

# MARKET INTELLIGENCE

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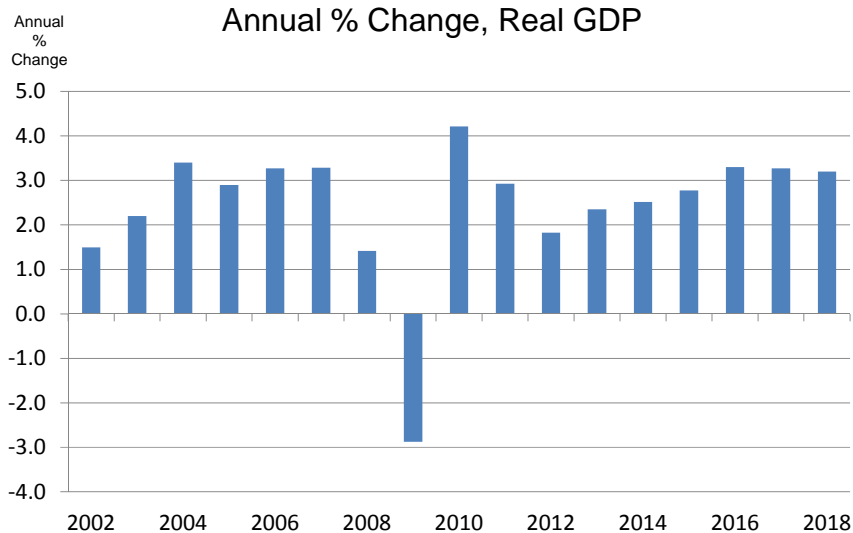
May 22, 2015

## World Cement Consumption: Implications for the US

### Overview

The United States is not an island. Global economic and cement market conditions impact the United States cement industry in a myriad of ways. Healthy world economies suggest strong export opportunities for the United States – impacting jobs and consequently to some degree the level of construction activity in the United States. World growth conditions also influence concrete's relative price versus steel, asphalt, and lumber - impacting its competitive position. Conditions impacting ocean freight can impact the level of United States' cement imports. Finally, the value of the United States dollar is determined in international markets and holds broad implications for the United States economy and the cement market. This report provides rough assessments of global economic and cement market conditions that could impact the United States cement industry.

### World GDP Growth Rates



## Global Economic Outlook

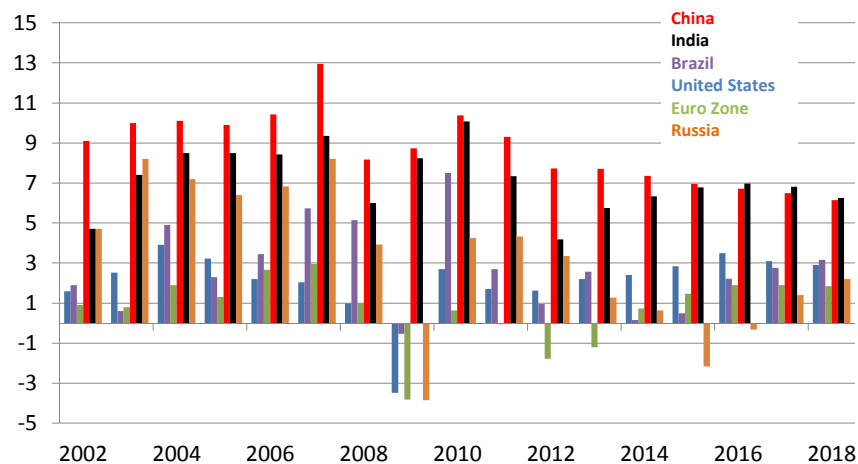
World economic growth is expected to reach 2.7% in 2015, compared to 2.5% in 2014, according to the latest survey of forecasts conducted by the World Bank, United Nations, the Organization for Economic Co-Operation and Development (OECD), as well as major banks and consulting firms. North American real GDP is expected to accelerate to 2.7% and exceed 3.0% in 2016. Improving, yet weak economic growth of 1.4% is expected to characterize the Euro Zone this year, followed by a modest improvement in growth next year. Weak growth conditions are also expected to characterize South America and to a lesser extent Eastern Europe. Chinese economic growth is expected to ease to less than 7%.

By 2016, the United States recovery is expected to strengthen and distressed European economies are also expected to record marginally stronger economic growth. The gradual strengthening among industrialized economies is expected to improve commodity prices and the overall export outlook among transitional and emerging economies – strengthening their economic growth prospects. By 2017-2018, synchronized world economic growth is expected to re-emerge resulting in global GDP growth rates in excess of 3% annually.

The slowdown in Chinese economic growth, coupled with generally soft conditions among developed economies, are the key ingredients that are expected to reduce growth rates for global cement consumption to 2.2% in 2015 – slowest growth rate since 2008.

## Comparative GDP Growth Rates

Annual % Change, Real GDP



The near-term global economic outlook reflects a dichotomy of growth among high-income economies. In the United States, the United Kingdom, and some other European countries growth is slowly accelerating and now stand above pre-recession peaks. Many Euro-Zone countries, however, continue to struggle with the economic distress associated with European sovereign debt adjustments. As a result, overall economic growth rates accrued to high-income economies is somewhat muted and has resulted in slower export opportunities for emerging and transitional economies. The sharp decline in oil prices since mid-2014 is projected to be sustained and to contribute to global growth. Low oil prices, and receding domestic headwinds in many developing countries are expected to strengthen growth among many of the oil-importing countries – to the detriment of the oil-exporting countries.

Slow growth is expected to work to the detriment of commodity prices and overall trade activity. Growth conditions among export driven transitional economies are expected to see reduction in growth and rely more heavily on domestic demand. Such is the case with China. Indeed, China's economic outlook contains a second complexity as it also shifts domestic demand from investment-led to consumer-led. The economic growth outlook for China, as a result of these risks, has been ratcheted down to less than 7% in 2015 and 2016, compared to more than 10% during 2010-2011. Given the importance of Chinese economic growth to the region, its slowdown may result in a regional growth slowdown as well.

Political uncertainties pose risks to the near term forecast. Given sanctions arising from issues in the Ukraine, Russia is expected to enter into a recession. According to the survey of forecasters, real GDP is expected to decline by more than 3% in 2015, followed more modest declines in 2016. Some analysts expect an even more severe recession. Given its regional importance, growth among Eastern Europe countries may also face additional headwinds. Conflict in the middle-east is also expected to play a disruptive role.

## World Outlook by Region

### North America

**United States:** Cement consumption is expected to grow 7.5% in 2015 followed by similar growth rates during 2016. Further gains are expected, but at a reduced rate, during 2017-2018. Past peak levels of consumption are expected by 2020.

