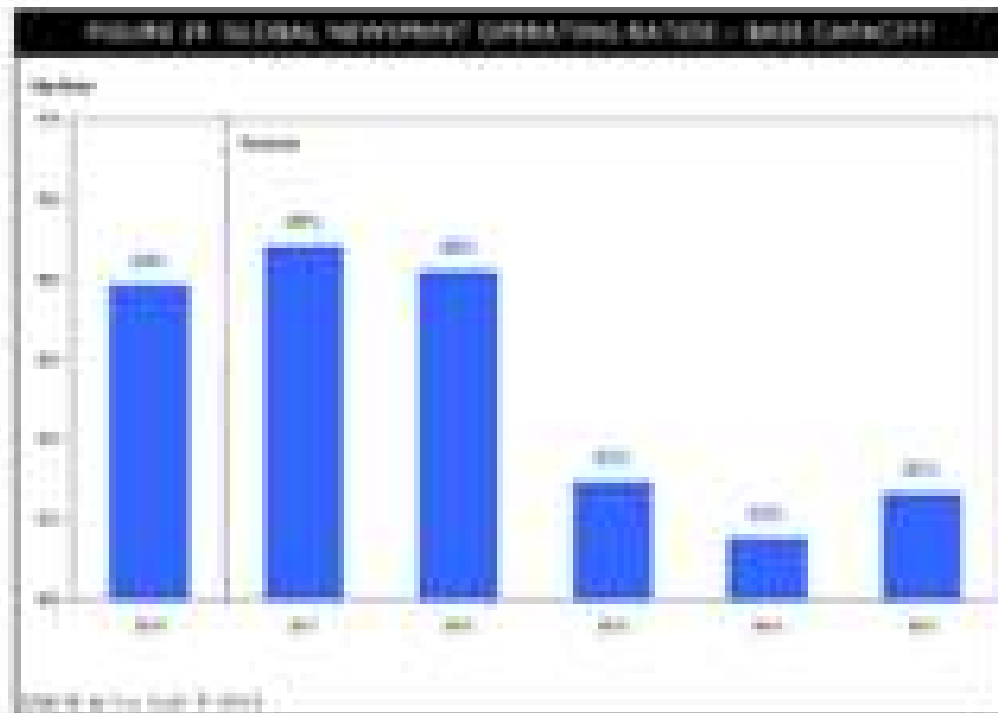


The bulk of recent capacity additions have been in North America and Western Europe in 2010, with the industry in those regions waiting to meet capacity no longer demand.

For the period forecast period to 2015, regional differences are shown below – natural gas capacity tends to increase in North America and Western Europe as mentioned, while the growth looking forward is primarily focused on Asia and elsewhere. The expansion planned by China has also been delayed last by climate and shifted to other gases.

FIGURE 18: CAPACITY INCREASE FORECAST BY REGION – GAS CAPACITY





Capacity cuts in 2016/2017 helped to keep global supply closer balanced with demand fall. However, with demand projected to fall further, we are forecasting that further closures will be required, if substantially overcapacity is not prevented.

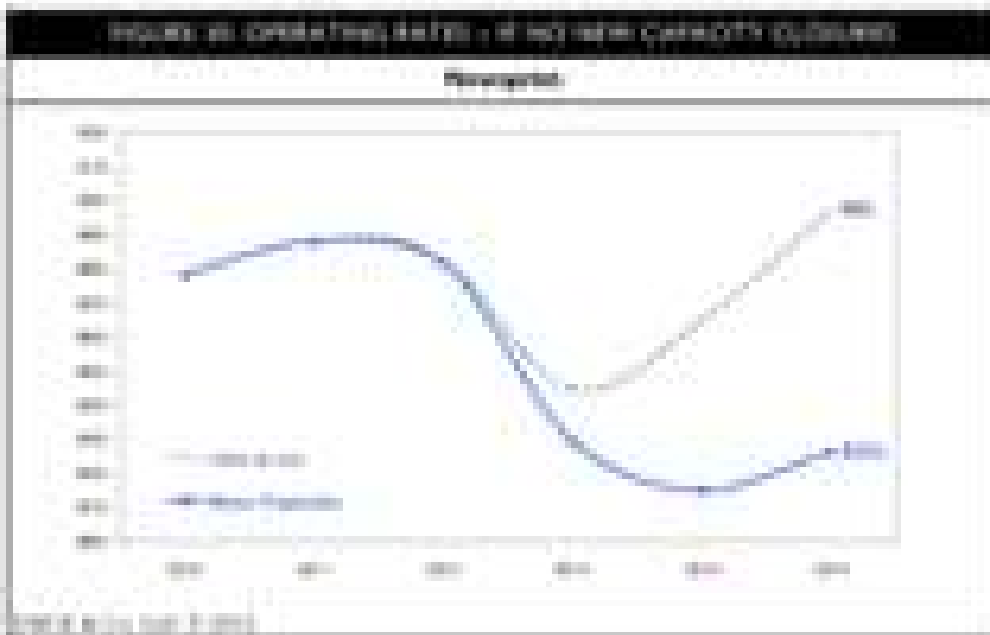
As things currently stand, with demand forecast to fall heavily in 2017, while Base Capacity is not expected to fall at all, we would expect the global market to become very oversupplied from 2017 onwards (see chart).

Combining our demand forecasts with the Base Capacity presented earlier in the previous pages, the best year for newspaper producers would be this year (see chart). The following years would be significantly worse, with Operating Sales falling at low or 80%.

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6. Supply – Forecast Capacity

We expect only to make additional capacity, what we had because very unimpaired



As mentioned in the previous section, our **Base Capacity** processes do not include any additional **Unimpaired Capacity** closures in any form which have already been announced. This series of our supply projects includes all of the closures that stands at risk before year in the scenario, as result is EMSE's **Forecast Capacity**.

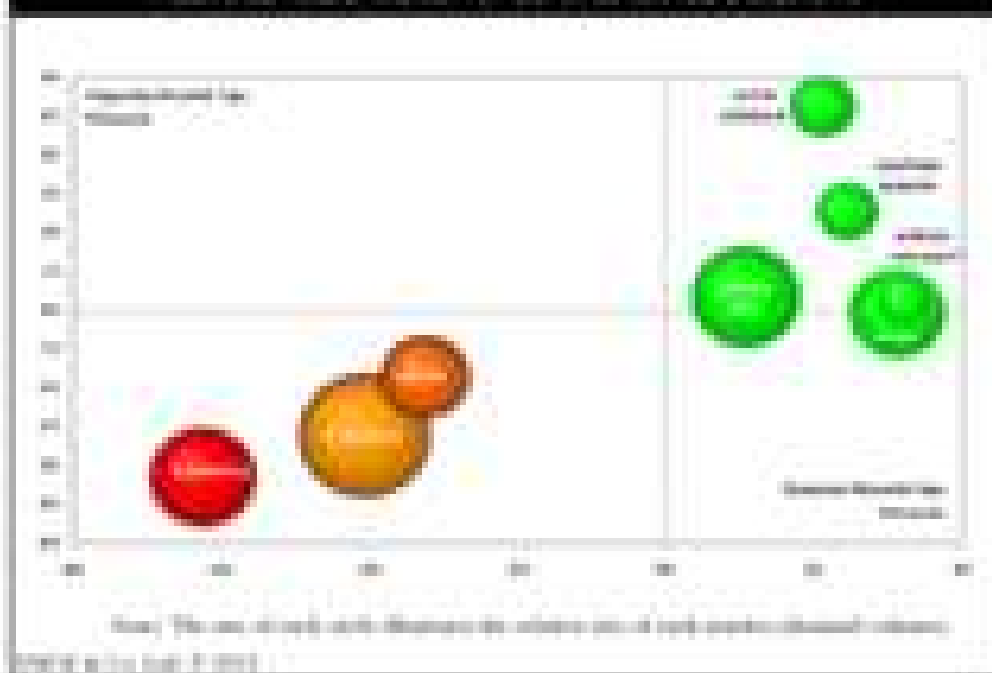
Unlike **Base Capacity**, which is based only on what is currently known, our **Forecast Capacity** is based on certain assumptions. For this forecast, the main assumption is that **Manufacture producers in major markets will try to maintain supply with falling demand**. As mentioned, if papermakers do not close more capacity than they have to be used they will, then capacity will be consistently higher than produced demand during the base part of the forecast period (see below for an chart). We do not expect papermakers to increase this for very long. The **Manufacture industry has a fairly strong recent record of proactively closing capacity to re-balance supply and demand**, and we expect further such moves during the forecast period. These closures will be triggered especially during periods of heavy overcapacity, meaning that very low **Operating Rates** should not last too long. The top line on the chart above shows how we expect additional ("Unimpaired") capacity closures to prevent **Operating Rates** from remaining at very low levels for long.



As mentioned, we expect investments in these areas capacity that they need as the demand will shift with the growing economies and sustained demographics. High demand being found in the eastern regions of North America, Western Europe and Japan. There are also the factors where we expect more different capacity to be focused over time.

Taken together we are forecasting that capacity investment capacity will manage the expansion in energy markets.

FIGURE 11. REGIONAL SUPPLY-DEMAND DIVERGENCE, 2019-21



The chart shows the divergence between supply and demand for various regions from 2019 to 2021. The Y-axis represents 'Divergence' (ranging from -20 to 20) and the X-axis represents 'Year' (2019, 2020, 2021). The chart is divided into two panels. The left panel shows the divergence for 2019 and 2020, with bubbles for China (red), Latin America (orange), Europe (yellow), Middle East (green), and Africa (purple). The right panel shows the divergence for 2021, with bubbles for the same regions. The bubbles in the right panel are significantly larger and more colorful than those in the left panel, indicating a much larger divergence in 2021. The legend in the top right corner identifies the regions by color: China (red), Latin America (orange), Europe (yellow), Middle East (green), and Africa (purple).

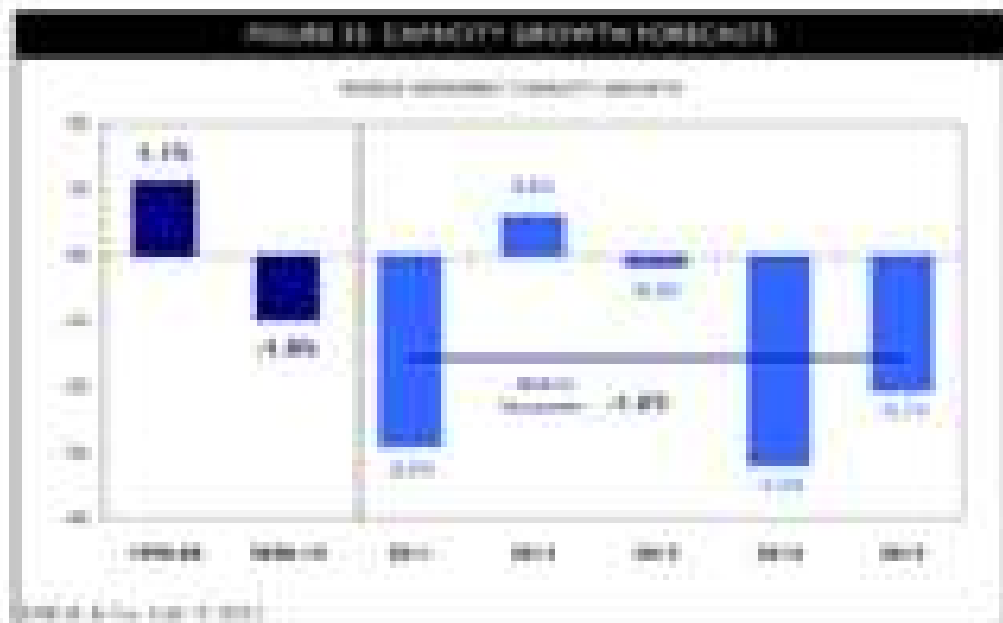
This chart shows the convergence between our forecasts for demand and capacity.

