

Construction Equipment

MARKET & OPPORTUNITIES



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Introduction

The Indian Construction Equipment sector has an estimated market size of US\$ 2.4 – 2.6 billion for the year 2007. The industry has been growing due to the large investments made by the Government and the private sector infrastructure developments. The prospects of the construction equipment industry look attractive with a projected investment of US\$ 320 billion in the infrastructure sector over the next few years. The Indian market is catered by about 200 domestic manufacturers (small, medium & large).

Though the Indian construction equipment industry is a fraction of the global market, whose size is over US\$ 75 billion, it has been growing at an average of 30 per cent annually compared to the global growth of 5 per cent. India is one among the top 10 markets for construction equipment and is one of the key international market. The growth in this industry is expected to be primarily due to investments in infrastructure, investments by the Government in the form of external borrowings and internal accruals by Public-Private-Partnerships (PPP) model. Indian firms are strengthening their existing operations for catering to the growing domestic demand and are also planning to expand to tap overseas markets. At the same time international majors have ambitious plans for India.

SECTOR COMPOSITION & SIZE

The following is the sector breakup of the construction equipment industry in India as of 2004.

Product consumption constitutes the bulk of the segment with around 56 per cent while the unorganised sector contributes to around 15 per cent. Unorganised players are more prevalent in the relatively less technology intensive material handling, material preparation and concrete equipment segments.

Construction & Material Handling Equipment Industry	
Products	56%
Spare Parts	21%
Unorganised Sector	15%
Services	6%
Exports	2%

Source: CII-KPMG Report on Indian Infrastructure, KPMG Analysis

The imports market is estimated around US\$ 375 million. Of these, the earthmoving, excavation and hauling equipment categories command around 25 per cent.

Imported used equipments, which include high-end hydraulic mobile cranes, excavators, motor graders, vibratory compactors comprise a negligible 0.4 per cent of the total construction equipment market.

Company	Revenue (US\$ Million)	Market Share
JCB India	329	13.2%
BEML	307	12.3%
TELCON	283	11.3%
L&T Case/Komatsu	156	6.3%
Caterpillar India	143	5.7%
Ingersoll Rand	105	4.2%
Volvo	99	3.9%
ECEL	61	2.4%
Greaves Cotton	37	1.5%
ACE Ltd.	36	1.5%
Others	944	37.7%
Total Market	2500	100.0%

The exports of Indian construction equipment industry were estimated at US\$ 35 million in 2004-05. The growth in exports in the period 2000-01 to 2004-05 was around 30 per cent. The potential exports market for construction

equipment from India is projected to be around US\$ 100-120 million by 2010.

Spare parts revenues range anywhere from 20–29 per cent of the total sales for representative companies and are predominant in tunneling and drilling equipments. Services revenues have been higher for global players at around 11–20 per cent in comparison to 2–8 per cent of Indian players.

The construction equipment industry in India has more than 200 players; however, the top 6 players occupy about 60 per cent of the market. The following are players and their contribution to the Indian construction equipment industry.

- Earthmoving equipment
- Road construction equipment
- Material handling equipment
- Tunneling and Drilling equipment
- Construction vehicles

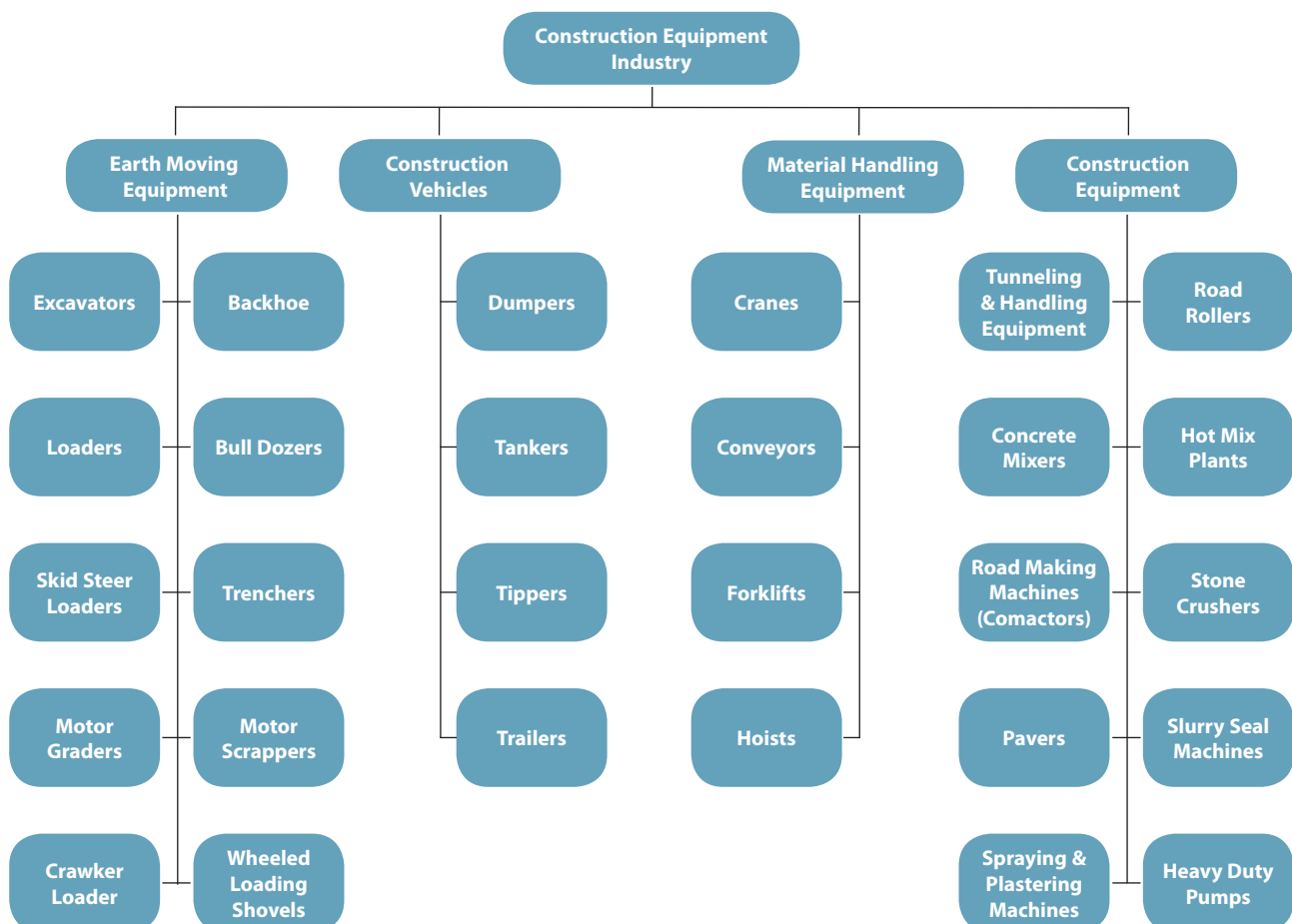
The following is the industry structure and the categories involved in the construction equipment industry:

In terms of size, earthmoving equipment constitutes the biggest segment, accounting for nearly 57 per cent of the overall equipment market. Material Handling equipment and tunneling and drilling equipment follow with 13 per cent and 12 per cent respectively.