PCA expects aggregate economic demand will remain strong in the years ahead. Slack in the economy will gradually dissipate and be replaced by gradual tightening in the workforce, logistics and new reliance on imports. To a certain extent, many of these conditions are occurring now. The natural result of tight market conditions is higher wages and prices – lifting the overall inflationary pressures. To the extent that the world economy is in a slow growth trajectory, some relief from inflation is expected. Strong near term economic conditions in the United States versus the rest-of-the-world suggests a stronger U.S. dollar and lower import costs/prices. In addition, slow rest-of-the-world growth implies more tepid demand for raw materials, such as oil. Both conditions work to moderate near term inflationary pressures in the context of swelling demand in the United States.

PCA believes the underlying economic fundamentals will continue to strengthen. The United States' job market lies at the core of PCA's optimistic outlook regarding the economy, construction markets and expected cement volumes in the years ahead. Thus far, the monthly job creation rate is averaging 270,000 net new workers during the past six months. This pace is expected to settle to 250,000 through the first half of 2015. During the second half of 2015, the monthly job creation rate is expected to edge up.

The picture painted for consumers is one of a willing and able consumer. Not only will consumers be in an improved position to increase spending, the existence of massive pent-up demand suggests that they will need to spend. The past recession was so severe consumers postponed needed durable goods purchases to make ends meet – generating pent-up demand. The recovery that followed was so muted that pent-up demand balances continue to get larger. During 2008-2012, for example, more than 24 million light vehicle purchases were postponed. This level of pent-up demand is roughly four fold the amount of light vehicle pent-up demand generated by the severe double-dip recession of the early 1980's. The existence of pent-up demand in such large quantities could provide ample fuel for strong consumer spending for some time.

**Canada:** Cement consumption is expected to decline marginally during 2015 due to low oil prices. As oil prices recover modest gains of less than 2% in cement consumption are expected for 2016. Slightly stronger gains are anticipated for 2017-2018.

Low oil prices are expected to dampen economic growth and job creation during 2015-2016 despite a stronger manufacturing export profile. Mining and oil and gas extraction has declined – disproportionately impacting the energy exporting Prairie regions of Canada. Softness in this region is expected throughout 2015-2016. At the same time, the weakening of the Loonie and stronger economic growth in the United States suggests a strengthening in manufactured exports. Eventually, these conditions are expected to translate into stronger growth and employment conditions in Ontario and to a lesser extent Quebec. The consensus of forecasters suggests Canadian real GDP will grow at a rate of roughly 2.2% annually through 2016 and strengthen thereafter.

**Mexico:** Despite low oil prices, internal demand is expected to push cement consumption up by 3.0% in 2015. Accelerated growth, near 5% annually, is expected during 2016-2018.

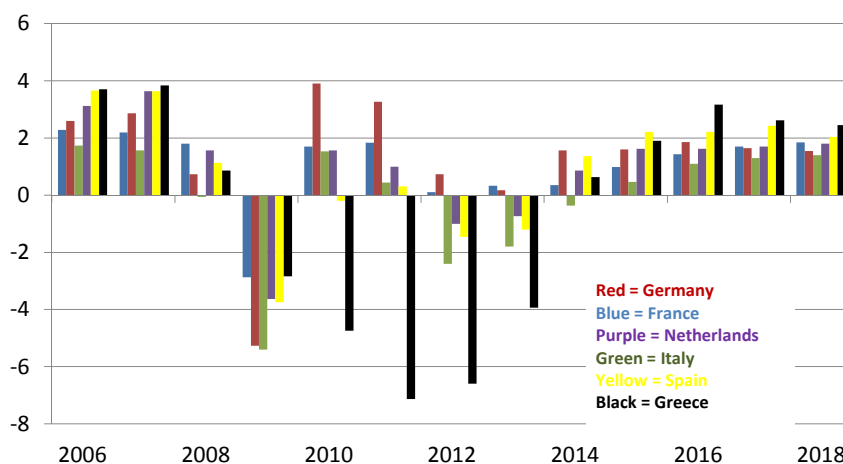
The economic outlook remains largely tied to the underlying strength of the US economy and the ongoing process of internal structural reforms. The combined effect of a weaker Mexican peso, a stronger US economy, and robust household finances bodes well for Mexican exporters, particularly in the automotive sector. Low oil prices, a weak Peso, and a difficult economic environment, however, are expected to weight down Mexico’s expansion. Low oil prices adversely impact Mexico’s trade balance, reduce government revenues and potentially dampen oil related investment spending. Overall, the consensus forecast projects real GDP will expand by 3.2% this year before accelerating to 3.6% in 2016.

## Europe

**West Europe:** Cement consumption in the Euro-Zone region is expected to flatten after years of decline. As economies in the region re-gain footing, cement consumption is expected to record modest gains in cement consumption averaging 2.5% by the end of the forecast horizon.

After a year of tentative recovery in 2014, the Euro-Zone is expected to achieve stronger growth during the next two years, albeit at lackluster growth rates. The modest strengthening in growth is aided by two important growth drivers – sharply lower oil prices and quantitative easing of monetary policy. These factors will help GDP growth accelerate from 0.7% in 2014 to 1.5% this year and 1.9% in 2016. Notable threats to economic growth remain. Difficult negotiations over Greece’s debt and conflict in Ukraine are expected to pose a risk.

**Real GDP Growth Among Euro-Zone Economies**  
Annual Percent Change



Throughout 2014 there was gradual domestic healing in the Euro-Zone as consumers regained confidence and the unemployment rate stopped rising. Improvement in these trends are expected to continue and will be supported by lower oil prices, which could boost real household income and enable consumer spending growth to accelerate. Stronger domestic demand, plus improving access to capital, could underpin business confidence and spur faster capital spending. This, coupled with a tentative recovery in housing markets and stabilizing public investment, could strengthen growth in fixed investment.

While fiscal debt reduction is expected to characterize near term economic growth conditions, the period of emergency austerity has been dramatically reduced and in some economies government spending may contribute to growth. Such contribution will be limited since public debt remains above 90% of GDP in eight countries, and at 96% for the Euro-Zone overall.

**East Europe:** Despite improvement in some Baltic states, expected recessionary conditions are expected to characterize the Russian economy leading to an 18% decline in cement consumption. Weakness in Russia, the region's largest cement consumer, translates into a decline for the region. Modest growth is expected during 2016, followed by stronger growth rates in 2017-2018.

Slow world growth, is expected to result in modest increases in commodity prices going forward – thereby moderating growth among resource-rich countries in Eastern Europe such as Russia. Low oil prices, coupled with sanctions targeted at Russia due to the Ukraine issue, and the collapse of the ruble is expected to push Russia into a severe recession during 2015. Russia is the world's largest energy exporter and investment activity is vulnerable to energy price fluctuations. Indeed, oil revenues comprise 50% of Russia's budget revenue. With the gradual strengthening of world economic growth, commodity prices, such as oil, are expected to strengthen – adding to growth among the energy-rich countries in 2016.

Russia aside, the Baltic countries and Central Europe have shown resilience to the Russia-Ukraine conflict as well as Russia's economic weakness. This is mainly because of favorable economic conditions, including strong real household incomes (especially in the Baltics) that are allowing robust private consumption. The prospect of improving exports to Germany will also provide support. But overall growth rates will be modest during the next couple of years as exports to Russia fall and weak business investment activity due to geopolitical turmoil in the region.

