THE CONSTRUCTION EQUIPMENT INDUSTRY IN TURKEY

JULY 2015

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INTRODUCTION

This report on the construction equipment industry in Turkey is one of a series on the subject produced by Off-Highway Research. The market has expanded rapidly during the last 10 years, underpinned by robust economic growth and wide scale government investment in infrastructure construction. The last study by Off-Highway Research on Turkey was published in 2012, at which point the market had soared to then record levels having recovered from the impact of the global economic crisis. Since then, demand for new machinery has risen strongly once again, establishing a new record volume of sales in 2013, and witnessing four consecutive years of sales in excess of 10,000 units.

The aim of this report is to present a concise overview of the development of the various construction equipment sectors in Turkey since 2010, assessing the major changes which have taken place, and those which are likely to occur by the year 2019.

Apart from basic foreign trade statistics and data on the output and domestic sales of agricultural tractors, there is no other published analytical information on the subject. The official government figures are too general or simply not done, and so are of little value in analysing the subject.

The industry is represented by the trade association, IMDER, founded in 2002, whose members constitute some 93 per cent of companies in the sector and include all the major machinery distributors and manufacturers. IMDER also organises a confidential exchange of market data.

The findings in this report are based on an in-depth field research programme conducted in Turkey in March and April 2015. This covered all manufacturers of any significance, the major importers of construction equipment, government departments, trade associations and the trade press. Off-Highway Research would like to record its deep appreciation to all those who assisted in the compilation of this report.

The report follows the usual format of a typical Multi-Client Study from Off-Highway Research, which has been developed with an emphasis on clarity. The coverage is organised as follows:

1. The first section includes important topics of a general background nature, such as the political and economic history, current economic activity including construction and prospects for both that industry and the general economy. The conclusions apply to all the product areas and are therefore not repeated in each analysis.

2. The second section covers 14 construction equipment sectors. For each category the following information is given:

   - Market Size and Trends, 2010-2014
   - Domestic Production, 2010-2014
   - Market Shares, 2014
   - Population of Machines and End-Users, 2015
   - Sales Forecast, 2015-2019
   - Machines Available in Turkey, 2015

3. The final section gives comprehensive profiles of the leading manufacturers and importers of construction equipment, with details given under the following headings:

- Address
- History and Structure
- Turnover
- Personnel
- Product Range
- Manufacturing Facilities
- Production
- Component Sourcing
- Distribution and Service
- Domestic Sales
- Exports
- Future Developments

Rates of Exchange

Table 1. Turkey: Exchange Rates, 2015

(Turkish Lira Per Unit of Currency)

$US	2.72
£UK	4.21
€	3.05
¥100	2.20

Source: www.xe.com

In 2005 the government introduced a new 'heavy' Turkish Lira. This is worth one million of the old Lira and thus rids prices of six zeroes. In the transitional period between 1st January 2005 and 31st December 2008, the second Turkish lira was officially called *Yeni Türk lirası* (New Turkish lira). It was officially abbreviated "YTL" and subdivided into 100 new *kuruş* (*yeni kuruş*). With effect from 1st January 2009, the "new" was removed from the second Turkish Lira, its official name becoming just "Turkish lira" again, abbreviated "TL".

SUMMARY OF MARKET ANALYSES

This section summarises the statistics and trends of the 14 product lines to be found in the individual Equipment Analyses which follow.

Sales

Following a period of improved economic and political stability a sustained recovery in the sales of new construction equipment took place during 2006-2007, resulting in unprecedented levels of growth. In 2007 demand reached its then highest recorded level of nearly 12,000 units, equating to a four-fold increase within five years. The market was stimulated by considerable government investment in the construction industry, particularly the house building and energy sectors, and by contractors' finally committing to previously delayed investments in new machinery.

During the first half of 2008, however, the onset of political uncertainty surrounding Turkey's governing party, the AKP, a dramatic rise in the rate of VAT applied to leasing transactions at the beginning of the year, and a sharp decline in Foreign Direct Investments (FDIs) combined to effect a significant decline in demand, and volumes in most product sectors fell by 40-50 per cent. The onset of the global financial crisis towards the end of 2008 merely accentuated the problem, and in 2009 demand fell by a further 32 per cent to reach its lowest level since 2003, at just 4,300 units.

The first shoots of recovery emerged in the last quarter of 2009 and, following strong growth in the domestic economy coupled with the instigation of many infrastructure projects, the market posted robust growth of 83 per cent in 2010. This development continued in 2011 underpinned by a buoyant construction sector, and by the end of the year sales had risen by a further 41 per cent to exceed 11,000 units once more.