The performance of each segment is discussed separately under various heads.

INDUSTRY STRUCTURE

India produces the entire range of construction equipment for different applications. The industry can be broadly classified under the following categories:



Construction Equipment Industry Structure	
Earth Moving Equipment	57%
Material Handling	13%
Tunnelling & Drilling for Mining	12%
Road Construction Equipment	7%
Concrete Equipment	6%
Concrete Preparations	5%

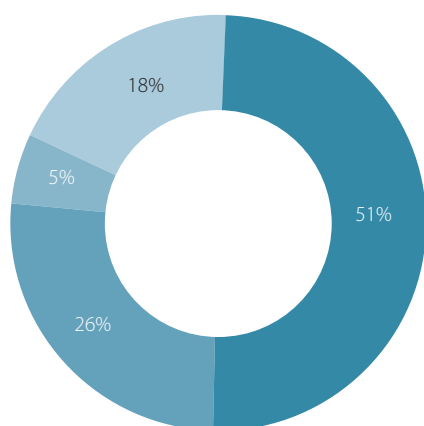
Source: KPMG Analysis, Industry Sources

EARTHMOVING EQUIPMENTS

The earthmoving equipment market in India is estimated at about US\$ 1.4 billion. The predominant sub-segment in this is excavators, which account for just over half the market. Backhoes account for 26 per cent and loaders for another 5 per cent share.

The prime driver for earthmoving equipment is mining activities and construction industry. Within these industries, the key demand drivers going forward are likely to be road construction, urban infrastructure, irrigation, real estate, construction and mining.

Earthmoving Equipment Segment
Total Market Size ~ US\$ 1.4 billion



■ Excavators ■ Backhoes ■ Loaders ■ Others

Source: Industry Sources; Primary Research; CII-KPMG Report; KPMG Analysis

EXCAVATORS

Excavators are extensively used in many roles such as digging of trenches and foundations, demolition, general grading/landscaping, heavy lifting (e.g. lifting and placing of large concrete pipes), river dredging, mining and brush cutting with hydraulic attachments. Excavators come in a

range of capacities and are usually classified on the basis of tonnage. The lower end excavators, referred to as mini excavators, find greater usage in urban infrastructure development and road development. The heavier duty excavators are used in mining and heavy construction. In India, the level of technology of the equipment manufactured is at par with international standards with some exceptions being the limited usage of electronic controls and hydraulic systems and engines adhering to the latest emission norms.

The excavator market in India was around US\$ 733 million in FY'06 with a total of about 4455 units being sold. There is a sizeable market for used equipment as well. Excavators have registered a 30 per cent CAGR (Compounded Annual Growth Rate) for the past four years. Given the long term nature of India's infrastructure development plans, similar growth rate is expected in future as well.

High end excavators incorporating modern technology are witnessing faster growth compared to the traditional low end excavators. In terms of tonnage, 6–18 tonne excavators have grown at a CAGR of 9 per cent while 18–22 tonne excavators have registered a growth of 23 per cent CAGR during the period of FY'01-06. The 22-50 tonnes excavators have seen a CAGR of 35 per cent and over 50 tonnes have registered 19 per cent CAGR in the same period. Increase in the sales of smaller sized excavators is largely driven by irrigation projects. Increased privatisation of mining and capacity augmentation in cement industry has propelled the growth for larger excavators. The key players in this sector are Telcon, L&T - Komatsu, Volvo, CAT and JCB. Telcon is the market leader with about 50 per cent of the market.

NEW ENTRANTS GAINING SHARE

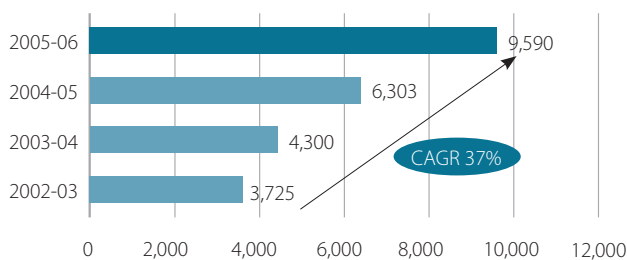
A product range catering to the entire basket of equipment requirement of the customer is one of the differentiators in the market place. Indian players have the advantage of long experience in the market, leading to deep relationships with buyers, well spread out service networks and a deep understanding of the customer's current and emerging needs. Multinationals that are relatively new entrants have strengths in the areas of technology, presence across the spectrum of equipment and providing end-to-end solutions.

New technology enables better quality of service, low cost of ownership (low fuel consumption, less downtime, ease of maintenance, etc.), better resale value and reliability even in case of overuse or abuse of the equipment. Presence across the spectrum enables the firm to present a one-stop shop to customers. End-to-end solutions to customers help in retaining customers over the entire equipment usage cycle, right from financing through service and maintenance, till resale / disposal. Based on these strengths, over the last few years, relatively new entrants into the Indian market have been gaining share at the expense of the traditional market leaders.

BACKHOE

The backhoe loader, consisting of a tractor, front shovel/bucket and small backhoe in the rear is a versatile piece of equipment and is therefore often the only piece of heavy equipment brought onto small to medium landscaping projects. A backhoe can duplicate the work of a bulldozer, front end loader and excavator. The backhoe loader also has the advantage of being driven directly to the different job areas as opposed to other specialised machines which need to be towed into the site and require external power sources.

Backhoe Market



Source: Industry Sources, KPMG Analysis

India is the second largest market for backhoe loaders in the world with a market size of approximately US\$ 358 million. The market has been growing at a rate of close to 37 per cent CAGR over last four years. Going ahead growth is likely to be at least 11 per cent CAGR over the next few years. Most industry players however expect much faster growth (around 30-40 per cent) in the near term. JCB India is the leader in this segment with a share of over 70 per cent. Other players include Telcon, L&T, Caterpillar and Terex. While technology plays a key role especially for lowering

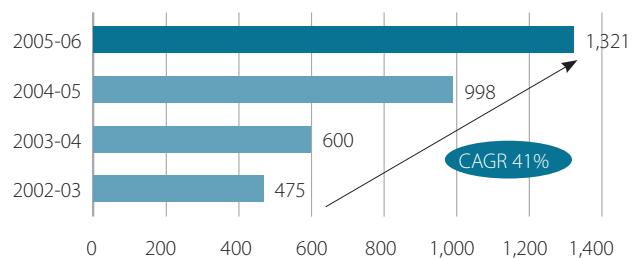
operating costs by making the machine more fuel efficient, it is not perceived to be as important for backhoes as it is for excavators. With more players and increased competition, price competition may increase.

The drivers for this market have been the housing and urban construction. Backhoes are used for all construction applications and hence have a very high utilisation for renters. Backhoes are perhaps the only market in India amongst construction equipment that have reached a stage of maturity and scale where exports could be considered.