## **South America**

**Latin America:** Cement consumption growth in South America is expected to slow and possibly turn negative during 2015 due largely to weak economic conditions in Brazil, Argentina, and Venezuela. Strong growth conditions are expected to materialize in 2017 and beyond.

The strong US dollar, weak oil prices, China's economic growth slowdown and Brazil's fiscal restraint are expected to characterize the Latin America region during 2015 and 2016. The result suggests a contraction in real GDP for 2015 followed by only a modest expansion in 2016. A large portion of South American economic activity is tied to the export of raw commodities. In the context of slower world growth, commodity prices have softened and are expected to remain so through 2016. In large part this condition is fueled by slower economic growth anticipated for China's economy. In the context of slower growth, foreign direct investment may also slow. In addition, Brazil's economy is expected to be characterized by fiscal restraint as it attempts to reduce its large fiscal deficit which reached nearly 7% of GDP in 2014. Fiscal restraint in the largest South American economy is required to avoid an adverse credit rating adjustment.

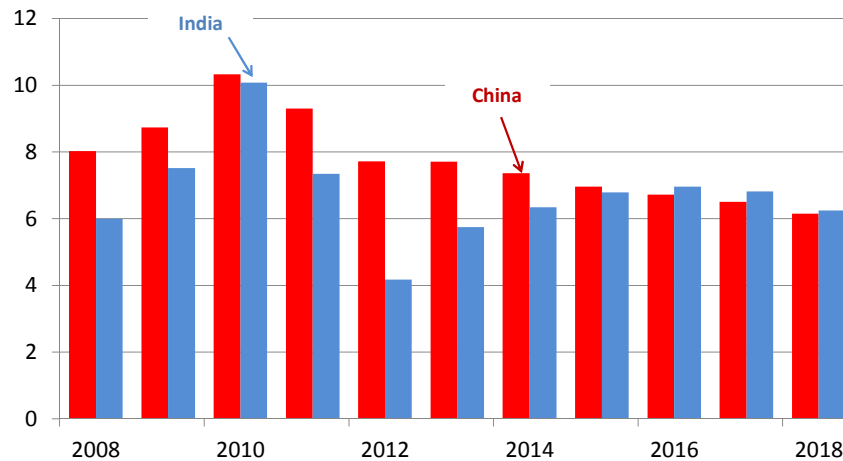
## Asia

**Asia:** Cement consumption in Asia is dominated by China and India. Cement consumption in China is expected to slow to 2.5% growth in 2015, with only a modest improvement in growth rates expected in the remaining years of the forecast horizon. India is expected to show sustained robust gains in cement consumption throughout the forecast horizon. Other Asian countries are also expected to show relatively strong gains in cement consumption.

China dominates the region and the strength of its growth spreads to many other emerging economies in Asia, particularly export-dependent countries that trade heavily with it such as Hong Kong, Indonesia, Singapore, and Taiwan. China's economic growth has been moderating since 2011 as higher interest rates and tighter credit to the private sector slowed investment in housing and foreign trade weakened – resulting in a slowdown in real GDP growth, but from very robust levels. In 2015, real GDP is set to slow to 7%. While these growth rates are impressive, they lie well below an average of 10% real GDP growth that materialized 2000-2011. A significant risk to world growth and the ASEAN region is whether the combination of softer domestic demand and weaker exports will lead to a more significant economic growth slowdown for China.

### Key Asian GDP Growth Rate Outlook

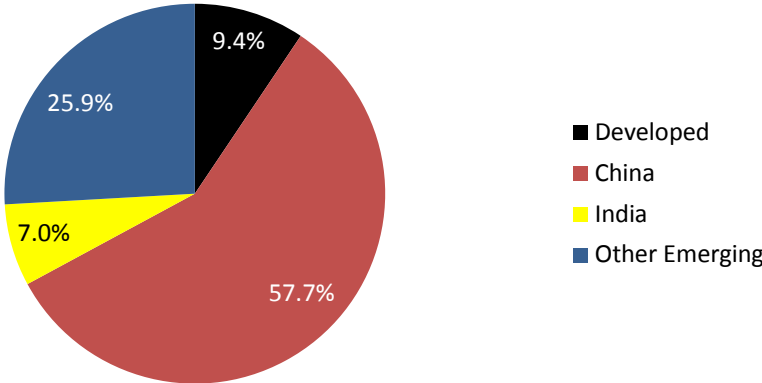
Annual % Change, Real GDP



# Composition of World Cement Consumption

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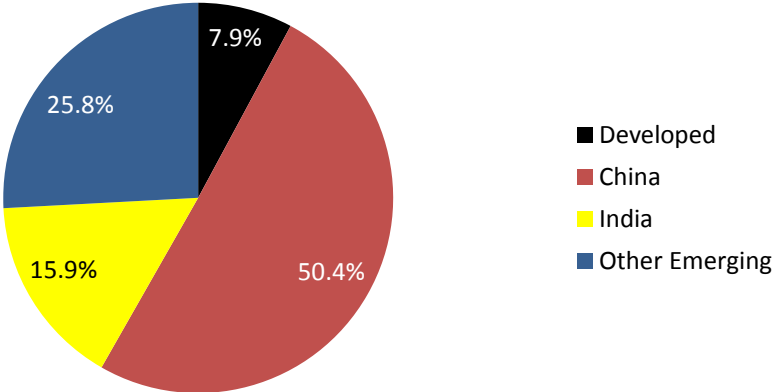
2010 = 3,313 Million Metric Tons



# Composition of World Cement Consumption

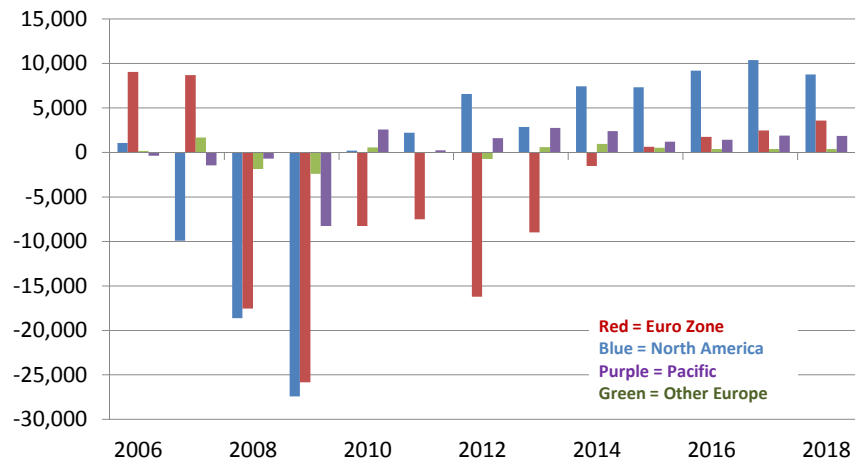
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2018 = 4,794 Million Metric Tons