While demand forecasts for 2021 have mostly a modest increase, they are also where we predict the most significant capacity increases will take place during the forecast period.

The lower forecast for Latin American capacity increase (see chart) is a result of both the most rapidly falling demand and the region's large number of relatively old machines. Demand is not falling quite as rapidly in Western Europe, and most of the machines in operation are comparatively modern, so our forecast for capacity reflects a slow region-wide decline until 2024. In Japan, meanwhile, we expect some of the capacity that was damaged in the earthquake/tsunami of March 2011 to be closed permanently.

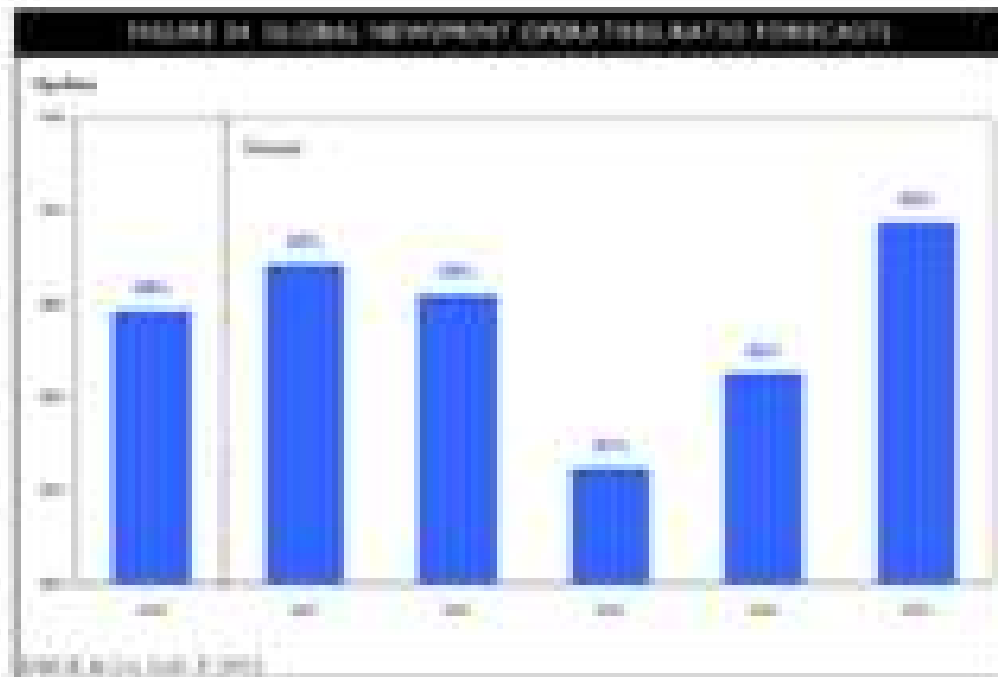
Of course, capacity growth is expected to occur in several regions where demand growth is the highest. However, we now expect less capacity growth (and a net loss) in China than we did previously, because many Chinese Newspaper producers have this year received capacity as production of other grades this year. Therefore, the high capacity growth forecast for Latin America (see chart above), is due to the new Newspaper PPI being built in Venezuela, which will create fairly high growth from Latin America's comparatively small manufacturing base (currently less than one million tons).

For detailed Pipeline Investments, please see more information on the Investment in Western Europe, Asia and Latin America, etc. (page 76).



Large volumes of closures this year and especially this year have led to an increase in capacity as a result of the fact we are forecasting an average Closing Rate of 87% for 2022. However, as we are also producing further lifts in demand over the forecast, particularly in 2023, we expect to see a corresponding increase in demand that will cause more closures and lifts are closed.

Most of the Unpermitted capacity closures that we are forecasting will be in response to the opportunity, but as such, will take place after a shutdown, as shown in 2024 and 2025. Continuing the capacity cuts already announced, these Unpermitted closures that we are forecasting will mean an overall decline in world Permitted capacity over the forecast period as a whole. The global decline is projected to be -1.0B per on average, or around 5.5 million sqm, for the 2024-2025 period.



Comparing our demand forecast with our Forecast Capacity, we come to a prediction of consistently below Operating Ratios, that could result from Base Capacity expansion. However, EMSE is still expected to see the same consistency of the forecast period, with supply and demand are predicted to be more or less in balance by 2026, as capacity continues to decline with the specific demand recovery we are forecasting for that year.

Specifically, our forecast is that Operating Ratios will fluctuate between 60% (in 2024) and 90% on an annual basis throughout the forecast period, i.e. sometimes overcapacity for most of the time.

TABLE 16. OPERATING CAPACITY

Global Operating Capacity by Region

	2022	2023	2022	2023	2023
Western	0%	0%	-1%	-1%	-1%
Asia Pacific	0%	0%	0%	0%	0%
Europe	0%	0%	-1%	-1%	-1%
Latin America	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%
Other Asia	0%	0%	-1%	-1%	-1%
Other Europe	0%	0%	0%	0%	0%
Total	0%	0%	-1%	-1%	-1%

(USD million, 2022-2023)

Our forecast of fully operational and profitable over and above those that have already been announced/underway, is shown in the table above.

Operating capacity
enhancements through
new investments

Overall, EMGE's capacity is forecast to decline by 1.0% on average worldwide over the forecast period. However, the Forecast Capacity* includes a margin for 14.0% within gas in Base Capacity* with a 0.7% within gas in Unspecified Capacity*, as shown in the table below.

TABLE 17. CAPACITY BY TYPE AND REGION (2022 vs 2023)

Capacity Type	2022	2023	2022	2023	2023	2023
Gas	100	100	0	-1	100	100
Non-gas	100	100	100	0	100	100
EMGE forecast	100	100	100	-1	100	100

(USD million, 2022-2023)

* Base Capacity (see table) is the capacity of existing and known projects, including new investment and major upgrades that have been approved, entered and licensed, as well as the forecast plans.

† Unspecified Capacity comprises 14% of EMGE's assumptions for capacity change, and are those projects that have been confirmed by government decisions. Unspecified Capacity is EMGE's assumption of additional capacity to resources that have not yet been confirmed, but which we consider viable and profitable.

‡ Non-gas is made up of Forecast Capacity (see table), which is the also used for the forecast in this report.

Capacity Projections – by year and region

TABLE 10 CAPACITY FORECAST CHANGES BY REGION									
NEWSPAPER CAPACITY (THOUSANDS)									
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Exp	Rev	Exp	Rev	Exp	Rev	Exp	Rev	Exp
W Europe	9700	-475	-40	-200	-400	-200	-100	0	0
Other Europe	2000	0	20	100	175	20	100	100	100
N America	6000	-475	-170	-100	-100	-400	-170	0	0
Latin America	450	0	40	100	40	10	100	100	100
Japan	2000	0	0	0	-200	0	-100	0	0
China	6000	175	200	50	0	0	0	0	0
Other Asia Inc. Areas	1100	100	100	20	-100	-20	0	0	0
Africa/ME	700	0	0	0	0	0	0	0	0
Total	26200	-1000	100	-60	-1100	-700	1700	1070	1070
Europe Total	11700	-475	-20	-100	-225	-200	-100	0	0
Asia Total	12070	175	170	20	-100	-20	100	100	100
of which reprinted capacity									
Year	2011	2012	2013	2014	2015	2016	2017		
	Rev	Rev	Rev	Rev	Rev	Rev	Rev		
W Europe	0	0	100	100	100	100	100		
Other Europe	0	0	0	0	0	0	0		
N America	0	0	100	100	100	100	100		
Latin America	0	0	0	0	0	0	0		
Japan	0	0	0	100	0	100	100		
China	0	0	0	0	0	0	0		
Other Asia Inc. Areas	0	0	100	100	100	100	100		
Africa/ME	0	0	0	0	0	0	0		
Total	0	0	400	400	400	400	400		
Europe	0	0	100	100	100	100	100		
Asia	0	0	100	100	100	100	100		

Source: EMSE, 2011-2018

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7. Trade

Falling demand to shape limited trade balance



As seen in both 2018 and 2017, falling global demand means less volume of exports from a range of producer regions, because countries consistently have less need for more.

Nevertheless, as our long-term forecast is for further declines in world demand, we also expect global trade to be relatively quiet, with only moderate changes in the net trade balances of individual regions (see chart).

This will particularly affect sales in those regions where demand demand is just declining, as a lack of export growth to compensate for the declining domestic demand will mean overcapacity. This is another reason why we are forecasting capacity closures in the resource sector.

The main region to feel less a forecast to be North America, where comparatively small declines will struggle to penetrate further into markets outside, where demand is already relatively weak. Canada will be also expected to be disadvantaged by the country's heavy subsidies.

Looking specifically at China, we predict that capacity constraints will curb the country's exports, as it focuses more on supplying domestic demand.

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8. Prices

Upward price trend appears to have halted, for now.



We expect to see the World Newsprint Market report this previous price run coupled with cost demand would no longer push more than small, gradual upward price moves, and probably more so if in the USA, where demand is weaker of all world markets.

Indeed, the previous upward price momentum now seems to have cooled in the global market, with newspaper prices also having peaked (for now). In the short term, this is expected to cause some pricing weakness, and indeed, we have already seen us discounting in several markets. In the longer term however, we believe the newspaper cost risk is on the upside, meaning an upside risk also for Newsprint prices, and therefore further consumption weakness by publishers is expected.

We monitor the balance of news versus supply and demand in the paper report in the World Newsprint Market report (the **EMGE Publications Paper Price Forecast**), which forecasts prices for Newsprint, WC and LWC on a basis of US\$, Euro and £/t.

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A. Leading Suppliers - 2011

A.1. M&E - 10 Groups still control an market share

TABLE 1. LEADING SUPPLIERS' CONCENTRATION - 1991 - 2011				
Top 10 Share of Capacity (Manufacturing Sites)				
	1991	2001	2010	2011
	Share	Share	Share	Share
1991	65%	59%	54%	51%
2011	66%	60%	54%	50%
ENR Paper Industry Manufacturing Sites				
1991 - 1991	120	100	100	100
1991 - 2011	140	100	100	100

Source: ENR Paper Industry Manufacturing Sites, ENR-based supply concentration.
ENR, ENR, ENR, ENR

The above table shows that although the share of the Top 10 papers in the world will have increased to 54% by 2012 (compared to just 39% in 1991), the global newspaper sector remains far a Paper Industry Manufacturing Sites (PIMS) value of just 57%, which is well below the recognized 800 PIMS benchmark of a highly concentrated industry.

Although the Newspaper industry is a considered to be a global commodity business, much of the market - including supply, printing and printing - is concentrated by nation.

On a regional basis, with 60% of 3 markets share, the concentration level in North America is the highest of any region, with a PIMS of 24%. As the North American Newspaper sector is already very highly concentrated, industry concentration may continue, but no single producer or small publisher will be better than major P&A.

In Western Europe, even though the top 5 market share is as high as 82%, the situation is rather different. The level of concentration in the region is a lot lower than N.America (the P-HH is just 1530), even after the LVM-Molybdenum-Paper deal earlier this year. As such, there is theoretical scope for additional major M&A deals or new mergers in the region, but there have been no major moves in recent years.

We have assessed that M&A deals in W. Europe involving any of the five largest producers in the region would take the P-HH level above 1800. Approval from the EU Competition Authorities for such a buy-up could prove difficult or impossible, especially if the deal were between the largest of the players.

Authorities aside, we also believe financial risk is a factor acting against new M&A deals in Western Europe. Returns from the region's Newspapers sector have been fairly poor in recent years, and the outlook remains very challenging, with demand and capacity expected to continue falling, while costs are on a long-term upward trend (despite the current easing of newspaper prices). The potential acquisition by a leading company of a smaller player in Europe (and there has been much discussion on this topic over the years) would run the risk of lower returns, as capacity is reduced to meet the fall in demand. This would make it difficult to get value from the investment.