LOADERS

Loaders are used mainly for uploading materials into trucks, laying pipes, clearing rubble, and digging. The flexibility of usage is low as compared to a backhoe and loaders are largely used as complimentary products for material re-handling in construction and mining applications.

Loader Market



Source: Industry Sources, KPMG Analysis

The total market for wheeled loaders was approximately US\$ 64 million in FY'06 with a total of about 1321 units being sold and has been growing at a CAGR of about 41 per cent over the last 4 years. The growth is expected to continue at 10 per cent CAGR over the next few years. As in the case of backhoes, faster growth of about 20-30 per cent is expected in the near term. Unlike excavators, the growth in loaders is greater in the lower capacity categories (<10T). Key players in the Loaders market are Caterpillar (~50 per cent share), JCB and Telcon with L&T Komatsu and Volvo being players with a relatively smaller presence. In the high capacity loaders market (>15T), Volvo is a significant player.

Most of the customers for loaders are first time buyers and this is the reason for huge sales of lower end loaders. Just as it is for excavators, a complete range of products and comprehensive maintenance and service support are becoming the critical success factors for players in the

industry. The demand of loaders is from increased global demand for iron ore mining activities in the country.

CONSTRUCTION EQUIPMENT & VEHICLES

Equipment in this category typically find multi purpose application for various construction activities. Some of the construction equipment used are road rollers, concrete equipment, mixers, hot plant mixers, stone crushers, compactors, pavers, pneumatic tyre rollers (PTR), dumpers, tippers, trailers, and others. Compactors account for majority of the market share of road construction equipment. There are two main types of compactors - Tandem Vibratory Rollers (TVR) and soil compactors. These are used for compaction of asphalt and soil respectively primarily in road construction.

The road construction equipment market share was around US\$ 175 million in FY '06. Of this, the compactor market (TVR and Soil Compactors) was about US\$ 48 million, with a total of about 1076 units being sold (516 TVR and 560 soil compactors). Reconditioned equipment account for about 5 – 10 per cent of this segment. The segment has seen erratic growth over the last 3 years owing largely to delays in the road infrastructure development plans of the Government. However, the CAGR over the last 3 years has been healthy at 20 per cent. Going ahead, growth is likely to be at least 11 per cent CAGR over the long term. Demand for road construction equipment will be driven not only by road construction activities but also by irrigation, power projects and other construction activities.

Some of the major players in this sector are Ingersoll Rand (IR), Escorts Construction Equipment Limited (ECEL), L&T and Greaves. These companies largely compete on price though there are differentiators around service support. The market is now led by Ingersoll Rand with around 37 per cent market share in the TVR and soil compactors market. Both ECEL and L&T account for about 22 per cent each in the TVR and soil compactor market. Greaves occupies fourth position with a share of 17 per cent a large part of which it has gained in the last year (increase in share from 9-17 per cent between FY05 and FY06) mainly at the expense of IR.

Tunneling & Drilling equipment are primarily used for mining, irrigation, construction (road, ports, airports, railways, power, etc.), urban infrastructure, and pipeline infrastructure. The product range in this category includes

Rotary / DTH drilling, hammer track drill, boring equipment, and demolition equipment. Bharat Earthmovers Limited (BEML) & Caterpillar lead the market of construction vehicles, consisting primarily of dumpers & dozers.

The competitive advantage of construction equipment lies on technological superiority and a wide product portfolio. It's also important to maintain strong relationships with the large, organised buyers.

MATERIAL HANDLING EQUIPMENT

The chart below explains the different material handling equipment and their market share. Pick and carry cranes is the largest segment with 27 per cent share of the US\$ 325 million material handling equipment market. Slew cranes, crawler cranes and tower cranes together account for another 24 per cent. Forklifts have 12 per cent share.

Material Handling Equipment Market Share Total Market Size ~ US\$ 325 million	
Pick-n-Carry Cranes	27%
Forklift	12%
Slew Cranes	11%
Crawler Cranes	8%
Tower Cranes	5%
Others	37%

Source: Industry Sources; Primary Research; CII-KPMG Report; KPMG Analysis

PICK & CARRY CRANES

Pick and Carry cranes provide wide range of applications and high cost economies in material handling requirements. Some of the typical uses include loading, unloading, moving, shifting and erecting material.

The pick-n-carry crane segment in India has an estimated market size of US\$ 87 million (3698 units), and these cranes comprise 27 per cent of the overall material handling market and over 50 per cent of the cranes market. The market has grown at a CAGR of 72 per cent in volume terms in the last 3 years. Going forward, the growth rate is expected to be in the range of 15-20 per cent over the next few years.

The key drivers are the construction and industrial sectors. Within the construction sector the key demand driver is urban infrastructure (expected investment growth of 13 per cent annually). Within industrial applications, the

key demand drivers are steel and power industries (growing at around 9 per cent annually).

The major players in this segment are ECEL and Actions Construction Equipment (ACE). While ECEL has been the traditional leader in this segment, ACE has been gaining share. A third player – Omega – has been able to capture 2.5 per cent of the market within one year of commencing production. The barriers of entry in this segment are low. The first movers have the added advantage of established sales, service and distribution network along with an existing component supplier.

OTHER CRANES

Other cranes prevalent in India primarily consist of slew cranes, crawler cranes and tower cranes. These are higher value, more sophisticated cranes than pick-n-carry cranes and are typically used for heavier duty work.

The market for slew cranes is about US\$ 35 million (300 numbers) with about US\$ 13 million (180 numbers) of this being accounted for by imported used equipment. Within slew cranes, yard cranes are the most prominent, comprising 65 per cent of all new slew cranes. The crawler cranes market is about US\$ 25 million (210 numbers) with imported used cranes comprising about US\$ 9.5 million (110 numbers). Tower cranes are about US\$ 15.6 million (175 numbers).

In volume terms other cranes comprise about 16 per cent of the overall cranes market in India, but in value terms these cranes account for almost 47 per cent of the market. While slew cranes have witnessed a CAGR of 34 per cent over the last 2 years, tower cranes have grown at 71 per cent CAGR in the same period. Industry sources indicate a growth rate of between 15-20 per cent over the next few years.

Demand for other cranes is driven primarily by the construction and industrial sectors. Within industrial applications, the key demand drivers going forward are likely to be the power, refinery and mining sectors. With increasing average scale of infrastructure and construction projects, the growth rate of slew (specifically yard/rough terrain) and tower cranes is likely to surpass the average growth rate of the overall cranes segment. With improved road networks by 2008-09, demand for truck mounted cranes may also witness a spike. In the slew cranes segment, used imports dominate the market, with Tractors India

Limited (TIL) being the market largest domestic player. TIL and ECEL have a market share of around 32 per cent and 6 per cent in terms of volumes. Telcon is the sole player in the crawler cranes segment with a share of approximately 50 per cent by volume (balance is accounted for by used imports). Shirke Potain is the market leader in the Tower crane category with 50 per cent market share followed by ACE at 25 per cent market share. ACE plans to widen its product portfolio in the cranes segment through manufacture of Truck Mounted and Tower cranes. This segment has healthy growth prospects.