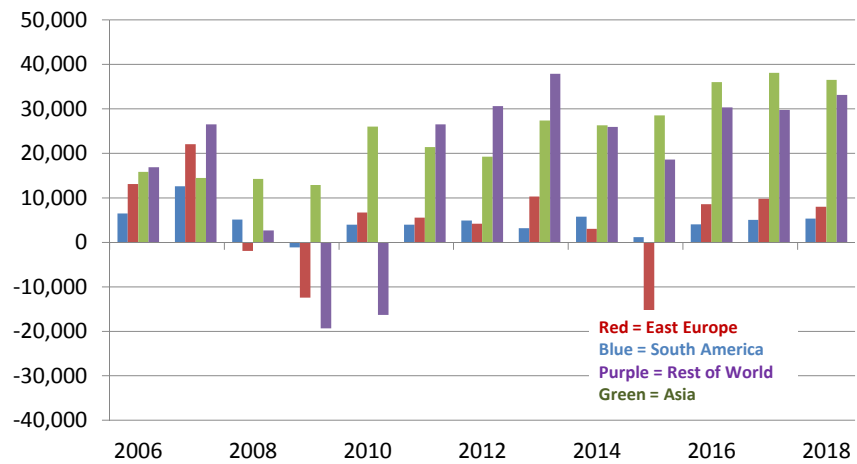
## Volume Changes in Cement Consumption Among Developed Economies

Annual Volume Change, 000 Metric Tons



## Volume Changes in Cement Consumption Among Emerging Economies (Excluding China)

Annual Volume Change, 000 Metric Tons





## World Cement Outlook

World cement consumption grew an estimated 4.5% in 2014 from 4.0 billion metric tons in 2013 to 4.3 billion metric tons. The cement market in China is nearly 10 times the size of the entire developed world's consumption. India's market is more than equal to the developed world's cement consumption. Combined these markets account for 67% of total world consumption. Growth in 2014 was, and will continue to be determined by consumption among developing and transitional economies.

After years of decline, cement consumption among developed economies increased by roughly 9.2 million metric tons in 2014. Cement consumption among developed economies is expected to grow another 9.0 million tons in 2015, followed by somewhat more accelerated growth in 2016 and beyond. Most of the gains in developed world cement consumption is attributed to North America (+7.4 million metric tons). The North American region is expected to continue to grow at a faster pace than most other developed countries. Other Europe and developed Pacific regions account for the remaining growth in 2014. Declines in consumption in the Euro-Zone region are subsiding with only a 1.5 million metric ton decline recorded in 2014. This compares with an average annual decline of 12 million metric tons during the previous two years. PCA expects modest growth will materialize in the Euro-Zone in 2015 (+210 thousand metric tons) followed by stronger gains in 2016 and beyond. On the back of a modest economic recovery, this scenario reflects the gradual healing of distressed housing and nonresidential sectors among several Euro Zone economies.

Cement consumption among emerging and transitional economies grew by an estimated 4.6% in 2014, or roughly 173 million metric tons. China and India accounted for the bulk of these gains. Relatively strong, albeit decelerating, growth in India and China, is expected to account for more than two thirds of world cement consumption. The Chinese cement market accounts for more than 59% of world consumption. India accounts for another 7% of world cement consumption. Combined, these markets dominate world cement consumption trends. As a result, world cement consumption is expected to record sustained growth during 2015-2018, but at a less robust pace than previously expected. World cement consumption is expected to grow 2.2% in 2015, 3.7% in 2016, and remain near 4.0% growth during 2017-2018.

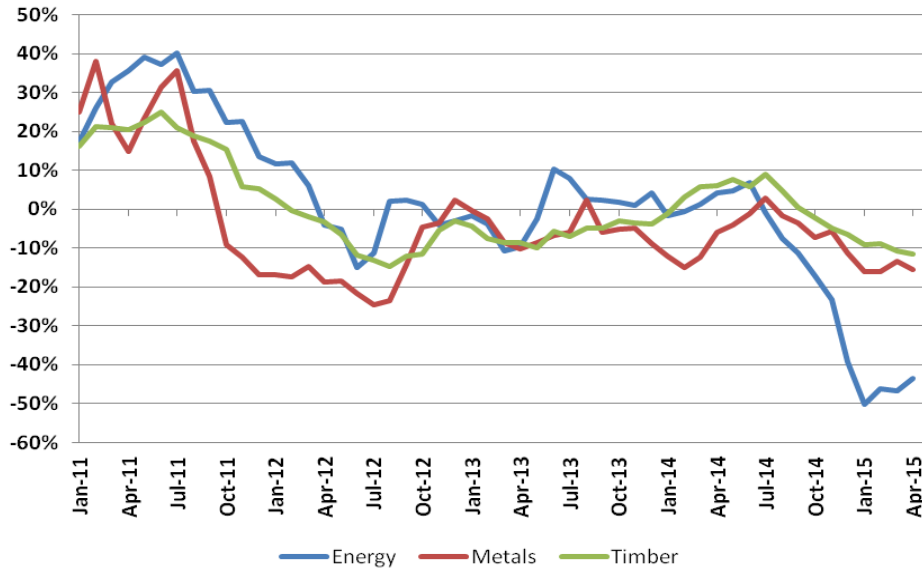
## World Growth Implications for Cement's Competitive Position in the U.S. Market

Concrete competes against other building materials such as asphalt, steel and wood. Concrete's competitive position is determined, in part, by the relative price of concrete versus these other construction materials. The prices of these building materials are partially shaped by global economic supply and demand conditions. Slow global economic growth, is expected to deter significant improvement in already depressed commodity prices that impact the construction industry. Concrete, in comparison, is not as vulnerable to the unfolding changes in world growth dynamics as other competing materials. Concrete's key factor input is limestone, which is harvested locally and not as subject to the new world growth dynamics. Soft global economic conditions, therefore, could adversely impact concrete's relative price position against competing materials in the United States.

**Steel:** China accounts for nearly half of the world's steel production. Slower Chinese economic growth is expected to spill over into internal construction markets including housing, building and infrastructure. Growth in Chinese steel consumption, according to the China Iron and Steel Association, has reached its peak and is expected to decline by more than 800 million metric tons in 2015 and 2016. It is unlikely that these potential reductions will be offset by growth among other areas of the world.