To summarize, we believe future mergers in Western Europe will face several factors acting against them. A top-five merger could struggle to get approval from competition authorities, while most potential deals, regardless of size, represent a considerable financial risk in a difficult sector. We do not, however, rule out the possibility of a deal, especially if it were to involve the forced sale of low-cost, competitive capacity at a significant discount due to difficult financial conditions, for example.

For further explanation of the P-HH index, please contact EMGE.

A.3. Leading Suppliers

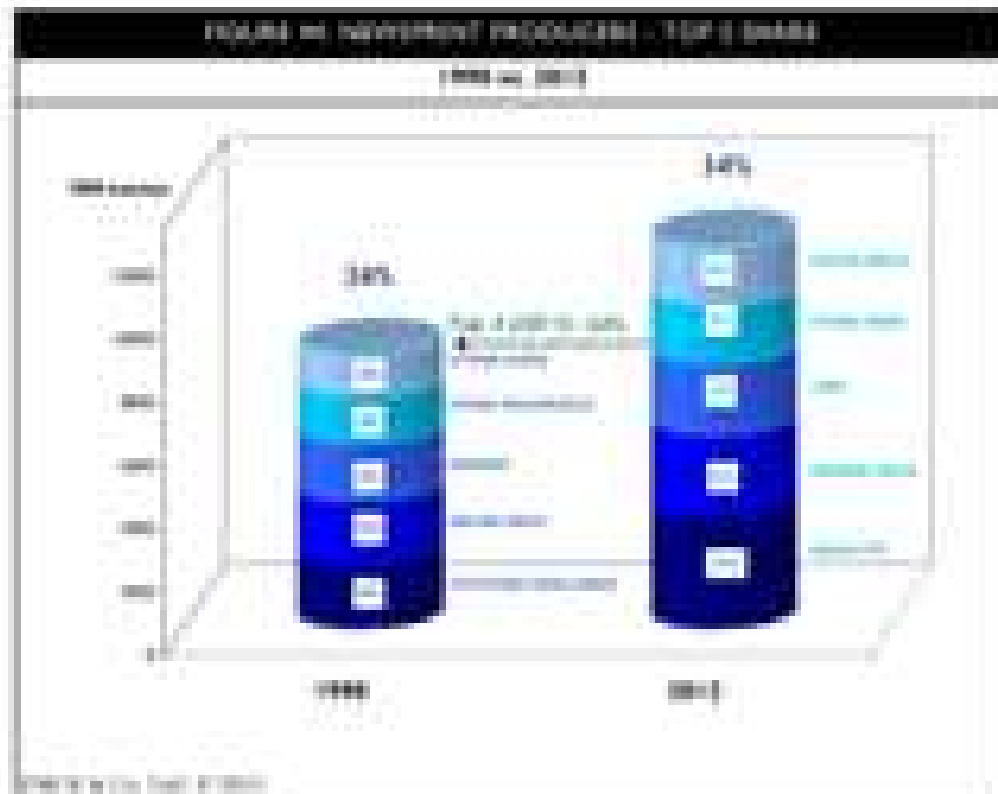
TABLE A.3.1 (continued) SUPPLY RECEIPTS BY SUPPLIER, 2010-2011						
Capacity, MW						
Supplier	Country	Supply Year	Supply Received	Capacity Accepted	Supply Rejected	World Share
1	INDONESIA	2010	1000	1000	0	10.0%
2	INDONESIA	2011	2000	2000	0	20.0%
3	USA	2010	1000	1000	0	10.0%
4	INDONESIA	2010	1000	1000	0	10.0%
5	INDONESIA	2011	1000	1000	0	10.0%
6	INDONESIA	2010	1000	1000	0	10.0%
7	INDONESIA	2011	1000	1000	0	10.0%
8	INDONESIA	2010	1000	1000	0	10.0%
9	USA	2011	1000	1000	0	10.0%
10	INDONESIA	2010	500	500	0	5.0%
11	INDONESIA	2011	500	500	0	5.0%
12	INDONESIA	2010	500	500	0	5.0%
13	INDONESIA	2011	500	500	0	5.0%
14	INDONESIA	2010	500	500	0	5.0%
15	INDONESIA	2011	500	500	0	5.0%
World Capacity		2011	10000	10000	0	100%
Top 5 Share of Capacity			60%	60%	0%	60%
World			2000	1000	0	2%

NOTE: 1. EMGE Supply Includes the Annual Allocation Table under 1.000 MW of supply commitments.
 2. 0.0% = 0.000 MW of supply.

The following table shows the different regional patterns in more detail.

100 million			
Region	in	2011 Revenue (1000000)	Share
WORLD		(271)	
1. America	America	100	37%
2. Europe/Asia	Europe	94	35%
3. Africa	Africa	20	7%
4. Other Asia	Other Asia	19	7%
5. Latin America	Latin America	18	7%
Subtotal		161	60%
EUROPE		(244)	
1. Germany	Germany	100	41%
2. Other Europe	Other Europe	144	59%
3. Russia	Russia	10	4%
4. Switzerland	Switzerland	10	4%
5. Netherlands	Netherlands	10	4%
Subtotal		184	76%
AMERICA		(200)	
1. USA	USA	100	50%
2. Other USA	Other USA	100	50%
3. Canada/Mexico	Canada/Mexico	10	5%
4. Brazil	Brazil	10	5%
5. Other Latin America	Other Latin America	10	5%
Subtotal		140	70%
REST OF WORLD		(200)	
1. Africa/Asia	Africa/Asia	100	50%
2. Europe/Other Asia	Europe/Other Asia	100	50%
3. Other Asia	Other Asia	10	5%
4. Latin America	Latin America	10	5%
5. Other Europe/Other Asia	Other Europe/Other Asia	10	5%
Subtotal		130	65%

(continued on page 12 of 20)



4.3. Leading Suppliers – Notes on M&A Activity

The latest major deal in the Wastewater industry was the \$775M acquisition deal, which included the Water Purge unit and considerably increased the concentration of the sector in Western Europe. However, with a P/E44 of 150 (vs. 100 below the average 100 level), the Western European Wastewater industry is still not yet Highly Concentrated.

In contrast, the merger of Aqua-Corpuscularis and Borealis Inc. into Aqua-Borealis in 2007 (now called Borealis Water Products) was the major factor in raising the North American sector (vs. Highly Concentrated) with a current P/E44 of 240, i.e. 50 above the 100 average level.

FIGURE 11 - Global Wastewater - 2010 vs. 2009

Category	Change
Water	10% (from 10% to 20%)
Wastewater	10% (from 10% to 20%)
Sewerage	10% (from 10% to 20%)
Solid Waste	10% (from 10% to 20%)
Other	10% (from 10% to 20%)

Source: ENGE WORLD WIDE REPORTS (ISSUED 2011)

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B. Supply-Demand Forecasts

B.1. Nonproject Demand

FIGURE B1. DEMAND FORECAST, 2011-2015, BY REGION, \$BILIONS*

Region	2011 Revenue					2015 Revenue	2011-2015 Growth
	2011	2012	2013	2014	2015		
Europe	1500	1500	1500	1500	1500	1500	+0%
Asia Pacific	1300	1300	1300	1300	1300	1300	+0%
Americas	1200	1200	1200	1200	1200	1200	+0%
Latin America	200	200	200	200	200	200	+0%
Japan	200	200	200	200	200	200	+0%
Middle East	100	100	100	100	100	100	+0%
Africa/SEA	100	100	100	100	100	100	+0%
World	500	500	500	500	500	500	+0%
Total	5000	5000	5000	5000	5000	5000	+0%
Global Total	5000	5000	5000	5000	5000	5000	+0%
Net Total	1200	1200	1200	1200	1200	1200	+0%

*ENGE & CO. INC. © 2011

growth % per

Region	2011	2012	2013	2014	2015
Europe	+0%	+0%	+0%	+0%	+0%
Asia Pacific	+0%	+0%	+0%	+0%	+0%
Americas	+0%	+0%	+0%	+0%	+0%
Latin America	+0%	+0%	+0%	+0%	+0%
Japan	+0%	+0%	+0%	+0%	+0%
Middle East	+0%	+0%	+0%	+0%	+0%
Africa/SEA	+0%	+0%	+0%	+0%	+0%
World	+0%	+0%	+0%	+0%	+0%
World Total	+0%	+0%	+0%	+0%	+0%
Global Total	+0%	+0%	+0%	+0%	+0%
Net Total	+0%	+0%	+0%	+0%	+0%

*ENGE & CO. INC. © 2011

Current scope of the
ENGE World Wide
Nonproject Demand
Forecast

B.2. Trade Flows

FIGURE 41. TRADE FLOWS, WORLD OF REGIONAL GOVERNMENT							
(\$ million)							
Year	2019	2021	2022	2023	2024	2025	2026-30
Imports	100	100	100	100	100	100	100
Other Exports	100	100	100	100	100	100	100
Exports	100	100	100	100	100	100	100
Net Exports	100	100	100	100	100	100	100
Net	0	0	0	0	0	0	0
Capital	100	100	100	100	100	100	100
Debt	100	100	100	100	100	100	100
Equity	100	100	100	100	100	100	100
Total	0	0	0	0	0	0	0
Other Total	100	100	100	100	100	100	100
Net Total	100	100	100	100	100	100	100

(2019 & 2020: Actual)

B.3. Noncapital Output

FIGURE 42. OUTPUT FLOWS, WORLD OF REGIONAL GOVERNMENT							
(\$ million)							
Output	2019	2021	2022	2023	2024	2025	2026-30
Imports	100	100	100	100	100	100	100
Other Exports	100	100	100	100	100	100	100
Exports	100	100	100	100	100	100	100
Net Exports	100	100	100	100	100	100	100
Net	100	100	100	100	100	100	100
Capital	100	100	100	100	100	100	100
Debt	100	100	100	100	100	100	100
Equity	100	100	100	100	100	100	100
Total	100	100	100	100	100	100	100
Other Total	100	100	100	100	100	100	100
Net Total	100	100	100	100	100	100	100

(2019 & 2020: Actual)

FIGURE 10. OUTPUT GROWTH WORLD BY REGION, AVERAGE

% Output Growth

Region	2011	2012	2013	2014	2015	2016-17
World	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Asia Pacific	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Europe	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Latin America	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Middle East	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
North America	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Other	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Energy	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Non-Energy	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

EMGE & IHS Global Insight

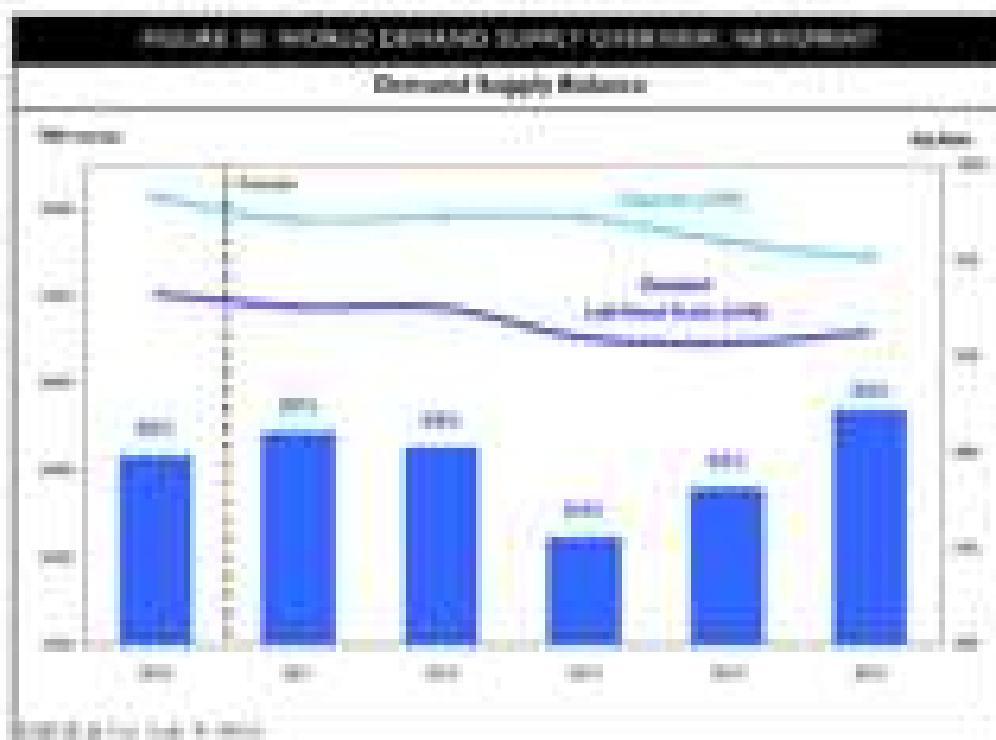


Figure demonstrating that a rise in supply can reduce demand in a global market and drive the market towards a supply surplus. Supply also drives demand to bring up the market by reducing the supply of new gas used for the conversion.