FORKLIFTS

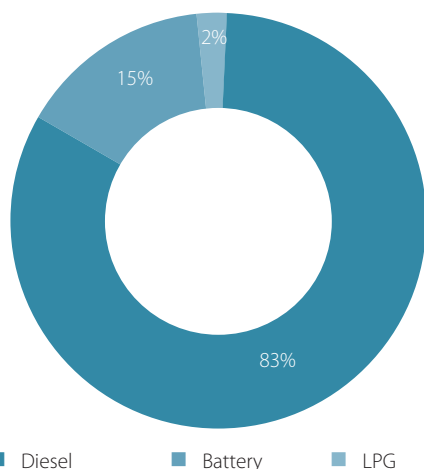
Forklifts are low tonnage vehicles used to transport materials stored in pallets, within limited spaces. Most forklifts are in the 1 tonne–5 tonnes range, though equipment up to 20 tonne are available. The flexibility and speed these equipment offer make them ideal for repetitive material handling tasks especially in restricted areas like warehouses and yards.

There are 3 types of forklifts based on fuel input - Diesel, Liquefied Petroleum Gas (LPG) and Battery. Each variant finds application in different industries based on the load factor determined by the power inputs, pollution etc. The current market is approximately of 2150 units per annum for forklifts with a market size of approximately US\$ 38 million. The segment has been on a 20 per cent growth trajectory year-on-year and is estimated to grow at a CAGR between 10-20 per cent. Diesel powered forklifts comprise a bulk of the market size at 83 per cent and are likely to drive growth going forward. Demand for forklifts will be driven primarily by new capacity creation and increased automation in the manufacturing and logistics (warehousing) sectors.

Forklifts contribute to making the end user industry organised and less labour intensive (in material handling). It has also increased the levels of palletisation and containerisation. Godrej and Voltas are the two major players having around 80 per cent market share, with Godrej having 48 per cent share. The forklifts market is highly price sensitive.

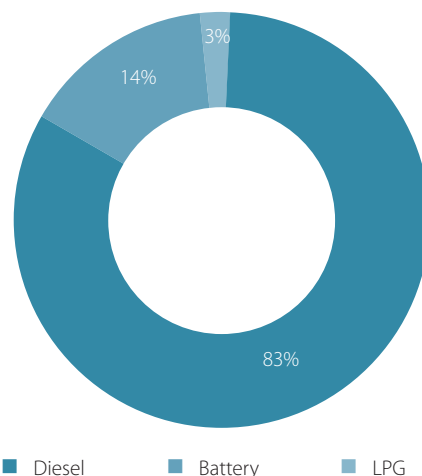
Technology is presently not seen as a differentiator, but with the end user industries becoming more organised and competitive, it would become increasingly important.

Fork Lift Market
Volume Terms - 2150 units



Source: Industry Sources, KPMG Analysis

Fork Lift Market
Value Term - US\$ 38 million



Source: Industry Sources, KPMG Analysis

KEY GROWTH DRIVERS & USER INDUSTRIES

The construction equipment industry is primarily driven by three key sectors:

- Construction
- Mining
- Manufacturing

CONSTRUCTION INVESTMENT

The Indian construction industry is worth US\$ 145 billion. The sector represents the second largest economic activity after agriculture and employs around 18 million people. Construction investments account for 11 per cent of GDP and around 50 per cent of the gross fixed capital formation, and are expected to grow to the tune of US\$ 182 billion at a CAGR of 8 per cent over the years of FY 06-08.

Construction equipment accounts for around 5–24 per cent of the total cost incurred in any construction project. The construction industry is a primary demand

driver for earthmoving and road construction equipment. Increasing mechanisation of industry and construction facilitates greater penetration of construction equipment. Recent Government policies around tax benefits for infrastructure ventures have boosted equipment usage.

Construction investment is composed of three components - infrastructure investment, real estate construction investment and industrial construction investment.

Each of these components is discussed separately in the following sections.

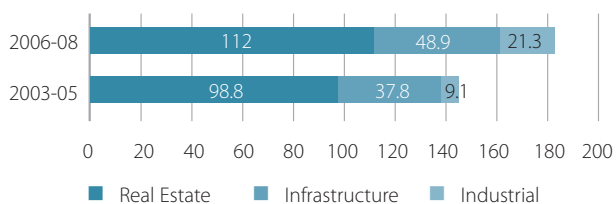
INFRASTRUCTURE INVESTMENT

Investments in infrastructure can be classified under investments for roads, ports, airports, railways, pipelines, irrigation and waterways and urban infrastructure

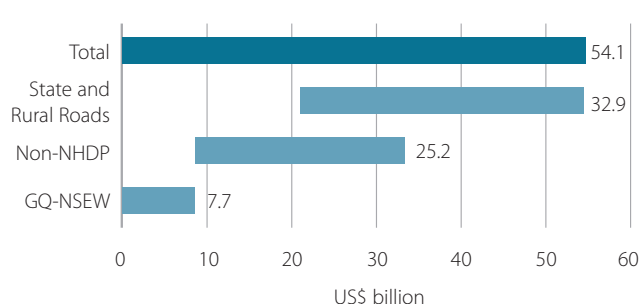
Roads

Significant investments are expected to be made in this sector over the next 5 years. The National Highway Authority of India (NHAI) has drawn up detailed plans for highway development as part of the National Highway Development Program (NHDP). The total potential orders are around US\$ 55 billion over the next five years. While the initial impetus has been given by the investment in the Golden Quadrilateral (GQ) and North-East-West-South (NEWS) corridor, once these arterial roads are completed, further growth will be fuelled by the second level of roads

Construction Industry - Projected Investment Growth



Source: CRIS INFAC

Total Planned Road Investments (FY 2005-10)

viz. state highways and rural roads. Further, the maintenance of these newly developed roads in addition to the increased maintenance expenditure on existing roads will fuel further growth. Construction equipment constitutes around 22 per cent of the total investment in road construction.

Ports

The projected investment for improving major and minor ports in India is around US\$ 18 billion over the next four to six years. A major portion of the investment for improving the major ports is expected to come from private players. Privatisation has been regarded as one of the key avenues for increasing investments in this segment. Another pertinent factor is the expected growth in the cargo handled at all Indian ports, which is expected to grow at a CAGR of 8 per cent.

These developments would drive demand for material handling equipment such as cranes for handling cargo and construction equipment for infrastructure development in the ports.

Airports

Domestic passenger and international inbound and outbound traffic is expected to increase with increasing investments and trade activity necessitating improvement in infrastructure at airports. The estimated investment for developing airports is around US\$ 9 billion over the next 3 to 4 years of which the estimated cost for upgrading the major airports in the four metros is around US\$ 2.2 billion. Privatisation of a few of these airports is expected to attract bulk of the investments.