The potential reduction in Chinese production may lead to a reduction in the cost inputs for steel manufacturing worldwide. Steel scrap and pig iron, major cost inputs, are expected to remain weak and possibly decline. PCA's correlation analysis between changes in these cost drivers and changes in steel

## Global Commodity Prices Related to Construction Materials (year-over-year percent change)



Source: World Bank Commodity Price Data (Pink Sheet)

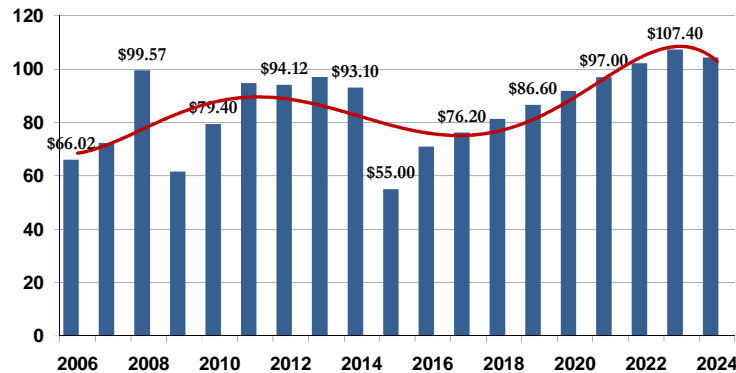
prices during 2001-2011 shows an extremely high correlation between input costs and steel prices in the United States' market. This suggests that the potential reduction in steel production input costs could also reduce the price of steel. The slowdown in China's economic growth could also lead to the venting of excess capacity onto world markets – depressing steel prices to the detriment of concrete's competitive position. Lower input costs and the potential of venting are expected to dampen a significant improvement in steel pricing in the United States market and as a result, hinder concrete's competitive position.

**Asphalt:** Asphalt prices are partially determined by the movement in oil prices. The outlook for oil prices contains extreme uncertainty. In any case, the current Energy Information Agency's (EIA) short term oil price forecast (two year projection) expects oil prices will average \$55 per barrel for West Texas Intermediate oil during 2015, and \$71 per barrel for 2016. Correlation analysis between annual percent changes in oil prices and the six month lagged annual percent change in asphalt prices suggest asphalt prices rose 7% for every 10% increase in oil prices during the past 10 years. With the introduction of cokers at refineries, the increase in asphalt prices has been even stronger increases in oil prices.

Some concerns have been raised that as oil prices decay, the potential exists that concrete's relative price position against asphalt will turn in favor of asphalt. Given the historical correlation between oil price changes and asphalt price changes, PCA estimated that the initial cost breakeven point for urban roadways is \$76.5 per barrel of oil. The lifecycle breakeven point is estimated at \$71 per barrel.

Given the depressed level of oil prices, and based on historical relationships between oil prices changes and lagged asphalt changes, asphalt paved roads should have regained its competitive advantage over concrete pavement on both an initial bid and life cycle cost basis for all roads. Unfortunately, for DOTs, declines in oil prices have a much weaker correlation to declines in asphalt prices. The two years prior to the oil price collapse asphalt prices declined 2% for every 10% decline in oil prices.

## West Texas Intermediate Oil Prices Per Barrel



The disconnect in the correlation between oil price declines and asphalt prices may be explained by refiners move toward lighter crudes, and the impact of the increased introduction of cokers at oil refineries. Each factor reduces liquid asphalt production and could result in substantive reductions in asphalt supply at a time when cycle demand is increasing. In such an environment, the market dynamics could mask the lower input cost typically associated with low oil prices. Indeed, during the second half of 2014 oil prices declined 44%. During the same time horizon asphalt prices increased 1.5% - reaching a record high in December.

PCA's correlation analysis suggests there is typically a five to six month lag between changes in oil prices and changes in asphalt prices. Given the environment facing asphalt supply, the lag may be somewhat longer. The magnitude of decline in oil prices, however, suggests some adverse impact will materialize for asphalt during 2015 – albeit muted. It is likely that the unique supply conditions that surround the asphalt industry will prevent concrete from losing much of its relative price advantage among roads it currently competes.

**Lumber:** Lumber is concrete's largest competitor in the housing market and displaces more than 40 million metric tons of cement potential consumption in a typical market. Weak lumber prices, coupled with aggressive promotional activity, are key reasons behind concrete's market share decline in the above-grade wall market from 14% in 2005 to roughly 7% currently. Lumber prices have increased substantially since they bottomed out in January 2009. United States housing starts are a critical determinant in local lumber pricing. While PCA expects a 17% increase in housing starts this year, the increase comes from an extremely low base. In 2005, more than two million homes were built in the United States. Last year, starts barely topped one million. Stronger starts activity could serve as support for modest price increases.

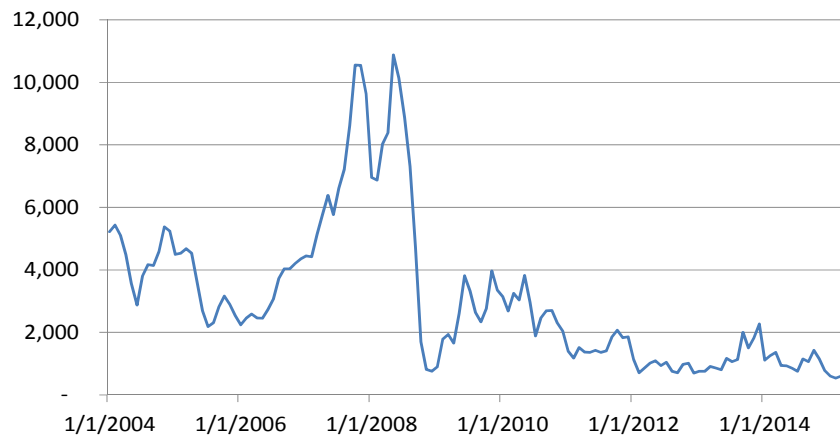
These gains could be moderated by international conditions. Keep in mind, China is a major export market for logs and lumber from the United States. The slowdown in Chinese economic growth, as well as its shift away from housing can have a dramatic impact on the prices for logs and lumber. PCA expects United States timber exports will decline due to reduced demand from importing countries, China in particular. PCA's long-term lumber pricing model is driven largely by capacity utilization levels. The model assumes 2.5% annual gains in exports to China through 2035. This assumption may no longer hold. As such the outlook for lumber prices has been reduced. This suggests that the global dynamics may work against concrete's relative price position.

## World Growth Implications for the Dry Bulk Shipping Market

The United States cement industry ability and willingness to import cement is partially dependent on conditions surrounding dry bulk ships. Dry bulk ships carry a multitude of products. Steel scrap, iron ore, coal and grain represent the bulk of their cargo. Cement typically represents less than 5% of total dry bulk shipments. The volume of trade activity among the major dry bulk products is largely determined by manufacturing activity, particularly for steel products. China represents nearly 50% of world steel production and hence plays a major role in dry bulk ship availability and freight rates.

Accented by 10% economic growth in China, dry bulk freight rates accelerated sharply during 2005-2008 - reaching historic highs. This, in turn, prompted a response by the shipping companies that led to record levels of investment in dry bulk capacity and the postponement in planned vessel retirements. With the subsequent slowdown in world growth conditions, dry bulk trade stalled. Due to the long lead times for ship construction, dry bulk capacity continued to accelerate – reflecting a net 125% increase in dry bulk deadweight tons (DWT) capacity during 2005-2012. In the context of excess capacity, freight rates declined – more than reversing gains that materialized during 2005-2008.