The above chart compares the demand-supply balance below.

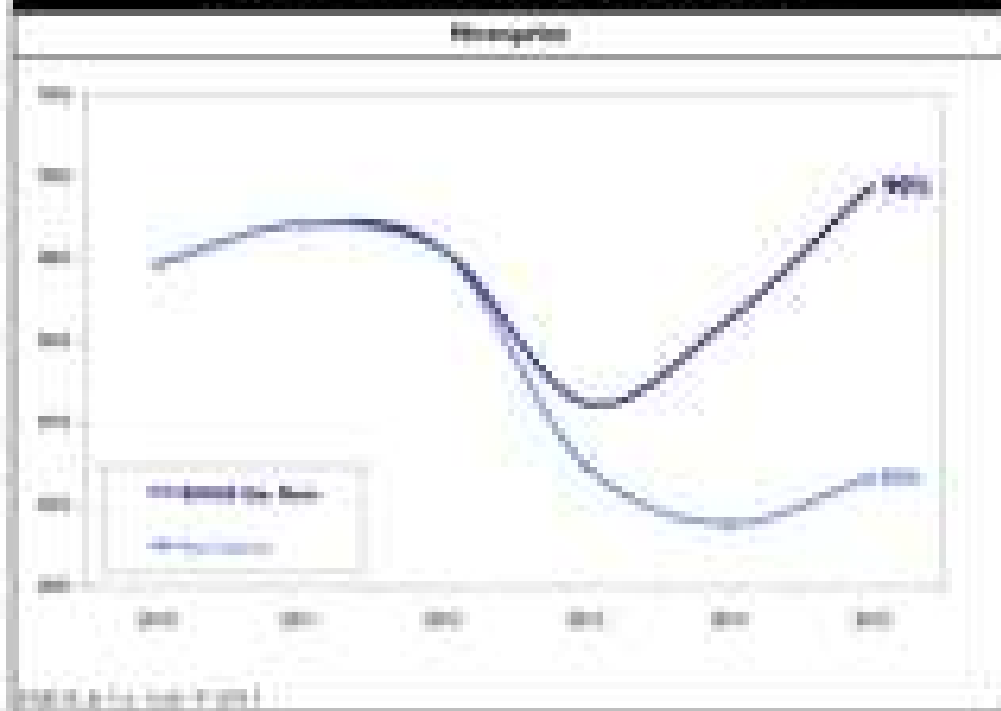
B.4. Capacity Reservations

FIGURE 11. 2022 CAPACITY ADDITIONAL RESERVES

Capacity	Competition (capacity)						
	2022	2021	2020	2019	2018	2017	2016-18
Wholesale	0	0	0	(200)	(400)	(400)	(400)
Other Energy	0	0	0	0	0	0	0
Wholesale	0	0	0	(200)	(200)	(400)	(1200)
Other Energy	0	0	0	0	0	0	0
Other	0	0	0	0	(200)	0	(200)
Other	0	0	0	0	0	0	0
Other Energy	0	0	0	(200)	(200)	(200)	(600)
Other	0	0	0	0	0	0	0
Total	0	0	0	(400)	(1000)	(600)	(2000)
Energy Res.	0	0	0	(200)	(400)	(400)	(1000)
Other Res.	0	0	0	(200)	(200)	(200)	(1000)

(Values in \$ million)

FIGURE 12. OPERATING RATE, SOLARITY VS. 2022



(Values in %)

8.1. Capacity and Operating Rates

8.1.1. Base Data

FIGURE 13. BAE CAPACITY, MGD BY REGION, PERIOD*

MGD capacity							
Region	2010	2011	2012	2013	2014	2015	2016-17
Western	6700	6800	6500	6100	6100	6100	6600
Latin America	1000	1000	1000	1000	1000	1000	1000
Germany	2000	2000	2000	2000	2000	2000	2000
East Europe	500	500	500	500	500	500	500
Asia	1000	1000	1000	1000	1000	1000	1000
Australia	1000	1000	1000	1000	1000	1000	1000
Other (Africa, India)	1000	1000	1000	1000	1000	1000	1000
Total	13000	13300	13000	12600	12600	12600	13600
Europe Total	10000	10000	10000	10000	10000	10000	10000
Asia Total	10000	10000	10000	10000	10000	10000	10000

*2016 & 2017 are forecast

FIGURE 14. BAE OPERATING RATES, MGD BY REGION, PERIOD*

% Production of Capacity							
Operating Rate	2010	2011	2012	2013	2014	2015	2016
Western	60%	60%	60%	60%	60%	60%	60%
Latin America	60%	60%	60%	60%	60%	60%	60%
Germany	60%	60%	60%	60%	60%	60%	60%
East Europe	60%	60%	60%	60%	60%	60%	60%
Asia	60%	60%	60%	60%	60%	60%	60%
Australia	60%	60%	60%	60%	60%	60%	60%
Other (Africa, India)	60%	60%	60%	60%	60%	60%	60%
Total	60%	60%	60%	60%	60%	60%	60%
Europe Total	60%	60%	60%	60%	60%	60%	60%
Asia Total	60%	60%	60%	60%	60%	60%	60%

*2016 & 2017 are forecast

B.3.2. Forecast Data

FIGURE 16. FORECAST CAPACITY, MOULD BY REGION, 2010-2019							
Capacity	MW (MW)						
	2010	2011	2012	2013	2014	2015	2019
Europe	1750	1850	1950	2050	2150	2250	2350
Asia Pacific	100	150	200	250	300	350	400
U.S.	100	100	100	100	100	100	100
Latin America	50	50	50	50	50	50	50
Other	100	100	100	100	100	100	100
Global	2000	2250	2400	2550	2700	2850	3000
Europe	1750	1850	1950	2050	2150	2250	2350
Asia Pacific	100	150	200	250	300	350	400
U.S.	100	100	100	100	100	100	100
Latin America	50	50	50	50	50	50	50
Other	100	100	100	100	100	100	100

Source: Global Wind Energy Council (GWEC)

FIGURE 17. FORECAST OPERATING RATE, MOULD BY REGION, 2010-2019							
Operating Rate	% Production of Capacity						
	2010	2011	2012	2013	2014	2015	2019
Europe	35%	35%	35%	35%	35%	35%	35%
Asia Pacific	35%	35%	35%	35%	35%	35%	35%
U.S.	35%	35%	35%	35%	35%	35%	35%
Latin America	35%	35%	35%	35%	35%	35%	35%
Other	35%	35%	35%	35%	35%	35%	35%
Global	35%	35%	35%	35%	35%	35%	35%
Europe	35%	35%	35%	35%	35%	35%	35%
Asia Pacific	35%	35%	35%	35%	35%	35%	35%
U.S.	35%	35%	35%	35%	35%	35%	35%
Latin America	35%	35%	35%	35%	35%	35%	35%
Other	35%	35%	35%	35%	35%	35%	35%

Source: Global Wind Energy Council (GWEC)

C. Country Data Worldwide

These tables show individual country data for each grade, available.

TABLE OF DEMAND, TRADE, OUTPUT & CAPACITY BY COUNTRY - 2010

All Europe, & Other Europe - 2010

Country	Consumption	Trade	Output	Capacity	Op. Rate %
Albania	0.0	0.0	0.0	0.0	0.0
Andorra	0.0	0.0	0.0	0.0	0.0
Austria	0.0	0.0	0.0	0.0	0.0
Azerbaijan	0.0	0.0	0.0	0.0	0.0
Belarus	0.0	0.0	0.0	0.0	0.0
Belgium	0.0	0.0	0.0	0.0	0.0
Bulgaria	0.0	0.0	0.0	0.0	0.0
Croatia	0.0	0.0	0.0	0.0	0.0
Cyprus	0.0	0.0	0.0	0.0	0.0
Czechia	0.0	0.0	0.0	0.0	0.0
Denmark	0.0	0.0	0.0	0.0	0.0
Egypt	0.0	0.0	0.0	0.0	0.0
Estonia	0.0	0.0	0.0	0.0	0.0
Finland	0.0	0.0	0.0	0.0	0.0
France	0.0	0.0	0.0	0.0	0.0
Germany	0.0	0.0	0.0	0.0	0.0
Greece	0.0	0.0	0.0	0.0	0.0
Hungary	0.0	0.0	0.0	0.0	0.0
Iceland	0.0	0.0	0.0	0.0	0.0
Ireland	0.0	0.0	0.0	0.0	0.0
Italy	0.0	0.0	0.0	0.0	0.0
Latvia	0.0	0.0	0.0	0.0	0.0
Lithuania	0.0	0.0	0.0	0.0	0.0
Luxembourg	0.0	0.0	0.0	0.0	0.0
Malta	0.0	0.0	0.0	0.0	0.0
Netherlands	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0
Poland	0.0	0.0	0.0	0.0	0.0
Portugal	0.0	0.0	0.0	0.0	0.0
Romania	0.0	0.0	0.0	0.0	0.0
Slovakia	0.0	0.0	0.0	0.0	0.0
Slovenia	0.0	0.0	0.0	0.0	0.0
Spain	0.0	0.0	0.0	0.0	0.0
Sweden	0.0	0.0	0.0	0.0	0.0
Switzerland	0.0	0.0	0.0	0.0	0.0
Turkey	0.0	0.0	0.0	0.0	0.0
Ukraine	0.0	0.0	0.0	0.0	0.0
United Kingdom	0.0	0.0	0.0	0.0	0.0
Other Europe	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0	0.0	0.0	0.0

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DEBT, TRADE, OUTPUT & CAPACITY BY COUNTRY (2000-2019)					
World & Latin America & Caribbean (2019)					
Year	Debt	Trade	Output	Capacity	By Row 5
2000	100	100	100	100	100
2001	100	100	100	100	100
2002	100	100	100	100	100
2003	100	100	100	100	100
2004	100	100	100	100	100
2005	100	100	100	100	100
2006	100	100	100	100	100
2007	100	100	100	100	100
2008	100	100	100	100	100
2009	100	100	100	100	100
2010	100	100	100	100	100
2011	100	100	100	100	100
2012	100	100	100	100	100
2013	100	100	100	100	100
2014	100	100	100	100	100
2015	100	100	100	100	100
2016	100	100	100	100	100
2017	100	100	100	100	100
2018	100	100	100	100	100
2019	100	100	100	100	100

WORLDWIDE TRAFFIC, OUTPUT & CAPACITY BY COUNTRY/CONTINENT - 2010					
Africa & Middle East - 2010					
EST. YEAR	Estimate/Year	Year	Output	Capacity	Use Rate %
Africa	2010	2010			
	2011	2011	24	100	24%
	2012	2012	21	100	21%
	2013	2013	22	100	22%
	2014	2014	22	100	22%
	2015	2015	22	100	22%
	2016	2016	22	100	22%
	2017	2017	22	100	22%
	2018	2018	22	100	22%
	2019	2019	22	100	22%
Total	2010	2	2000	2000	100%
Middle East	2010	2010	2000	2000	100%
	2011	2011	2000	2000	100%
	2012	2012	2000	2000	100%
	2013	2013	2000	2000	100%
	2014	2014	2000	2000	100%
	2015	2015	2000	2000	100%
	2016	2016	2000	2000	100%
	2017	2017	2000	2000	100%
Total	2010	8	2000	2000	100%
Europe/Asia	2010	1000	1000	1000	100%
Asia/Total	2010	1000	1000	1000	100%