Railways

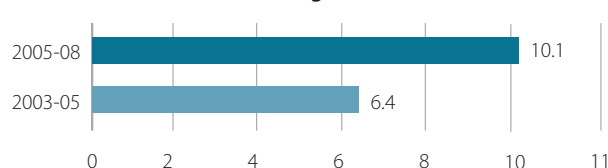
The investment in this segment is expected to be focused on relaying of tracks and improving the existing network. The Government has awarded US\$ 820 billion of projects to private firms.

Pipelines

Gas discoveries are the key drivers for laying pipelines. An estimated 18,671 Km. of domestic oil & gas pipeline network is expected to be laid between 2004 and 2008.

Irrigation and water supply

After road, irrigation is one of the key sectors expected to contribute significantly to the total infrastructure investment over the next 3 years. Estimated US\$ 10.1 billion of investment is expected in irrigation and water supply projects over the period 2006-10. Over 300 new irrigation projects have been taken up or are in the process of being taken up by the Government of India as part of the 10th plan to increase the irrigation potential. A total of US\$ 208 million has been released under the program during the current year, in addition to US\$ 1 billion allotted for repair, renovation and restoration of 20,000 water bodies with a command area of 1.47 million hectares.

Total Planned Irrigation Investments

Source: CRIS INFAC, Report on Construction

Increased emphasis by some state governments such as Gujarat and Andhra Pradesh on irrigation and water supply projects is expected to drive growth. Over the next 5 years the Andhra Pradesh government alone has envisaged an investment of US\$ 8.8 billion. 60 per cent of the total investment on irrigation is on construction and around 21 per cent of this construction investment is on construction equipment. The total investment planned in irrigation are as follows:

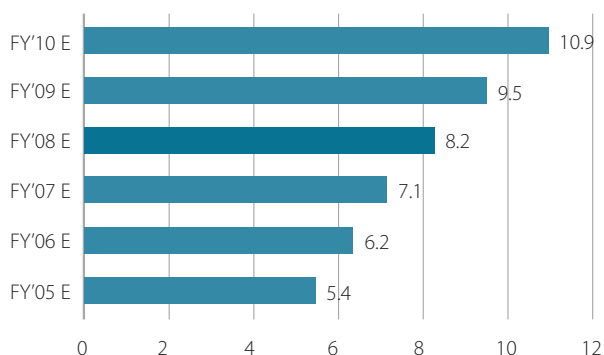
Urban Infrastructure

Development of urban infrastructure has been a priority area for the Government of India, and the Government has been encouraging private participation in this segment. Investment in urban infrastructure is expected to double from US\$ 5.4 billion in 2005 to nearly US\$ 10.9 billion in 2010.

The Central Public Health and Environmental Engineering Organisation (CPHEEO) has estimated the requirement of funds for 100 per cent coverage of the urban population under safe water supply and sanitation services by the year 2021 at US\$ 41.2 billion. Estimates by

Rail India Technical and Economic Services (RITES) indicate that the amount required for urban transport infrastructure investment in cities with population 100,000 or more during the next 20 years would be of the order of US\$ 49.3 billion. To catalyse development of urban infrastructure, 100 per cent FDI under the automatic route has been permitted in housing and urban infrastructure projects.

Total Planned Urban Infrastructure



Source: CRIS INFAC, SSKI Research

An estimated US\$ 13.8 billion of investments is expected in the next 5 years in mass road transport systems, drinking water supply, sewage treatments, etc. There would be a need for removing huge infrastructure bottlenecks that impact the growth of large Indian cities. The investments are expected through Government and private participation. The estimated CAGR over the next 3 years is 12.9 per cent.

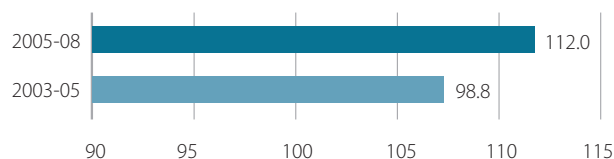
These investments would lead to demand for backhoe loaders, excavators and cranes.

REAL ESTATE CONSTRUCTION INVESTMENT

The segments which come under real estate construction include residential construction; commercial construction and retail construction. The real estate segment is expected to contribute around 61 per cent of total investments in construction over the next 3 years. Over 90 per cent of the real estate developed is residential and the rest comprises of commercial and retail.

It is estimated that India needs another 16 billion square feet of construction by 2010. These include 15.9 billion square feet of residential real estate for a projected 17 million new houses, 160 million square feet of commercial real estate and 212 million square feet of retail real estate.

Real Estate Development

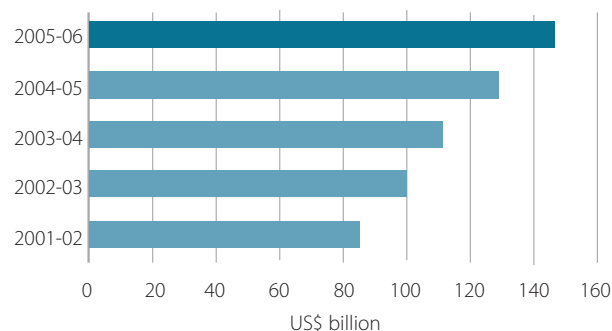


Source: Morgan Stanley Research

INDUSTRIAL CONSTRUCTION INVESTMENT

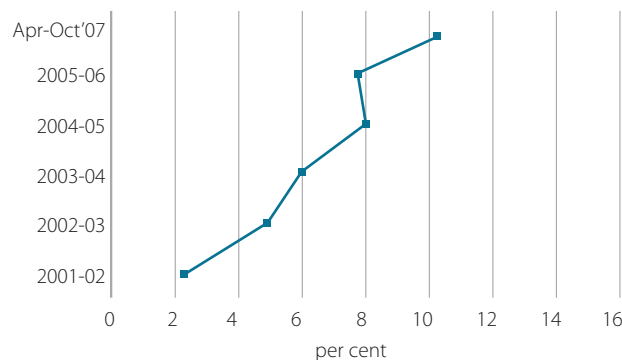
Steel, power, refineries and engineering are the key sectors attracting investments under industrial construction. These are discussed separately under the section on manufacturing sector investment.