### Baltic Dry Bulk Freight Index

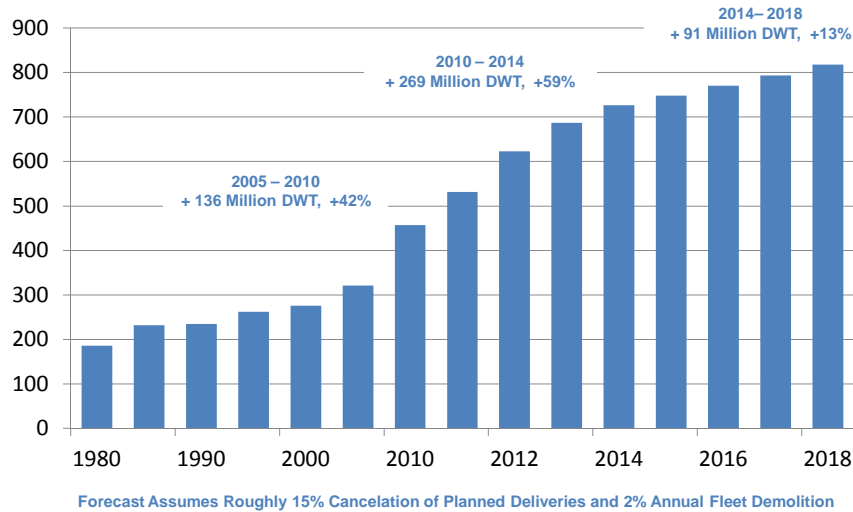


The net expansion of supply has slowed recently with a slowdown in ship building and accelerated retirements. Despite an improvement in demand, glut market conditions currently characterize the dry bulk shipping market. At the end of 2014 the dry bulk fleet reached approximately 726.3 million DWT. This represents a 269 DWT increase, or roughly 59% increase and includes Handysize, Handymax, Panamax and Capesize vessels. This expansion in dry bulk capacity materialized during soft demand conditions.

During the next three years, planned deliveries are expected to add another 110 million DWT to the fleet, or a 15% expansion of the fleet. Ship demolitions will partially limit the fleet's net expansion. The typical life of a dry-bulk carrier is between 25-30 years. The average age of the dry bulk fleet dropped from 26.5 years in 2006 to 9.3 years in 2014, and nearly half of the fleet is less than 5 years old. This implies

# World Dry-Bulk Fleet Outlook

Annual, Millions DWT



that the net demolitions going forward will be somewhat muted. Combining planned deliveries with an assumed cancellation rate of 15% and a 2% annual demolition rate suggests world dry bulk capacity will exceed 800 million DWT by the end of the forecast horizon. Given these assumptions, this estimate could be low.

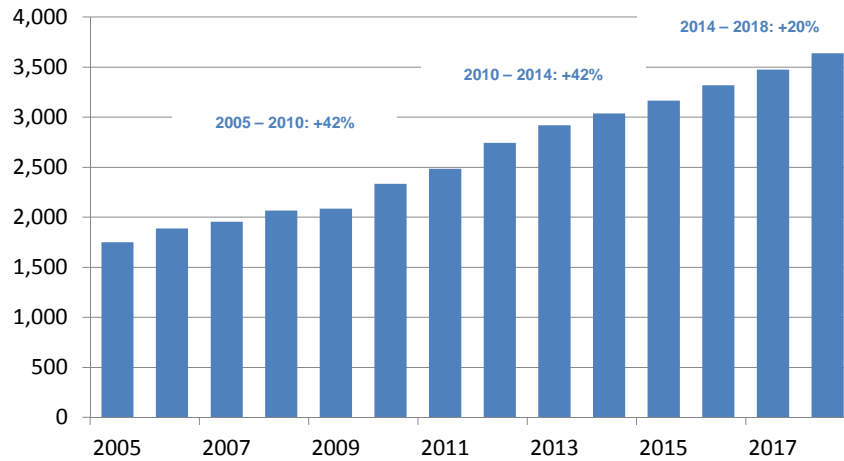
Demand for dry-bulk transport is determined by the composition and rate of world growth. Growth among emerging economies suggests an ongoing need for materials, such as iron ore, steam coal, and grain. Of particular importance is China's industrial growth. Changes in Chinese steel production, for example, can constitute significant changes in the dynamics of demand facing dry-bulk carriers. China accounts for much of world steel production. Iron ore and coking coal, used in the production of steel, account for 33% of the total dry-bulk market. Industrial production also adds to energy consumption, hence, the need for steam coal trade.

PCA calculated the relationship between millions of dry bulk tons loaded worldwide to nominal world economic activity. By using the average five year ratio between these two and our current world GDP projection, an estimate of world dry-bulk demand was calculated. According our estimates, world dry-bulk trade is expected to grow 4.3% in 2015 followed by an average annual growth rate of 4.7% through the remainder of the forecast horizon.

Based on our foregoing assessment of dry-bulk demand and supply, glut conditions are expected to continue during 2015. The slowing of new ship orders, coupled with low demolition rates and a gradual strengthening in world trade in 2016 and beyond suggests it will take some time to significantly reduce the glut facing global dry bulk shipping. Freight rates, as a result, are expected to remain flat through 2015 before a gradual strengthening materializes in 2016. More rapid annual gains are expected in 2017 and beyond.

## Major Dry-Bulk Shipping Projection

Annual, Millions Tons Loaded



History: UNCTAD, Review of Maritime Transport, 2014, PCA Projections

### World Growth Implications: U.S. Sourcing

During the economic downturn, cement companies reduced imports dramatically in an effort to defend operating rates within the United States market. Import volume was reduced from nearly 36 million metric tons in 2006 to less than 7 million metric tons in 2011. Operating rates in the United States are now improving and are expected to exceed an 80% utilization rate this year – for the first time in seven years. If PCA projections for cement consumption are accurate, utilization rates will reach 85% next year and approach 90% thereafter. As utilization rates climb into these high levels, cement companies will evaluate sourcing options that include re-opening temporarily shuttered plants or increasing imports to meet potential regional shortfalls in supply.

These sourcing decisions in the United States are expected to be made during the next several years. The re-opening decisions are likely to be based on prevailing and expected future demand in the regional markets they serve, regulatory compliance costs, and the comparative costs regarding permanent shut down versus staying open. Plant re-opening decisions, will also likely take into consideration a pure import strategy based in the context of a strong U.S. dollar and low freight rates – each working to reduce the landed cost of imports. These conditions may widen the timeframe in which the re-opening of plants takes place.