Since then, further record sales figures have been set in 2012 and then again in 2013; indeed, the market has all but trebled since the recent trough of 2009. The process and benefits of

mechanisation in the construction sector have been fully embraced and understood, and the conditions for this enthusiasm to be exploited have been created by further high levels of public sector investment in major infrastructure projects and housebuilding. The market contrived to fall by some 16 per cent in 2014, prompting a degree of concern about a return to the sector's historical tendency to volatility. However, the fact remains that, even in the midst of significant regional upheaval as well as domestic political and economic uncertainty, the market stayed above 10,000 units for the fourth consecutive year. With plenty more construction related work yet to be done to fulfil the country's self-proclaimed goals, and a clear appetite for machinery to play a key role in delivering these goals, it is to be hoped such violent fluctuations will soon be a thing of the past.

Table 2. Turkey: Sales of Construction Equipment by Type, 2010-2014

(Units)

	2010	2011	2012	2013	2014
Asphalt Finishers	55	99	174	140	74
Backhoe Loaders	2,435	3,195	4,336	4,065	3,294
Compaction Equipment*	600	966	800	741	565
Crawler Dozers	84	101	99	95	125
Crawler Excavators	2,120	3,043	3,474	3,948	3,019
Crawler Loaders	12	19	8	7	7
Dump Trucks	29	96	19	23	74
Mini Excavators	180	278	576	610	747
Mobile Compressors	300	350	250	220	190
Mobile Cranes	60	75	49	149	85
Motor Graders	190	309	259	244	244
Rough Terrain Lift Trucks	155	326	298	413	538
Skid-Steer Loaders	259	367	327	293	284
Wheeled Excavators	197	286	260	235	230
Wheeled Loaders	1,176	1,545	1,255	1,364	1,134
Total Construction Equipment	**7,852**	**11,055**	**12,184**	**12,547**	**10,610**

* Ride-on types only

Source: Off-Highway Research

Asphalt Finishers: The release of government funds for new road construction in 2011 and 2012 saw strong growth, although a significant proportion of sales at the time were made to Turkish contractors with work in Iraq, Afghanistan, Ukraine and other countries. The market for new pavers in Turkey has fallen since then, but the five year average remains above 100 units.

Backhoe Loaders: This remains the single largest volume sector in the Turkish construction equipment market, accounting for some 30 per cent of overall demand. Yet combined sales of hydraulic excavators (crawler and wheeled models) have exceeded those of backhoes in two of

the past four years, indicating a degree of maturity and perhaps even saturation. Sales, though, remain at very high levels sustained by the vast number of owner-operators who constitute the main end-user sector for the product. The assumption of an increasing threat from mini excavators remains widely shared, but evidence of a transition on the ground is as yet scarce. Most machines are now rated around 100 horsepower, with buyers placing emphasis on versatility by adding forks and using hammers.

Compaction Equipment: Demand is dependent on government spending on road building programmes and can therefore vary dramatically from year to year. Strong economic growth and the instigation of wide ranging construction projects in 2011 has led to an unprecedented level of growth in the compaction equipment sector with sales surging by over 60 per cent. The next two years remained strong, but the sector suffered more than most last year as public sector investment slowed notably.

Crawler Dozers: Demand for crawler dozers has essentially remained stable at around 100 units annually due to the on-going requirement for road and railway construction, and for the removal of overburden in the coal mining sector and, to a lesser extent, in copper, gold and silver mines. The predominant size of dozer sold in Turkey is of 310 or 350 horsepower, which is the class of machine most frequently specified by the coal mining industry and by contractors working on highway or dam construction. There is also some, perhaps growing, demand for 250 horsepower dozers for use on smaller road construction and maintenance projects, or for layering of overburden.

Crawler Loaders: A niche product with demand essentially limited to the steel industry for slag collection and disposal, or the municipalities for use on refuse tips. The private sector has abandoned it in favour of the more versatile crawler excavator.

Dump Trucks: The use of articulated dump trucks in quarrying or civil engineering applications has failed to develop, as potential users prefer the on/off-highway truck which costs around a quarter of the price of an articulated dump truck. Demand averages 10-15 units, predominantly 30 tonne capacity trucks, and comes from the large marble quarries; occasional peaks reflect sales to single, big projects. The market for rigid dump trucks has effectively disappeared, as both the quarrying and marble mining sectors favour on/off-highway trucks, such as those built by Astra and Iveco, due to cheaper purchasing and maintenance costs.