EMGE WORLD-WIDE PROJECTS REPORT

ESTIMATED TRADE, OUTPUT & CAPACITY BY COUNTRY (CONT'D) - M3					
Year From, 2020					
Year To	Domestic	Trade	Output	Capacity	Cy. Rate %
2020	100	100	1000	1000	100
2021-2025	1000	100	1000	1000	100
2021-2025	1000	100	1000	1000	100
2021-2025	100	100	1000	1000	100
2021	100	100	1000	1000	100
2022	100	100	1000	1000	100
2023	100	100	1000	1000	100
2024	100	100	1000	1000	100
2025	100	100	1000	1000	100
2026	100	100	1000	1000	100
2027	100	100	1000	1000	100
2028	100	100	1000	1000	100
2029	100	100	1000	1000	100
2030	100	100	1000	1000	100
2031	100	100	1000	1000	100
2032	100	100	1000	1000	100
2033	100	100	1000	1000	100
2034	100	100	1000	1000	100
2035	100	100	1000	1000	100
2036	100	100	1000	1000	100
2037	100	100	1000	1000	100
2038	100	100	1000	1000	100
2039	100	100	1000	1000	100
2040	100	100	1000	1000	100
2041	100	100	1000	1000	100
2042	100	100	1000	1000	100
2043	100	100	1000	1000	100
2044	100	100	1000	1000	100
2045	100	100	1000	1000	100
2046	100	100	1000	1000	100
2047	100	100	1000	1000	100
2048	100	100	1000	1000	100
2049	100	100	1000	1000	100
2050	100	100	1000	1000	100
2051	100	100	1000	1000	100
2052	100	100	1000	1000	100
2053	100	100	1000	1000	100
2054	100	100	1000	1000	100
2055	100	100	1000	1000	100
2056	100	100	1000	1000	100
2057	100	100	1000	1000	100
2058	100	100	1000	1000	100
2059	100	100	1000	1000	100
2060	100	100	1000	1000	100
2061	100	100	1000	1000	100
2062	100	100	1000	1000	100
2063	100	100	1000	1000	100
2064	100	100	1000	1000	100
2065	100	100	1000	1000	100
2066	100	100	1000	1000	100
2067	100	100	1000	1000	100
2068	100	100	1000	1000	100
2069	100	100	1000	1000	100
2070	100	100	1000	1000	100
2071	100	100	1000	1000	100
2072	100	100	1000	1000	100
2073	100	100	1000	1000	100
2074	100	100	1000	1000	100
2075	100	100	1000	1000	100
2076	100	100	1000	1000	100
2077	100	100	1000	1000	100
2078	100	100	1000	1000	100
2079	100	100	1000	1000	100
2080	100	100	1000	1000	100
2081	100	100	1000	1000	100
2082	100	100	1000	1000	100
2083	100	100	1000	1000	100
2084	100	100	1000	1000	100
2085	100	100	1000	1000	100
2086	100	100	1000	1000	100
2087	100	100	1000	1000	100
2088	100	100	1000	1000	100
2089	100	100	1000	1000	100
2090	100	100	1000	1000	100
2091	100	100	1000	1000	100
2092	100	100	1000	1000	100
2093	100	100	1000	1000	100
2094	100	100	1000	1000	100
2095	100	100	1000	1000	100
2096	100	100	1000	1000	100
2097	100	100	1000	1000	100
2098	100	100	1000	1000	100
2099	100	100	1000	1000	100
2100	100	100	1000	1000	100

WORLD WOODS ESTIMATED MARKET

D. Supply Outlook

Expanded detail on our capacity calculations

This report includes detailed capacity information, so enable our clients to understand exactly how we arrive at the figures in our overall capacity forecasts. The data in the Supply Outlook is presented in three sections (Base Capacity, Unspecified and EPC2 Forecast), which are as follows:

D.1 Base Capacity. This section shows the capacity figures we use that are based on known projects, including new facilities and major upgrades that have been approved, ordered and financed, as well as firm closure plans.

B.1. Base Capacity – Standard Newspaper

The following table shows the base capacity provided by country worldwide:

FIGURE 18. CAPACITY INCREASE BY COUNTRY							
N. America, W. Europe & Asia							
Year	2004	2005	2006	2007	2008	2009	Percent
USA	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
W. Europe	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
Asia	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0
	100	100	100	100	100	100	0

EMERGENCY MANAGEMENT AGENCY

DENSITY INCREASE BY COUNTRY (COST \$)							
Rest of the World							
Year	2005	2011	2017	2023	2029	2035	2040-50
Europe	100	100	100	100	100	100	0
Am. Canada	100	100	100	100	100	100	0
Asia	100	100	100	100	100	100	0
Africa	100	100	100	100	100	100	0
Latin America	100	100	100	100	100	100	0
Rest of the World	100	100	100	100	100	100	0
Algeria	100	100	100	100	100	100	0
Argentina	100	100	100	100	100	100	0
Australia	100	100	100	100	100	100	0
Austria	100	100	100	100	100	100	0
Bahrain	100	100	100	100	100	100	0
Belgium	100	100	100	100	100	100	0
Brazil	100	100	100	100	100	100	0
Canada	100	100	100	100	100	100	0
China	100	100	100	100	100	100	0
Colombia	100	100	100	100	100	100	0
Costa Rica	100	100	100	100	100	100	0
Cuba	100	100	100	100	100	100	0
Czechia	100	100	100	100	100	100	0
Denmark	100	100	100	100	100	100	0
Egypt	100	100	100	100	100	100	0
France	100	100	100	100	100	100	0
Germany	100	100	100	100	100	100	0
Greece	100	100	100	100	100	100	0
India	100	100	100	100	100	100	0
Indonesia	100	100	100	100	100	100	0
Italy	100	100	100	100	100	100	0
Japan	100	100	100	100	100	100	0
Kenya	100	100	100	100	100	100	0
Malaysia	100	100	100	100	100	100	0
Mexico	100	100	100	100	100	100	0
Netherlands	100	100	100	100	100	100	0
Nigeria	100	100	100	100	100	100	0
Poland	100	100	100	100	100	100	0
Russia	100	100	100	100	100	100	0
Saudi Arabia	100	100	100	100	100	100	0
South Africa	100	100	100	100	100	100	0
Spain	100	100	100	100	100	100	0
Sweden	100	100	100	100	100	100	0
Switzerland	100	100	100	100	100	100	0
Taiwan	100	100	100	100	100	100	0
Tanzania	100	100	100	100	100	100	0
Thailand	100	100	100	100	100	100	0
Turkey	100	100	100	100	100	100	0
USA	100	100	100	100	100	100	0
Ukraine	100	100	100	100	100	100	0
UK	100	100	100	100	100	100	0
Uzbekistan	100	100	100	100	100	100	0
Vietnam	100	100	100	100	100	100	0
Zimbabwe	100	100	100	100	100	100	0

TABLE 10: BASE CAPACITY CHANGE BY REGION

Capacity - 2022 Forecast							
2022 Forecast	2020	2021	2022	2023	2024	2025	2026-30
Midwest	4,100	4,200	4,100	4,100	4,100	4,100	4,100
West Coast	2,000	2,000	2,000	2,000	2,000	2,000	2,000
U.S. South	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Latin America	400	400	400	400	400	400	400
Other	1,000	1,000	1,000	1,000	1,000	1,000	0
Other	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Other Special Areas	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Grand Total	12,500	12,600	12,500	12,500	12,500	12,500	12,500
Total	12,500	12,600	12,500	12,500	12,500	12,500	12,500
Change	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Net	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Annual Capacity Change							
2022 Forecast	2020	2021	2022	2023	2024	2025	
Midwest		100	100	0	0	0	
West Coast		0	0	100	100	100	
U.S. South		100	100	0	0	0	
Latin America		0	0	100	100	100	
Other		0	0	0	0	0	
Other		100	100	0	0	0	
Other Special Areas		100	100	100	100	100	
Grand Total		300	300	300	300	300	
Total		300	300	300	300	300	
Change		300	300	300	300	300	
Net		300	300	300	300	300	

(2020 & 2021 Actual Data)

3.2. Unpriced Capacity Changes

This section shows ENGE's additional (unpriced) assumptions for capacity changes, in addition to projects & capacity changes that have been confirmed by government's permission.

TABLE 3.2. CAPACITY - UNPRICED CHANGES							
Capacity - MW capacity							
Year (month)	2010	2011	2012	2013	2014	2015	2016-17
Wholesale	0	0	0	100	100	100	100
Other power	0	0	0	0	0	0	0
Hydro	0	0	0	100	100	100	100
Gas power	0	0	0	0	0	0	0
Coal	0	0	0	0	100	100	100
Other	0	0	0	0	0	0	0
Other power total	0	0	0	100	100	100	100
Grand	0	0	0	0	0	0	0
Total	0	0	0	100	100	100	100
Coal	0	0	0	100	100	100	100
Gas	0	0	0	0	0	0	0
Annual Capacity Change							
Year (month)	2010	2011	2012	2013	2014	2015	2016-17
Wholesale		0	0	100	100	100	100
Other power		0	0	0	0	0	0
Hydro		0	0	100	100	100	100
Gas power		0	0	0	0	0	0
Coal		0	0	0	100	0	100
Other		0	0	0	0	0	0
Other power total		0	0	100	100	100	100
Grand		0	0	0	0	0	0
Total		0	0	100	100	100	100
Coal		0	0	100	100	100	100
Gas		0	0	0	0	0	0

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B.3. Demand Capacity

These figures, showing the supply contract by sub-region and grade (below) are used to make our supply-demand forecasts. They result from our base capacity after being modified by our Unspecified capacity change assumptions:

$$(\text{Demand} + \text{Base} - \text{Unspecified})$$

TABLE 4.1. DEMAND CAPACITY - BY REGION PRODUCTION REGION							
Capacity - MWh/annum							
Sub-region	2010	2011	2012	2013	2014	2015	2016-19
Western	4700	4560	4520	4400	4300	4200	4100
Mid-Range	2000	2000	2000	2000	2000	2000	2000
Mid-Range	2000	2000	2000	2000	2000	2000	2000
Low-Range	500	500	500	500	500	500	500
Japan	1000	1000	1000	1000	1000	1000	1000
Other	1000	1000	1000	1000	1000	1000	1000
Other Top 10	1000	1000	1000	1000	1000	1000	1000
Other/Other	500	500	500	500	500	500	500
Total	10000	9860	9820	9700	9600	9500	9400
Europe Total	10000	10000	10000	10000	10000	10000	10000
Asia Total	10000	10000	10000	10000	10000	10000	10000
Annual Capacity Change							
Sub-region	2010	2011	2012	2013	2014	2015	2016-19
Western		-170	-40	-200	-100	-100	-100
Mid-Range		0	0	0	0	0	0
Mid-Range		-100	-100	-100	-100	-100	-100
Low-Range		0	0	0	0	0	0
Japan		0	0	0	0	0	0
Other		-100	-100	0	0	0	0
Other Top 10		100	100	0	-100	-100	0
Other/Other		0	0	0	0	0	0
Total		-170	-140	-200	-100	-100	-100
Europe		-170	-140	-200	-100	-100	-100
Asia		0	0	0	0	0	0

(ENGE, ENGE ENERGY ESTIMATES)