Index of Industrial Production & Industrial GDP



Source: CRIS INFAC, SSKI Research

Index of Industrial Production & Industrial GDP



Source: CRIS INFAC, SSKI Research

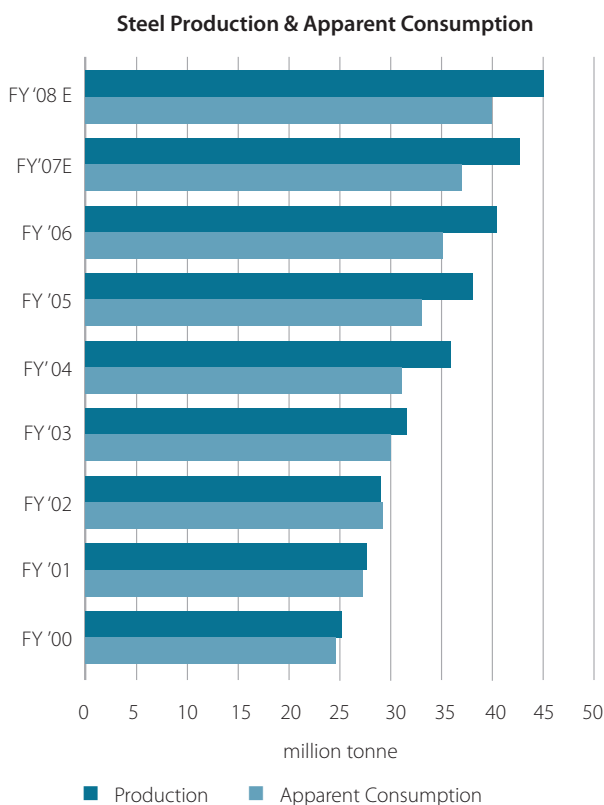
MANUFACTURING SECTOR INVESTMENT

The index of industrial production has displayed healthy growth trend. India's industrial GDP has grown at a CAGR of 12.6 per cent over the last five years.

The industrial sector is a primary demand driver for material handling equipment. The key sectors where significant investments are projected are discussed below

STEEL

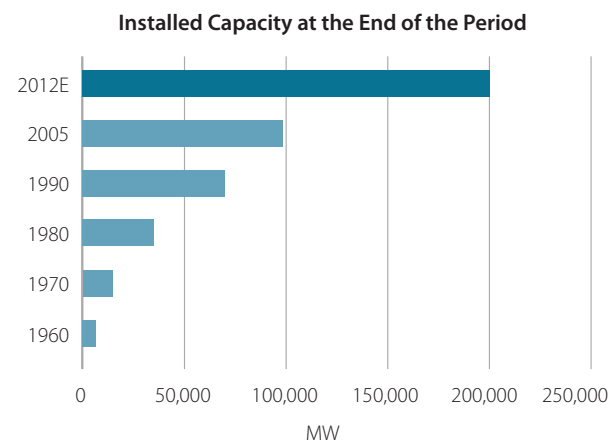
Steel majors in India have undertaken large capacity expansion projects with an expected capex outlay of US\$ 15.4 billion. This is to meet growing demand for steel from infrastructure projects, other construction activities, automobile and consumer durable industries. The industry is estimated to grow at 9-10 per cent over the next 5 years. The production and consumption have experienced steady growth over the period considered.



Source: CRIS INFAC, SSKI Research

POWER

Investment to the tune of about US\$ 96.5 billion is expected in India's power sector in the next 10 years, for adding generation capacity. The installed capacity in India is projected to grow to 212,000 MW by 2012 as against current level of 115,000 MW. This translates to a growth of 86 per cent over a period of 7 years, or a CAGR of 9.3 per cent. Ramping up of installed capacity is a key imperative for growth, as 55 per cent of population still does not have access to power. The estimated investment till 2009 is about US\$ 37.6 billion which is projected to translate down to US\$ 20.3 billion on construction and US\$ 4.6 billion on construction equipment.



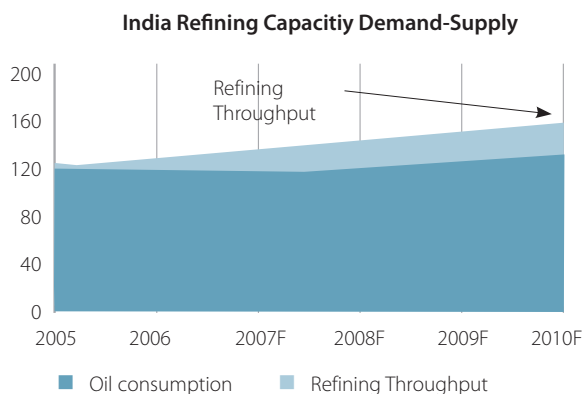
Source: Ministry of Power Augel Research

RETAIL

Exponential growth and emerging competition in organised retail in India is expected to drive the organised logistics and warehousing industries. India's organised chain store retail is at the inflection point. The estimated potential market size is US\$ 60 billion by 2015 implying a CAGR of 32 per cent over next 10 years. This would drive the construction of new stores, in turn leading to demand for construction equipment. The chart below shows the projected growth in the organised retail.

REFINERIES

India's refining throughput as also oil consumption is expected to chart out a steady growth path. It is expected to reach approximately 187 million tonnes by 2010. The estimated throughput growth is at 10 per cent over 2006-10.



Source: CRIS INFAC, SSKI Research

ENGINEERING/AUTOMOBILES/FOOD & BEVERAGES

An estimated US\$ 68 billion is projected for capital investment for the engineering industry in India, over key manufacturing sectors such as automobiles and food & beverages. In turn, this would drive demand for material handling equipment in the new capacities coming up.

Diesel forklifts find particular application in the automobile industry which has been growing at close to 15 per cent. The total automobile production is set to cross 10 million units. Estimated CAGR for key segments is 15-18 per cent with an overall outlook for the future pegged at 16 per cent.

LPG forklifts find particular application in food & beverages industry. Led by processed foods, wine, ice cream and edible oil, the US\$ 80 billion food and beverages industry registered an 8.5 per cent growth during the 2005-06 fiscal.

MINING INVESTMENT

There are about 355 opencast mechanised mines in India. Further 73 proposals for FDI having a total investment of US\$ 830 million and 163 reconnaissance permits for an area of 2,19,000 square kilometers had been approved till February 2004. Outsourcing of mining blocks for captive

use has increased the scope for contract mining leading to potential increase in open-cast as well as underground mining activity.

The mining sector attracts significant demand for earthmoving equipment. The mining investments can be categorised as follows.

COAL MINING INVESTMENT

Coal mining which accounts for 80 per cent of the mining activity in India is projected to rise by nearly 40 per cent over the next five years and almost double by 2020. US\$ 4.8 billion capex is planned by Coal India over the 10th and 11th five year plan periods. This could translate to approximately US\$ 2.9 billion for equipment.

Coal accounts for 55 per cent of India's energy needs. The Government is actively considering privatisation of coal mining to give a boost to power generation. The draft Coal Vision 2025 envisages increase in open cast production of 298 Million Tonnes Per Annum (MTPA) in 2024-25 with an investment of US\$ 21 billion. By 2025, 72 per cent (presently 50 per cent) of production will come from mine sizes of more than 5 MTPA. This is expected to increase the demand of open cast mining equipments like excavators.

IRON ORE MINING INVESTMENT

This is another key sector where significant potential for growth exists. As per United States Geological Studies (USGS) estimates, India has crude iron ore reserves of 9.8 billion tonnes, the ninth-largest in the world. Iron ore production has grown at a CAGR of 14 per cent over FY'00-06 while consumption has gone up by 9 per cent for same period.

SUMMARY OF KEY DRIVERS AND IMPLICATIONS

The above discussion clearly indicates the large potential that India has in terms of infrastructure, industrial and mining sectors to drive growth in the construction equipment industry. While some part of the demand will be met through imports, reconditioned equipment and existing pool of equipment, the potential for new equipment sales is undeniable.

