

# CEED

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**Construction Equipment Distribution**

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## Building Success in a Challenging Landscape

By Shiv Shivaraman, Carlos Thome and Stephen Tapley

As the last five years have shown, construction equipment (CE) manufacturers have endured a crisis. No longer can CE manufacturers rely on overall economic growth to drive performance. AlixPartners' research shows that the industry has gone through a significant correction and is poised to recover over the next five years. However, the recovery will be tepid and OEMs need to undertake major structural changes to reap greater profits and growth.

After reaching its peak in 2011 with almost 890,000 units sold, global construction equipment sales dropped almost 40%, reaching the bottom in 2016 when only 540,000 units were sold. Although developed economies demonstrated marginal growth, developing countries, mainly China, Brazil and India, posted a dramatic reduction in demand. Sales in China dropped from 488,000 units in 2011 to only 120,000 in 2016. Meanwhile sales in Brazil plummeted from 37,000 units in 2011 to only 8000 in 2016.

Despite 2016's bleak performance, the sector has already started to observe improvement among key demand drivers. Global GDP growth, a strongly correlated indicator of construction equipment sales, is projected to grow from 3.1% in 2016 to 3.4% in 2017. Additionally, global population growth continues to drive demand for infrastructure and residential construction—particularly in the developing world. After stalling during 2015-2016, global infrastructure investment, another key driver of the CE sector, is expected to increase 6% annually through 2020. Considering these macroeconomic drivers, the overall industry is forecasted to grow at a 5.2% CAGR over next five years, as shown in figure 1.

The growth may appear robust, yet the recovery is tepid as sales in 2020 are forecast to be about 25% lower than the 2011 peak. Major markets such as North America and China are expected to drive the future growth. Even Brazil is forecast to rebound significantly, albeit from a very small base. Additionally, Brazil and China face a more daunting task rebuilding, as the sales decline has reset the sales baseline far below a normal recovery.

During 2011-2015, all major OEMs faced significant drops in construction equipment sales volume. Hardest hit were the Chinese OEMs, whose global market share declined from 50% in 2011 to 35% in 2016. Average EBIT for global OEMs dropped from 8.0% in 2011, to 5.2% in 2015 to 4.6% in 2016. Concurrently, EBIT for Chinese OEMs dropped from 15.7% to 3.3% to 3.0% during the same period as shown in Figure 2.

While construction equipment OEMs were experiencing the drop in their bottom line, they continued to invest in CAPEX and R&D. The sector observed a slight increase in CAPEX investment, jumping from average 4.4% of revenue in 2014 to 4.6% in 2016. R&D spend as a percent of revenue has also slightly increased in

the last few years, from 2.8% in 2014 to 3.1% in 2016. However, the average return on capital employed was significantly higher for global OEMs than for the Chinese competitors: 4.6% for the global OEMs compared to only 1.7% for the Chinese ones in 2016.

AlixPartners research indicates that a few OEMs have made significant progress towards restructuring, but many others may be wasting the crisis.

There are three major factors that will drive long-term growth and sustainable profitability: instituting structural change, reconfiguring technology, and exploiting future market ecosystems and dynamics.

The construction equipment sector needs a holistic full-scale structural transformation through footprint optimization, productivity improvement, and rapid operational turnarounds to right-size the cost structure. The industry has production overcapacity and it will remain that way for the foreseeable future. This issue is particularly acute in Brazil and China. OEMs should be focusing not only on reducing capacity and optimizing their footprint, but also on implementing global cost reduction on direct and indirect materials, reviewing product portfolios, eliminating low-value add variants and reducing complexity (see Figure 3). An additional opportunity may include exploring M&A as a means to consolidate and improve profitability.

Taking advantage of the crisis includes developing products that incorporate new technologies and services. As with the automotive industry, new technology such as semi- and fully autonomous equipment, hybridization, electrification is already transforming the construction equipment industry, and will continue to do so into the future. The technological improvements are expected to increase productivity, safety, and asset utilization while reducing maintenance and operating costs. As construction equipment replacement demand builds over the coming years due to the crisis that has passed, OEMs need to be ready with these technological upgrades that end users will demand.

There are five technological trends that will impact the industry in the near- and medium-term. Example applications in each include:

### 1. Telematics and Internet of Things (IoT)

Monitor equipment usage in the field using embedded sensors to gather real-time performance information

Implement constant communication systems between equipment and site, getting access to in-depth information regarding asset operations, maintenance records, equipment health, etc.

Shift from current location tracking to information tracking and reacting (fluid level, pressures, and other machine status)

### 2. Data analytics

Understand equipment performance information through analysis of data generated through telematics



Adjust real-time machine reaction (e.g., increase/reduce speed) based on soil or other key drivers

Perform automated on-the-go soil property analysis

Use “what-if” scenario models for predictive analytics

### 3. 3D modeling

Generate field/site images taken from the sky (drones, planes, satellites) allowing accurate recreation of topography for project execution

Use extensive 3D modelling combined with data analytics, transforming how projects are designed and executed

Simulate excavation/construction to plan/monitor project execution

### 4. Autonomous machines

Use autonomous or semi-autonomous equipment (cab-less) with machine-to-machine communication technology

Implement fully automated (self-driving) machines or remotely controlled by operators

### 5. Hybrid/electrification

Design powertrains that can significantly

increase fuel economy—up to 50%—depending on equipment usage

Impact the longevity of equipment driven by less frequency of repairs

Implement better emission control, a potential key requirement in developed countries

To be successful, the OEMs must anticipate customer needs and the benefits that each new technology will deliver from an integrated value chain perspective. Some of the increased benefits may not offset the costs of these new technologies. But it stands that the technology revolution sweeping the automotive industry will rapidly make inroads into the construction equipment sector. Successful OEMs will need to ensure that the value proposition for technology, such as semi or autonomous, data analytics, electric, 3D mapping etc., is aligned with construction industry economics. It will be critical to tailor product technology offering to market/region demand and customer needs and not take a one-size-fits-all approach. Finally, capturing and leveraging early stage start up innovation will also be critical.

Winning the future means moving

beyond implementation of company-specific structural changes or conversion of technology from paper to reality. The new millennium marked a shift from product-center discrete markets to service-centric global ecosystems (“servitisation”). This paradigm holds true for the heavy equipment sector—specifically for construction. Data analytics-driven services and solutions will displace asset-based economic value creation. OEMs should continue to focus on products, while at the same time develop integrated services that unlock the potential of servitisation for their customers.

The construction equipment sector has endured a massive crisis in the last five years. Plummeting sales, revenues, and net income has taken its toll. As the market is now poised to recover, OEMs need to take advantage of the crisis to rapidly rebuild for the future—through structural change, innovative products, and market ecosystem development. If companies work hard on these three initiatives, they can transform a currently forecasted tepid growth into a profitable and sustainable future.

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