2.3 Machine Classes of Computers & Other Goods

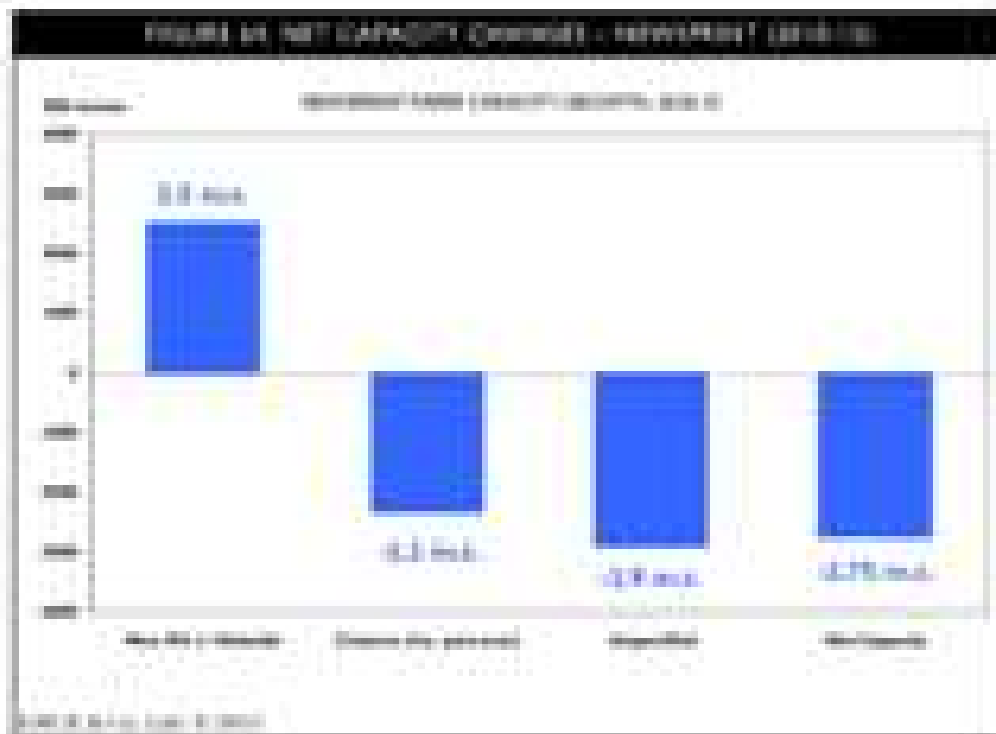
Accounting Officer

Non-Accounting Officer

Signature

FOUR (4) MACHINE DEVICES & CONVERSIONS - DETAILS						
SUMMARY, \$1000						
Device	Device	Alt	No	Device (FY)		Total, FY
				Process (C)	Storage	
001	Workstation	Workstation	100	0	100	100
002	File Server	Server	100	0	100	100
003	Printer	File Printer	100	0	100	100
004	Scanner	Workstation	100	0	100	100
005	Workstation	Server	100	0	100	100
Hardware Total:						500
006	Workstation	Server	100	0	100	100
007	Workstation	Server	100	0	100	100
008	Workstation	Server	100	0	100	100
009	Workstation	Server	100	0	100	100
010	Workstation	Server	100	0	100	100
Software Total:						100
011	Workstation	Server	100	0	100	100
012	Workstation	Server	100	0	100	100
013	Workstation	Server	100	0	100	100
Hardware Total:						100
Non-Machine (Special Services):						100

(FY 2024 - 2025 - 2026)



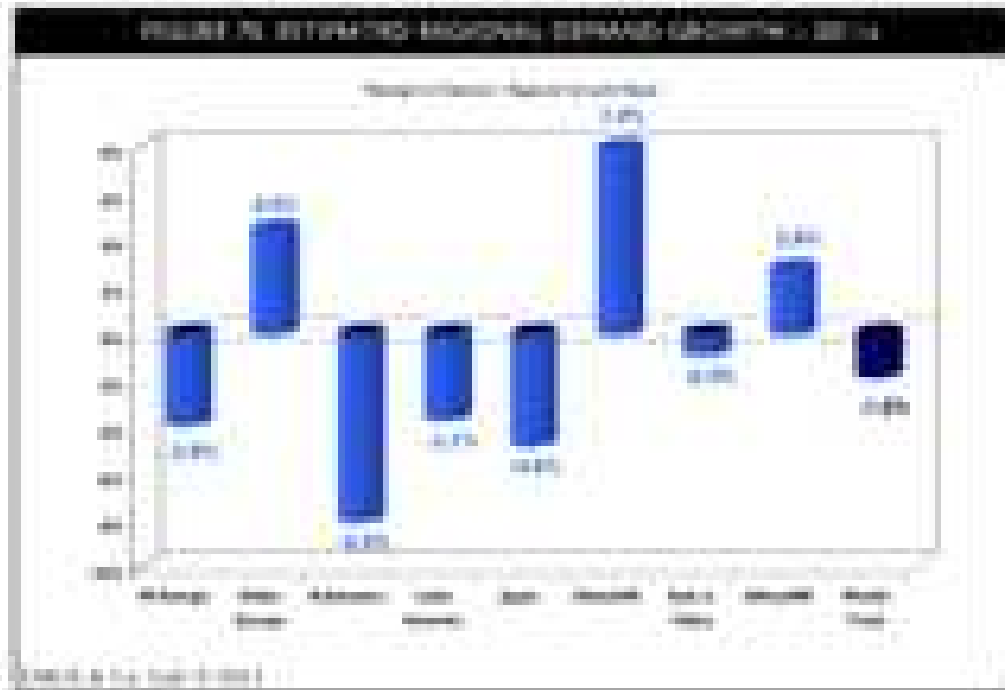
Detailed, individual generation gas listings

In the following tables we provide detailed generation gas listings. In these tables we show all generation capacity (MW), including those not classified as defined, detailed and licensed.

Individual machine details are shown in the tables following, where a **D** indicates the unit is included as detailed, while a **N** indicates that the unit is undetailed and hence excluded from our capacity analysis.

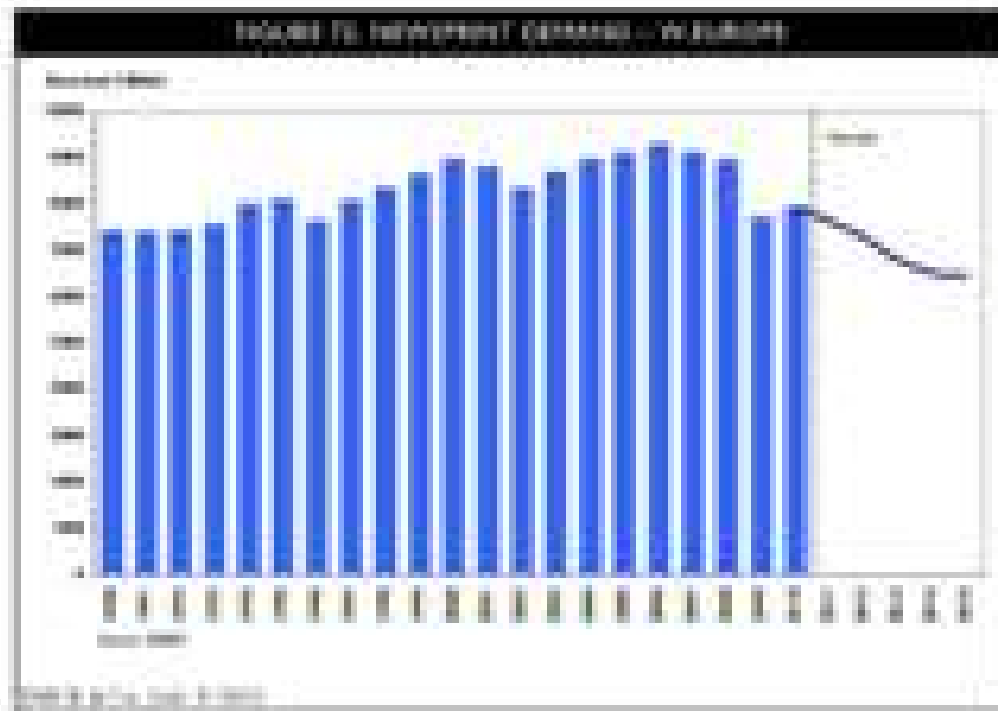
The complete listing follows...

EMGE Group's primary energy consumption, including purchased and self-generated energy, is shown in the chart below.



EMGE Group's primary energy consumption, including purchased and self-generated energy, is shown in the chart below.





ENGE WORLDWIDE REPORT

Reservoir Capacity



ENGE WORLDWIDE REPORT

Reservoir capacity is the difference between total capacity and current net capacity of the reservoir.

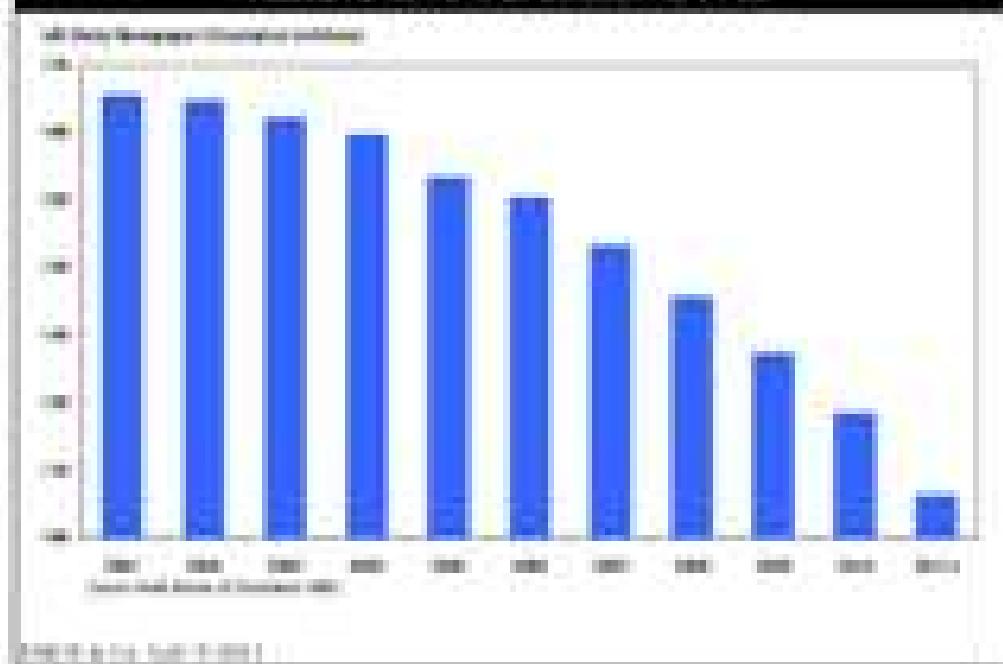
FIGURE 14. ENERGY STORAGE INVESTMENT DEMAND AND SUPPLY



The above chart shows the annual net growth of storage capacity worldwide.