The construction equipment industry in India is evolving from traditional, low end equipment to technologically advanced, high end ones. At the same time competition is intensifying with large Indian players such as BEML, ECEL and L&T competing with multinationals such as IR and JCB. In this milieu, the demand for equipment is set to grow rapidly. These trends indicate that sustaining growth and competitiveness in the industry would require firms to develop the required critical capabilities. These are discussed in the next section.

CRITICAL SUCCESS FACTORS FOR MANUFACTURERS IN INDIA

After Sales Services

The share of revenue from service for Indian construction equipment manufacturers is estimated at around 2-8 per cent as against 12-20 per cent that global players enjoy. This indicates the potential for improving service revenue in the Indian market. As product technology improves across competitors, service would be the key differentiating factor to retain customers.

Equipment in India are typically used for 15 to 20 years, indicating the significant potential for maintenance and service activities, apart from spare parts sales, across the usage cycle. Hence a clear focus on service is necessary for companies to grow and remain competitive. This needs to translate into developing capabilities in training, supply chain management and distribution reach.

Focus on R&D and Innovation

Indian construction equipment manufacturers invest very little in Research and Development (R&D) compared to global majors. This is a key lacuna that can hamper growth – product innovation and new product development are key capabilities to maintain a pipeline of new products, which is critical for success in the increasingly competitive market.

Customer training and education on the benefits of technology have to evolve in parallel with product technology development so that customers perceive value for the enhanced technology and also use the equipment correctly.

Providing End-to-End Solutions

The capability for providing end-to-end services to customers is expected to be a key differentiator for players in the construction equipment industry in future. From the evaluation of equipment prior to purchase till disposal of used equipment, customers need a variety of services and players who can provide these in an integrated manner, stand to gain multiple benefits. For this construction equipment manufacturers may need to enter into collaborative ventures with financiers, insurance companies and rental companies.

SUPPORTING GOVERNMENT REGULATIONS & POLICY

The Government of India's focus on infrastructure development is the single biggest driver for the construction equipment industry. Policies that encourage manufacturing and retail activity also have a positive impact on the equipment market. Apart from these, some of the policies that are aimed at attracting investment in the sector include the following:

- All agencies and ministries of union and state government will work united with a shared vision for success.
- 100 per cent FDI is allowed for manufacturing purposes.
- Exemption from obtaining an industrial license to manufacture.
- Manufacturers are free to select the location of the project.
- Import duties reduced to encourage imports.
- Encourage exports from Export Oriented Units (EOUs), Special Economic Zones and Export Processing Units (EPUs).
- Locations with high growth potential to be supported by Government to bridge technology and productivity gaps. skill up-gradation, physical infrastructure, environmental mitigations facilities to be provided by Government in selected areas of intervention.
- Schemes similar to SEZs can be developed for export oriented units with capital investment in plant and machinery over US\$ 6 million.

OPPORTUNITIES FOR INVESTMENT

Product and Service Segments

Based on the assessment of the market size, trends and growth drivers, earthmoving equipment, road construction equipment and material handling equipment appear the most attractive product segments in terms of size and future growth potential

In terms of services, nascent segments that are well established in global markets, but yet to take off in India, could offer attractive opportunities. These include areas such as engineering design services, construction equipment rentals and refurbishing of used equipment.

Attractive States/Locations

The states which would attract construction equipment sales would be those which have infrastructure developments and have other construction development activities happening, like in SEZs. Most of the states have infrastructure development activities. But the states in which setting up construction equipment plants would be attractive are:

ANDHRA PRADESH

Factor Conditions

- The state has been performing well in engineering industry producing a range of intermediate and final goods such as foundry and forging items, machine tools, auto components, testing machines, material handling equipment and components for defence production.
- Huge infrastructure projects are in place. New international airport construction is on in Hyderabad. New flyovers and other infrastructure developments to cater to this fast growing state are in place.
- Many global players like Tecumseh, BPL, Electrolux, among others have established their manufacturing facilities in the state.
- Ranks second in the number of industrial estates in the country.
- The state promises good quality manpower. The state has high literacy rates which have been ensured by the presence of good education and vocational training institutions.

- The state is keen on encouraging private sector participation in improving R & D infrastructure.
- The contribution of exports by engineering items has been around 8.4 per cent in 2002-03.
- The contribution of exports of machinery has been around US\$ 35 million, which has grown at CAGR of around 50 per cent.

GUJARAT

Factor Conditions

- Engineering sector is highly attractive in this state. This sector is supported by proactive policies and is capability driven.
- The state is a leader in terms of labor productivity.
- The state in the past attracted FDI amounting to around 7 per cent of total FDI approvals in India till 2004.
- The state offers quality manpower and infrastructure facilities such as power, water supply, ports, and gas grid. This has encouraged many multinational companies to set up manufacturing operations in this state.

TAMIL NADU

Factor Conditions

- The state has good quality manpower, high literacy rates, presence of good education, vocational training institutions.
- The engineering industry in the state consists of a network of nearly 3,000 units and employs a skilled workforce of more than 250,000, making high quality inputs such as castings and forgings and a wide variety of ancillary products.
- The export from engineering/machinery sector has been around US\$ 346 million and has been increasing at a CAGR of 20 per cent.
- The state is being looked in as manufacturing & sourcing base and an R&D hub with the presence of premium technological institutes.
- Huge infrastructure projects are in place with the development of various SEZs.
- Investments are also likely to come in mining & minerals.

Conclusion

The Indian construction equipment industry is a key segment of the manufacturing sector and is poised for excellent growth in the coming years, based on India's overall manufacturing sector and infrastructure growth.

The overall industry has been growing at 30 per cent CAGR and is projected to grow at 15 to 20 per cent over the next few years. Earthmoving equipment, material handling equipment and road construction equipment are key segments expected to contribute to the bulk of the growth, driven by construction activity in the parent sectors.

To leverage this opportunity, Indian construction equipment manufacturers need to focus on developing individual and pooled capabilities to develop global competitiveness across the sector. Collaborative endeavours to provide integrated services, industry bodies to promote the industry's interests and working with the Government to promote technology development are some of the key measures to be taken.

Appendix

PROFILE OF KEY PLAYERS

JCB India

JCB setup a presence in India in 1979 and has invested US\$ 125 million in the country. They are one of the largest construction equipment manufacturers in India. The company has a turnover of US\$ 335 million. The company is growing by between 25-30 per cent annually. JCB India is a subsidiary of prominent global player – J C Bamford Excavators Ltd. (JCB). The product ranges from Backhoe loaders, wheeled loaders to excavators and skid steer loaders. They have 70 per cent market share in the backhoe loader segment and around 13 per cent market share in overall Indian construction equipment industry. JCB's customers are mostly hirers and large and small contractors. They have facilities at Ballabgarh in Haryana & Pune in Maharashtra. They have a very good distribution network. They have 38 dealers and 206 outlets. They have dedicated parts center in Ballabgarh and parts distribution depots in Chennai, Pune and Kolkata. They are setting up a new facility in Pune with a capacity of 8000 units. The company has plans of going aggressive on excavators and compactors. They shall achieve the same with their new excavator production unit with an installed capacity of 6000 units. The company wants to make India an export hub to cater to the Middle East & South East Asian regions.