America's Cement Manufacturers™

# MARKET INTELLIGENCE

## World Cement Consumption Tables

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## PCA INTERNATIONAL OUTLOOK: Economic Growth

### Real GDP, Annual Growth rates

	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>World</b>	4.21	2.93	1.83	2.35	2.52	2.75	3.28	3.27	3.20
<b>North America</b>	3.76	2.72	2.35	1.90	2.29	2.73	3.16	2.97	3.05
<b>Canada</b>	3.27	2.57	1.83	2.18	2.29	2.21	2.29	2.05	2.25
<b>United States</b>	2.70	1.70	1.63	2.20	2.40	2.85	3.50	3.10	2.90
<b>Mexico</b>	5.33	3.90	3.60	1.32	2.18	3.12	3.68	3.77	4.00
<b>South America</b>	5.19	5.25	3.34	2.74	-0.44	-0.21	1.98	2.03	2.59
<b>Argentina</b>	9.18	8.83	1.40	2.90	-0.31	0.50	1.90	2.42	2.20
<b>Brazil</b>	7.50	2.70	0.95	2.56	0.16	0.49	2.22	2.75	3.15
<b>Chile</b>	5.50	5.93	5.47	4.17	1.85	2.87	3.71	2.67	3.65
<b>Venezuela</b>	-1.40	3.55	5.53	1.31	-3.47	-4.70	0.07	0.27	1.35
<b>Euro Zone</b>	0.63	-0.05	-1.77	-1.20	0.73	1.47	1.90	1.90	1.85
<b>France</b>	1.70	1.83	0.10	0.33	0.35	0.99	1.43	1.70	1.85
<b>Germany</b>	3.90	3.27	0.73	0.17	1.57	1.61	1.86	1.64	1.55
<b>Italy</b>	1.53	0.43	-2.40	-1.80	-0.37	0.46	1.10	1.30	1.40
<b>Netherlands</b>	1.57	1.00	-1.00	-0.74	0.86	1.62	1.62	1.70	1.80
<b>Spain</b>	-0.20	0.30	-1.47	-1.21	1.36	2.22	2.22	2.43	2.04
<b>Greece</b>	-4.73	-7.13	-6.60	-3.93	0.62	1.91	3.16	2.62	2.45
<b>Other Europe</b>	3.56	2.16	0.83	1.67	2.18	2.26	2.28	2.27	2.08
<b>Sweden</b>	6.17	3.50	1.10	1.39	2.08	2.79	2.91	2.82	2.55
<b>United Kingdom</b>	1.65	1.10	0.38	1.69	2.76	2.65	2.48	2.25	2.20
<b>Switzerland</b>	2.87	1.87	1.00	1.91	1.70	1.34	1.44	1.75	1.50
<b>Eastern Europe</b>	4.42	4.25	1.08	2.07	2.52	1.47	2.24	2.69	2.84
<b>Czech Republic</b>	2.40	1.87	-1.13	-0.77	2.11	2.56	2.78	2.54	2.40
<b>Hungary</b>	1.17	1.63	-1.70	1.24	3.28	2.70	2.60	2.25	2.45
<b>Poland</b>	3.20	2.40	0.30	1.62	3.27	3.46	3.46	3.28	3.15
<b>Russian Federation</b>	4.25	4.33	3.35	1.28	0.63	-3.04	-0.83	1.40	2.20
<b>Turkey</b>	9.08	8.63	2.35	4.13	2.90	2.76	3.73	3.83	3.55
<b>Oceania</b>	2.23	2.02	3.13	2.28	2.93	2.81	2.68	2.63	2.68
<b>Australia</b>	2.53	2.47	3.27	2.19	2.80	2.62	2.75	3.15	3.05
<b>New Zealand</b>	1.93	1.57	3.00	2.37	3.05	3.01	2.62	2.11	2.30
<b>Asia</b>	8.41	4.29	4.13	4.35	4.11	4.59	4.48	4.27	4.07
<b>China</b>	10.38	9.30	7.73	7.71	7.37	6.97	6.73	6.50	6.15
<b>India</b>	10.08	7.35	4.18	5.75	6.34	6.79	6.97	6.82	6.25
<b>Japan</b>	4.35	-0.58	1.75	1.55	0.21	1.19	1.27	0.91	0.90
<b>Malaysia</b>	7.25	5.10	5.60	4.72	6.04	5.20	5.10	4.65	4.50
<b>Philippines</b>	7.53	3.83	6.67	7.19	6.19	6.47	5.85	5.65	5.45
<b>Singapore</b>	12.68	5.15	1.30	4.25	3.04	4.08	3.51	3.13	3.10
<b>South Korea</b>	6.30	3.95	2.10	2.96	3.37	3.16	3.64	3.53	3.30
<b>Taiwan</b>	9.43	4.33	1.37	2.18	3.65	3.64	3.49	3.50	3.35
<b>Thailand</b>	7.68	0.15	6.45	2.87	0.80	3.85	3.74	3.76	3.60

Projections represent a raw average of growth projections obtained from IMF, United Nations, OECD, World Bank

## PCA INTERNATIONAL CEMENT OUTLOOK: Developed Economies

### Million Metric Tons

	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>World</b>	<b>3,312,406</b>	<b>3,592,730</b>	<b>3,743,025</b>	<b>4,012,087</b>	<b>4,194,416</b>	<b>4,284,518</b>	<b>4,442,407</b>	<b>4,613,003</b>	<b>4,790,280</b>
- Percent Change	10.3%	8.5%	4.2%	7.2%	4.5%	2.1%	3.7%	3.8%	3.8%
- Share of World	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
- Volume Change	310,313	280,325	150,295	269,061	182,329	90,102	157,889	170,596	177,277
- Share of Growth	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

### Developed Economies

<b>Total</b>	284,847	288,330	279,593	276,891	286,142	294,720	307,089	321,665	335,521
- Percent Change	-3.2%	1.2%	-3.0%	-1.0%	3.3%	3.0%	4.2%	4.7%	4.3%
- Share of World	8.6%	8.0%	7.5%	6.9%	6.8%	6.9%	6.9%	7.0%	7.0%
- Volume Change	-9,557	3,483	-8,736	-2,702	9,251	8,578	12,369	14,576	13,856
- Share of Growth	-3.1%	1.2%	-5.8%	-1.0%	5.1%	9.5%	7.8%	8.5%	7.8%
<b>North America</b>	111,617	113,784	120,373	123,261	130,682	138,026	147,225	157,594	166,359
- Percent Change	1.5%	1.9%	5.8%	2.4%	6.0%	5.6%	6.7%	7.0%	5.6%
- Share of World	3.4%	3.2%	3.2%	3.1%	3.1%	3.2%	3.3%	3.4%	3.5%
- Volume Change	1,693	2,167	6,590	2,888	7,421	7,344	9,199	10,369	8,765
- Share of Growth	0.5%	0.8%	4.4%	1.1%	4.1%	8.2%	5.8%	6.1%	4.9%
<b>Euro Zone</b>	107,630	107,810	91,600	82,619	81,100	81,751	83,516	86,000	89,575
- Percent Change	-7.2%	0.2%	-15.0%	-9.8%	-1.8%	0.8%	2.2%	3.0%	4.2%
- Share of World	3.2%	3.0%	2.4%	2.1%	1.9%	1.9%	1.9%	1.9%	1.9%
- Volume Change	-8,340	180	-16,210	-8,981	-1,519	650	1,765	2,484	3,576
- Share of Growth	-2.7%	0.1%	-10.8%	-3.3%	-0.8%	0.7%	1.1%	1.5%	2.0%
<b>Other Europe</b>	11,100	11,936	11,200	11,818	12,770	13,311	13,699	14,080	14,469
- Percent Change	-10.9%	7.5%	-6.2%	5.5%	8.1%	4.2%	2.9%	2.8%	2.8%
- Share of World	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
- Volume Change	-1,360	836	-736	618	952	541	387	381	389
- Share of Growth	-0.4%	0.3%	-0.5%	0.2%	0.5%	0.6%	0.2%	0.2%	0.2%
<b>Developed Pacific</b>	54,500	54,800	56,420	59,193	61,589	61,632	62,650	63,991	65,118
- Percent Change	-2.8%	0.6%	3.0%	4.9%	4.0%	0.1%	1.7%	2.1%	1.8%
- Share of World	1.6%	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%
- Volume Change	-1,550	300	1,620	2,773	2,396	43	1,018	1,341	1,126
- Share of Growth	-0.5%	0.1%	1.1%	1.0%	1.3%	0.0%	0.6%	0.8%	0.6%