Global E-Capacitor

FIGURE 15. REVENUE OF CAPACITORS – US



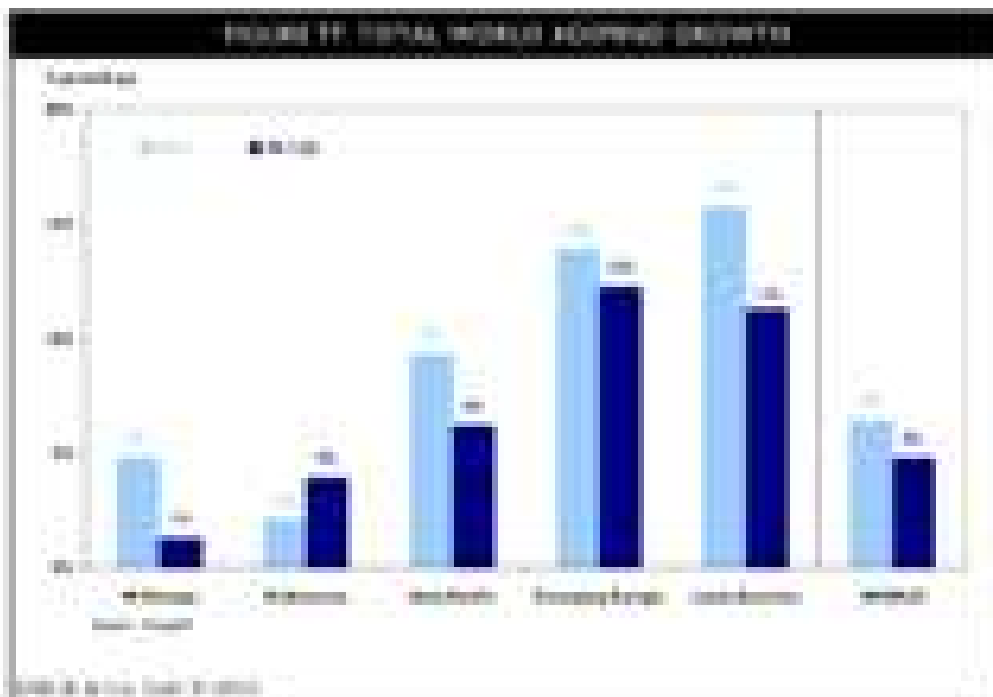
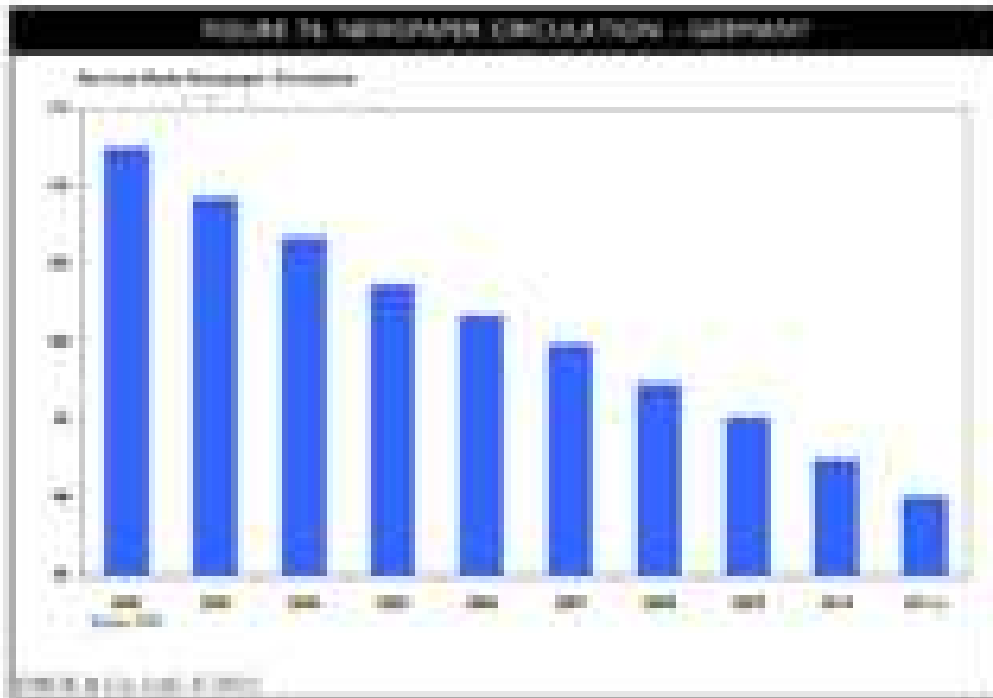


FIGURE 16. NEWSPAPER DEMAND VS. SUPPLY - AQWAL

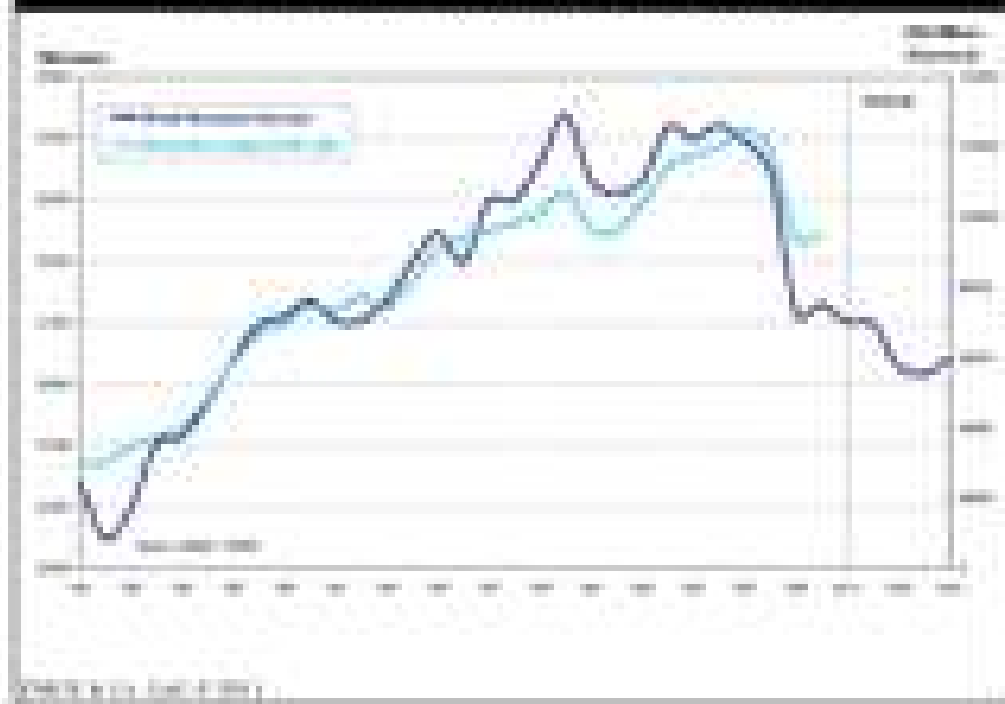
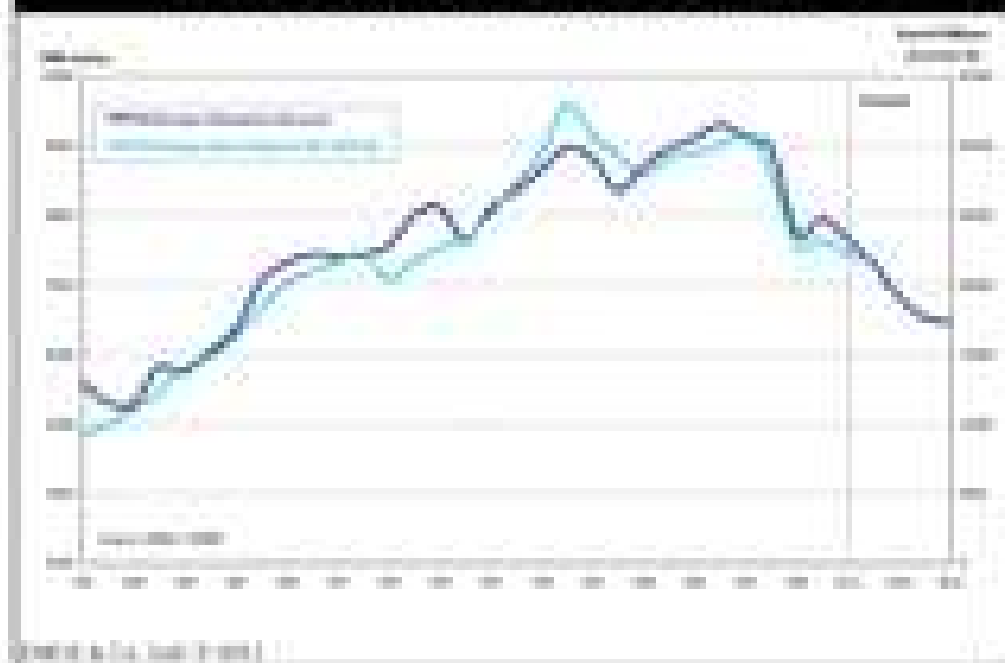
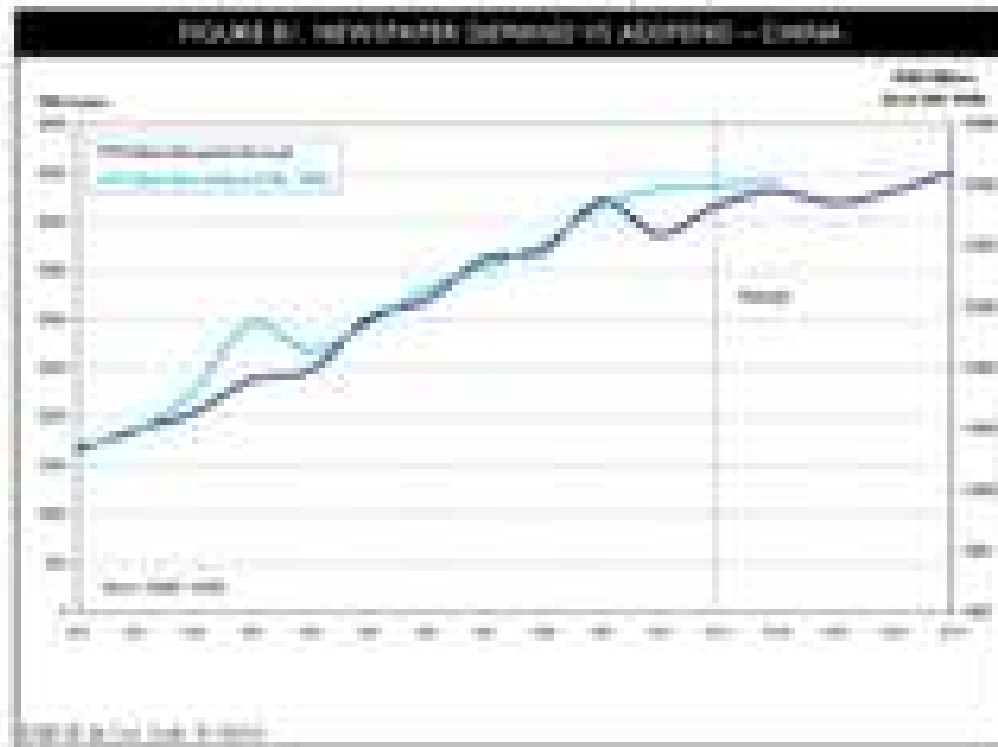
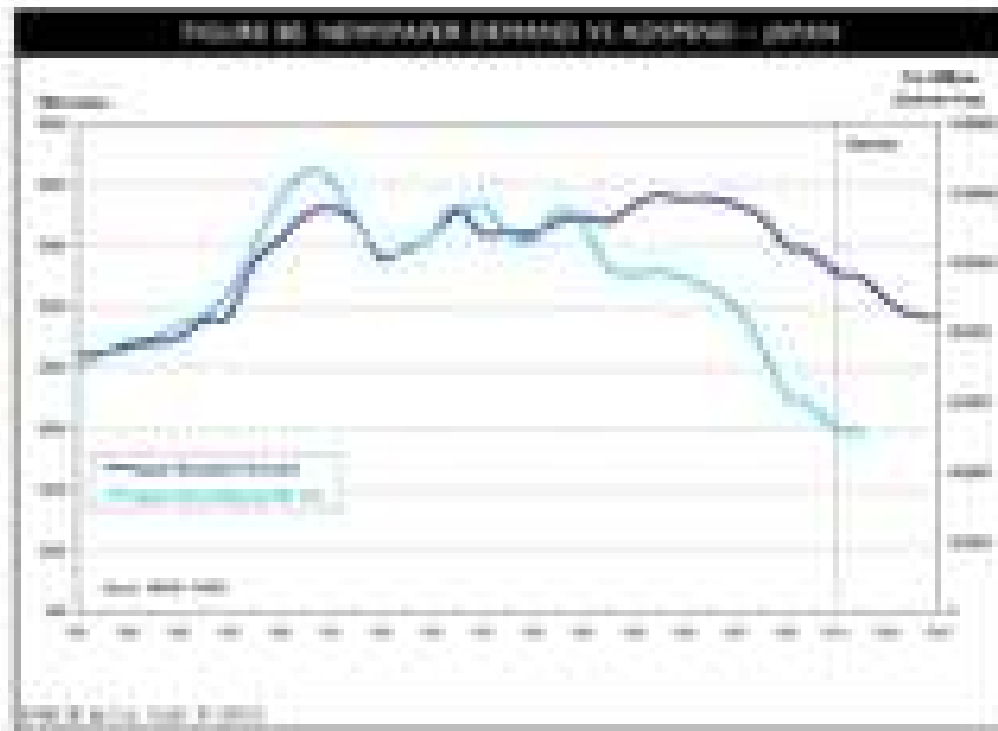
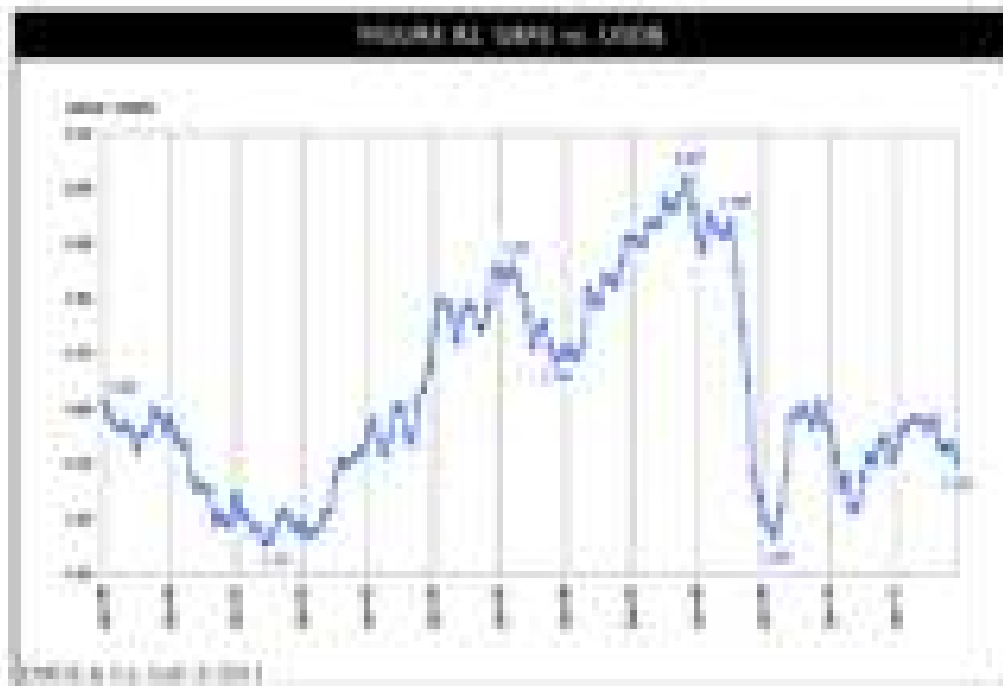