Bharat Earth Movers Limited (BEML)

BEML is the largest player in earthmoving equipment sector. The company turnover is around US\$ 484 million. The mining and construction equipment segment is around US\$ 306.6 million defence segment is about US\$ 154.2 million and railways around US\$ 23 million. The company is the largest public sector undertaking in

this industry. The following are the products which are manufactured by BEML: bulldozers, dump trucks, hydraulic excavators, wheel loaders, wheel dozers, tyre handlers, pipe layers, rope shovels, walking draglines, motor graders, scrapers, water sprinklers, aircraft towing tractors, backhoe loaders, and road headers & side discharge loaders for underground mining applications. Some of their customers are Delhi Metro Rail Corporation, Coal India, Jessop Co. Ltd. (Railways). They have facilities established in Bangalore, Kolar Gold Fields, and Mysore – Karnataka. They have 70 per cent market share in domestic earthmover industry and 12 per cent in the overall construction equipment industry. They have 33 marketing offices and have a strong foothold in the Government sector.

L & T Case and L & T Komatsu

Both the companies together have a turnover of US\$ 156 million, with majority coming from L & T Komatsu. Both these companies are subsidiaries of L & T Ltd. and are joint ventures with CNH American LLC and Komatsu Asia Pacific Pvt. Ltd., Singapore respectively. L & T Case manufactures Loaders backhoes and Vibratory Compactors; while L & T Komatsu manufactures hydraulic excavators. L & T Case hold 21 per cent market share in vibratory compactors and L & T Komatsu holds 20 per cent market share in excavators. Their customers are big contractors and hirers. L & T Case has its facilities in Pithampur, Madhya Pradesh and L & T Komatsu has its operations in Bellary Road in Karnataka. L & T Komatsu manufactures various excavator models which are primarily classified on the basis of their tonnage.

Ingersoll-Rand India Limited

The company is the market leader in compactor segment. They hold technological superiority in the compactor segment because of which they enjoy premium pricing. The public limited company with majority owned by Ingersoll Rand has a turnover of US\$ 104.5 million. They are primarily into Construction technologies and compact vehicle, air solutions, climate control with each of these contributing US\$ 50.8 million, US\$ 62 million, and US\$ 0.9 million respectively. They have 39 per cent market share in the compactor segment. Their major products are Compaction equipment, pavers, loaders, light towers, air compressors etc. Their customers are primarily big contractor houses, contractors, and hirers. They have their operations in Bangalore and Ahmedabad. They have good distribution network with 22 company offices and 80 distributors across India.

Tractors India Ltd. (TIL)

The company is a market leader in slew cranes segment in India. This public limited company has a turnover of US\$ 104.5 million of which US\$ 28.2 million is contributed from machine handling; US\$ 51.2 million from construction equipments; and rest from power systems. Their product range is slew cranes, earthmoving equipments, diesel generating sets, forklifts etc. They have 32 per cent market share in the slew crane segment. Their customers are steel and power companies, coal companies and road contractors. They have their facilities installed in Kamarhaty in West Bengal and Sahibabad in U.P. They have 33 Indian locations and 4 overseas offices in their distribution network. They have plans of growing their crane market in South East and Middle East Asia.

Telco Construction Equipment Company Limited (Telcon)

The company is a market leader in excavators and collaborates with Hitachi Construction Machinery Company, Japan, for hydraulic excavator and cranes; John Deere, USA, for backhoe loader technology; CESAN, Turkey, for asphalt plants. It is a subsidiary of Tata Motors and has a turnover of US\$ 283 million. Their major products are excavators, loaders, mechanical shovels, high tonnage crawler cranes etc. They have 50 per cent market share in

the excavator segment and an overall marker share in the construction equipment segment of 11 per cent. Tata group of companies, Government enterprises, and contractors are their major customers. They have facilities installed at Jamshedpur in Jharkhand and Dharwad in Karnataka. Their marketing network is situated in 30 Indian states and 3 international locations.

Voltas

The public limited company – a part of the Tata group is the second largest player in the forklifts segment after Godrej. The customers are engineering industries. Their products are: industrial air conditioning and refrigeration equipment, air conditioners, water coolers, freezers, commercial refrigerators, forklift trucks and large water supply pumps. The company has a turnover of US\$ 260 million of which less than 7 per cent is accounted by the material handling division. They have 31 per cent share in the forklifts segment. They have facilities in Thane, Maharashtra; Union territory of Dadar; and Sanathnagar in Andhra Pradesh. Voltas has its head office in Mumbai and zonal head-quarters in Mumbai, Kolkata, New Delhi and Chennai. It has territorial offices in 8 more Indian cities and 3 international locations.

Godrej & Boyce Mfg. Co. Ltd.

The private limited company has its products as forklifts (diesel, electric, battery). They hold 48 per cent market share in Forklifts segment. The company has a turnover of US\$ 402.6 million. Their major customers are airline operators, automobile industry, FMCG, Pharmaceutical industry, oil & petroleum industry. They have facilities in Mumbai, Maharashtra. It has 14 branches and 20 dealers across India. The company is a market leader in forklifts trucks (both in diesel and battery variants).

Escorts Construction Equipment Limited (ECEL)

It is a pioneer manufacturer of Pick and Carry cranes. The company is a subsidiary of Escorts Limited. It has a turnover of US\$ 61 million. They hold 56 per cent market share in the domestic pick and carry market. They have facilities installed in Faridabad, Haryana. Their products include pick and carry cranes, slew cranes, articulated boom cranes, tower cranes, forklift trucks, front end loaders, vibratory soil compactor,

tandem vibratory roller etc. Large, medium and small sized private enterprises as well as Government enterprises are their customers. They have 16 ECEL business centers and 54 dealer locations. The company has plans of setting up new facilities.

Action Construction Equipment Limited (ACE)

The public limited company has a turnover of US\$ 36.3 million. Their product range is hydraulic mobile pick-n-move cranes, forklift truck, loaders, tower cranes, aerial work platforms, lifts, lorry loaders/truck mounted cranes etc. They have 41 per cent share in Pick and Carry cranes segment. Their customers are usually large, medium and small sized private companies as well as Government enterprises. They have facilities installed in Faridabad in Haryana. There are 8 ACE offices and 33 dealer locations. The turnover of the company has grown at a CAGR of approximately 96 per cent in the last four years. The company has plans of diversifying their product portfolio to include – truck mounted cranes, forklifts, backhoes.

Exchange Rate Used

Year	Exchange Rate (INR/US\$)
2000-01	45.75
2001-02	47.73
2002-03	48.42
2003-04	45.95
2004-05	44.87
2005-06	44.09
2006-07	45.11

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