## PCA INTERNATIONAL CEMENT OUTLOOK: Emerging Economies

Million Metric Tons

	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>World</b>	<b>3,312,406</b>	<b>3,592,730</b>	<b>3,743,025</b>	<b>4,012,087</b>	<b>4,194,416</b>	<b>4,284,518</b>	<b>4,442,407</b>	<b>4,613,003</b>	<b>4,790,280</b>
- Percent Change	10.3%	8.5%	4.2%	7.2%	4.5%	2.1%	3.7%	3.8%	3.8%
- Volume Change	310,313	280,325	150,295	269,061	182,329	90,102	157,889	170,596	177,277
<b>Emerging and Transitional Economies</b>									
<b>Total</b>	<b>3,027,558</b>	<b>3,304,401</b>	<b>3,463,432</b>	<b>3,735,195</b>	<b>3,908,274</b>	<b>3,989,797</b>	<b>4,135,318</b>	<b>4,291,338</b>	<b>4,454,759</b>
- Percent Change	11.8%	9.1%	4.8%	7.8%	4.6%	2.1%	3.6%	3.8%	3.8%
- Share of World	91.4%	92.0%	92.5%	93.1%	93.2%	93.1%	93.1%	93.0%	93.0%
- Volume Change	319,871	276,842	159,031	271,764	173,078	81,524	145,520	156,020	163,421
- Share of Growth	103.1%	98.8%	105.8%	101.0%	94.9%	90.5%	92.2%	91.5%	92.2%
<b>Total Excluding China</b>	<b>1,177,558</b>	<b>1,254,401</b>	<b>1,303,432</b>	<b>1,402,195</b>	<b>1,463,290</b>	<b>1,483,919</b>	<b>1,562,142</b>	<b>1,644,326</b>	<b>1,727,150</b>
- Percent Change	6.3%	6.5%	3.9%	7.6%	4.4%	1.4%	5.3%	5.3%	5.0%
- Share of World	35.5%	34.9%	34.8%	34.9%	34.9%	34.6%	35.2%	35.6%	36.1%
- Volume Change	69,871	76,842	49,031	98,764	61,094	20,630	78,222	82,184	82,824
- Share of Growth	22.5%	27.4%	32.6%	36.7%	33.5%	22.9%	49.5%	48.2%	46.7%
<b>South America</b>	<b>90,697</b>	<b>99,345</b>	<b>104,250</b>	<b>107,412</b>	<b>113,181</b>	<b>114,345</b>	<b>118,390</b>	<b>123,421</b>	<b>128,755</b>
- Percent Change	11.4%	9.5%	4.9%	3.0%	5.4%	1.0%	3.5%	4.2%	4.3%
- Share of World	2.7%	2.8%	2.8%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
- Volume Change	9,269	8,648	4,905	3,162	5,769	1,164	4,045	5,031	5,334
- Share of Growth	3.0%	3.1%	3.3%	1.2%	3.2%	1.3%	2.6%	2.9%	3.0%
<b>Eastern Europe</b>	<b>120,637</b>	<b>145,451</b>	<b>149,621</b>	<b>159,897</b>	<b>162,922</b>	<b>135,497</b>	<b>143,528</b>	<b>152,964</b>	<b>160,919</b>
- Percent Change	9.9%	20.6%	2.9%	6.9%	1.9%	-16.8%	5.9%	6.6%	5.2%
- Share of World	3.6%	4.0%	4.0%	4.0%	3.9%	3.2%	3.2%	3.3%	3.4%
- Volume Change	10,837	24,814	4,170	10,276	3,025	-27,425	8,030	9,437	7,955
- Share of Growth	3.5%	8.9%	2.8%	3.8%	1.7%	-30.4%	5.1%	5.5%	4.5%
<b>China</b>	<b>1,850,000</b>	<b>2,050,000</b>	<b>2,160,000</b>	<b>2,333,000</b>	<b>2,444,984</b>	<b>2,505,878</b>	<b>2,573,176</b>	<b>2,647,012</b>	<b>2,727,609</b>
- Percent Change	15.6%	10.8%	5.4%	8.0%	4.8%	2.5%	2.7%	2.9%	3.0%
- Share of World	55.9%	57.1%	57.7%	58.1%	58.3%	58.5%	57.9%	57.4%	56.9%
- Volume Change	250,000	200,000	110,000	173,000	111,984	60,894	67,298	73,836	80,597
- Share of Growth	80.6%	71.3%	73.2%	64.3%	61.4%	67.6%	42.6%	43.3%	45.5%
<b>Asia No China No Japan</b>	<b>339,250</b>	<b>360,340</b>	<b>369,630</b>	<b>397,058</b>	<b>423,415</b>	<b>451,939</b>	<b>487,937</b>	<b>526,081</b>	<b>562,617</b>
- Percent Change	8.5%	6.2%	2.6%	7.4%	6.6%	6.7%	8.0%	7.8%	6.9%
- Share of World	10.2%	10.0%	9.9%	9.9%	10.1%	10.5%	11.0%	11.4%	11.7%
- Volume Change	26,660	21,090	9,290	27,428	26,357	28,523	35,998	38,144	36,536
- Share of Growth	8.6%	7.5%	6.2%	10.2%	14.5%	31.7%	22.8%	22.4%	20.6%
<b>Other World</b>	<b>626,974</b>	<b>649,265</b>	<b>679,931</b>	<b>737,828</b>	<b>763,771</b>	<b>782,138</b>	<b>812,288</b>	<b>841,859</b>	<b>874,858</b>
- Percent Change	3.8%	3.6%	4.7%	8.5%	3.5%	2.4%	3.9%	3.6%	3.9%
- Share of World	18.9%	18.1%	18.2%	18.4%	18.2%	18.3%	18.3%	18.2%	18.3%
- Volume Change	23,104	22,290	30,666	57,897	25,943	18,368	30,149	29,572	32,998
- Share of Growth	7.4%	8.0%	20.4%	21.5%	14.2%	20.4%	19.1%	17.3%	18.6%