FIGURE 17. NEWSPAPER DEMAND VS. SUPPLY - BY FLIGHT





Financial Charts



There clearly remains a disconnect between the S&P and the Euro zone as a consequence of the recent US dollar.

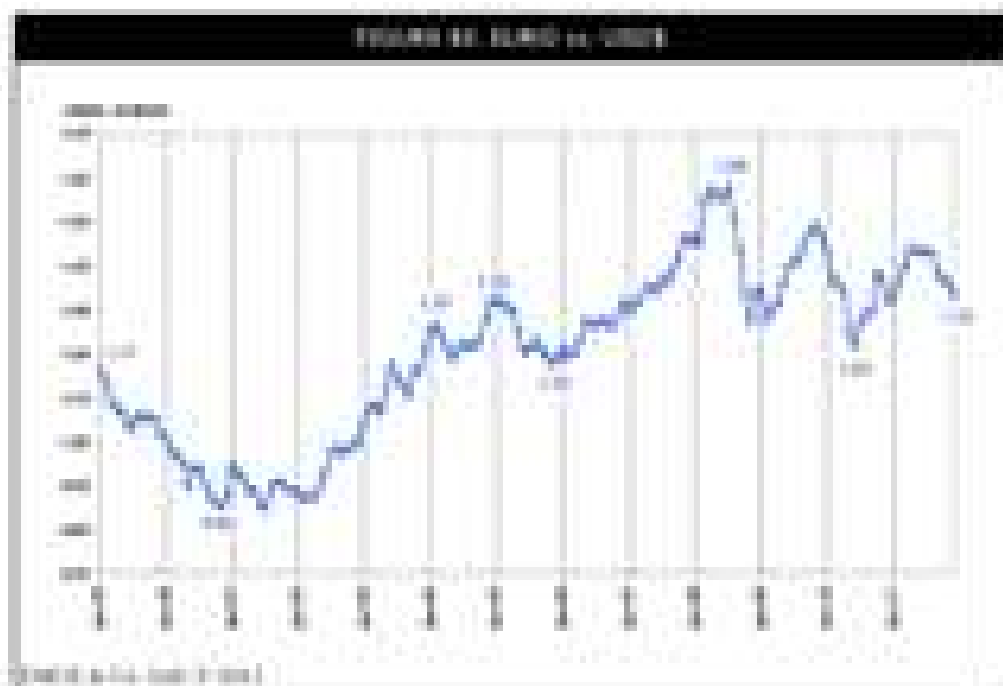
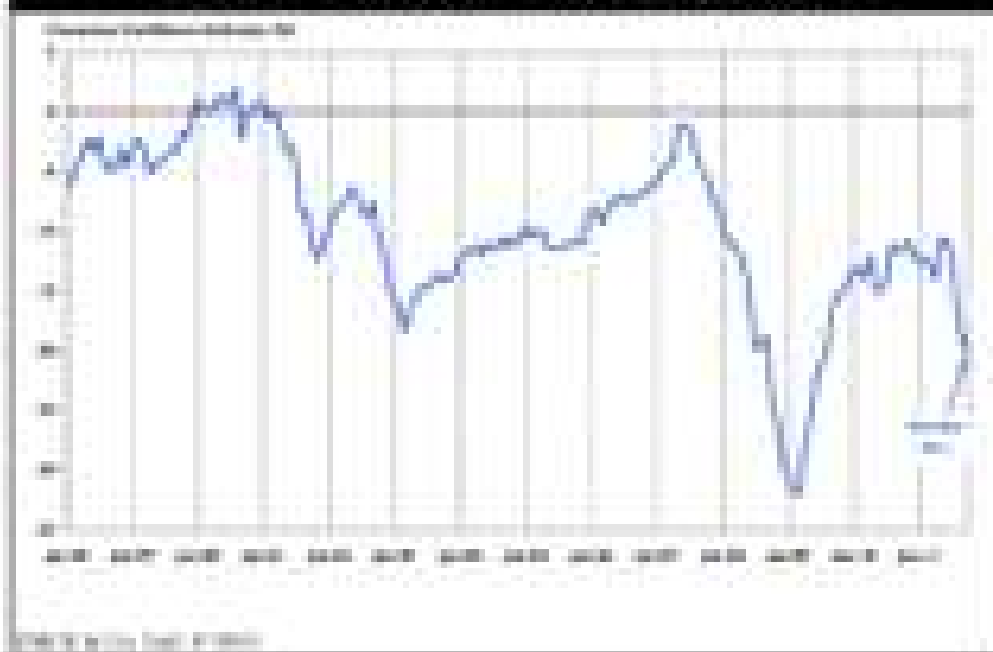


FIGURE 14. EUROPEAN ECONOMIC SENTIMENT INDICATOR



FIGURE 15. EUROPEAN CONSUMER CONFIDENCE INDICATOR



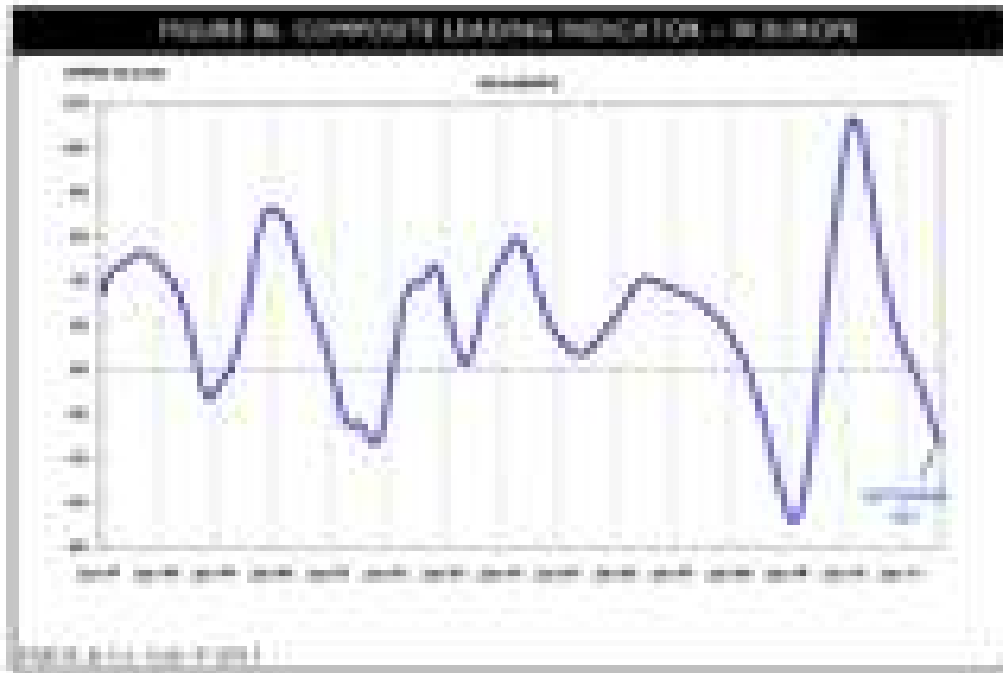


FIGURE 10. UNEMPLOYMENT - 1997

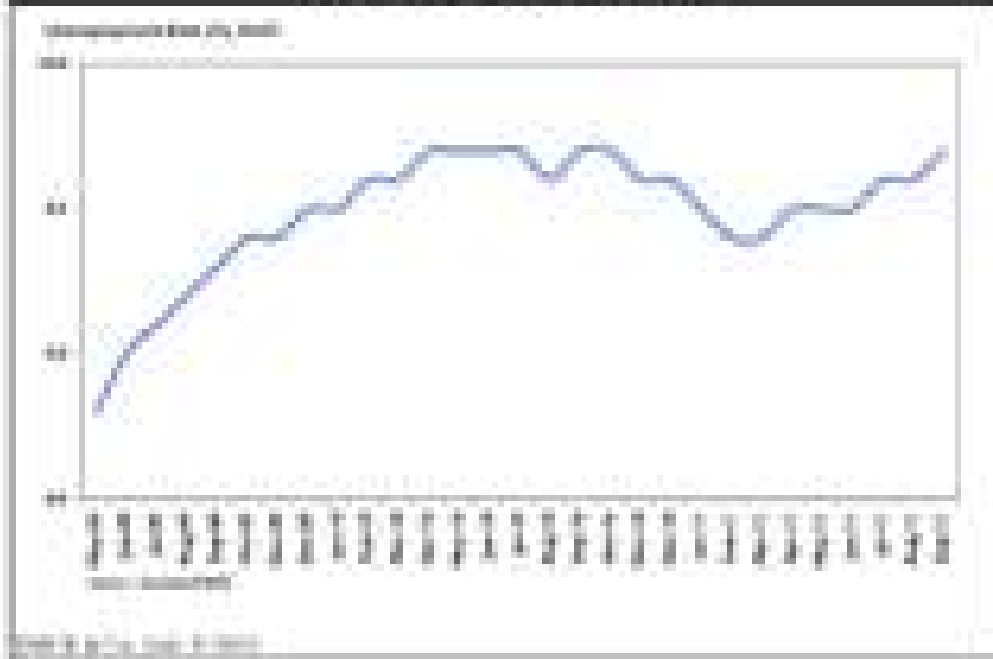


FIGURE 11. FEDERAL RESERVE DISCOUNT RATE



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