Hydraulic Excavators: Crawler excavators have been one of the major beneficiaries of the boom in construction equipment sales. In 2007 the market reached its highest recorded level of

nearly 3,500 units, well over double the volume just three years earlier, and it recovered strongly once again to set a new record of nearly 4,000 units in 2013, almost usurping the number one position long held by the backhoe loader. The most popular sizes are the 30 tonne machine, used for smaller public works, and the 35 tonne unit which is used extensively in civil engineering applications. Wheeled excavators have never achieved a significant measure of popularity due to the preponderance of the backhoe loader. The bulk of sales are now confined to machines from 17-20 tonnes

Mini Excavators: Traditionally mini excavators have struggled to compete with cheap manual labour and the popularity of the ubiquitous backhoe loader. As a result, volumes sold have been small and few suppliers put any priority on marketing the product. During the last three years, however, demand has risen sharply in response to the increasing requirement for smaller equipment on inner city job sites, and specific demand for use in forestry projects. It is now the unanimous opinion of suppliers interviewed that the compact equipment sector is set to develop significantly over the medium to long term.

Mobile Compressors: Demand for mobile compressors is very limited. In Turkey, it is still a niche product in general building construction and in civil engineering the machines are kept for many years and reconditioned when necessary.

Mobile Cranes: Demand rose significantly in 2007 and 2008 as a result of the huge increase in new infrastructure work, energy projects and oil refinery construction. However, long term stability has proven hard to establish, with considerable fluctuations in demand from year to year being typical. This is partly due to the major part of the apparent boom of crane demand in certain years being heavily influenced by the purchases of Turkish contractors operating in regions such as the CIS, Middle East and North Africa, and is not necessarily a reflection of the state of the domestic market. The rough terrain crane, which previously constituted approximately 80 per cent of sales, now has to share prominence with all terrain cranes, which are bought primarily by crane rental companies and are typically employed on energy related projects.

Motor Graders: The market has remained at a relatively stable and high level throughout the period under review. The on-going requirement for new road construction and maintenance of the existing network has resulted in an abundance of government tender purchases, which in 2011 culminated in the largest volume of sales recorded in the last 15 years. A stable mining sector, the other important user of graders, has also helped to underpin this demand.

Rough Terrain Lift Trucks: The market is still very undeveloped in comparison with some European markets. It now appears that there will never be any market for masted machines, although the telescopic variety has shown some growth during the last two years, and there are promising signs for future developments of this sector.

Skid-Steer Loaders: In spite of a fall in sales in the past two years, the market has grown since 2010, albeit not at the same pace as other compact equipment product sectors, most notably mini excavators. The introduction of stricter legislation relating to manual labour, together with increasingly tight restrictions on the use of large equipment on inner city job sites, have stimulated growing interest in smaller machines and the leading suppliers have begun to focus more closely on exploiting the product's potential. The amalgamation of smaller farms into bigger enterprises also offers the potential for growing interest in the product from the agricultural sector.

Wheeled Loaders: The market began to recover strongly in 2010 in response to buoyant economic conditions and widespread investment in the construction sector. Demand for wheeled loaders in the important quarry sector also rose significantly in response to increasing exports of marble to China, and by the end of 2011 the market had reached its highest recorded level of over 1,500 units. Even though this level has not been maintained since, demand has remained comfortably above the historically high threshold of 1,000 units. The distribution of sizes is strongly in favour of larger machines. The biggest selling category is the 180-240 horsepower class, whilst machines of 300 horsepower and above are also popular with the larger marble quarries.

Sales by Manufacturer

Table 3. Turkey: Suppliers of Construction Equipment and Their Sales, 2014

(Units)

	Asphalt Finishers	Backhoe Loaders	Compaction Equipment	Crawler Dozers & Loaders	Dump Trucks	Hydraulic Excavators	Mini Excavators	Mobile Compressors	Mobile Cranes	Motor Graders	Skid-Steer Loaders	Telescopic Handlers	Wheeled Loaders
Ammann	-	-	41	-	-	-	-	-	-	-	-	-	-
Astra	-	-	-	-	-	-	-	-	-	-	-	-	-
Atlas Copco	6	-	65	-	-	-	-	130	-	-	-	-	-
Bell	-	-	-	-	2	-	-	-	-	-	-	-	-
Bobcat	-	-	-	-	-	3	20	-	-	-	75	20	-
Bomag	3	-	225	-	-	-	-	-	-	-	-	-	-
Case	-	19	-	-	-	14	-	-	-	-	8	1	8
Caterpillar	2	277	45	89	6	448	47	-	-	108	65	14	242
Çukurova	-	82	-	-	-	2	-	-	-	-	-	-	10
Dieci	-	-	-	-	-	-	-	-	-	-	-	13	-
Doosan	-	-	-	-	-	188	8	25	-	-	-	-	41
Gehl	-	-	-	-	-	-	-	-	-	-	41		-
Genie	-	-	-	-	-	-	-	-	-	-	-	30	-
Grove	-	-	-	-	-	-	-	-	15	-	-	-	-
Hamm	-	-	113	-	-	-	-	-	-	-	-	-	-
Hidromek	-	1,284	-	-	-	665	-	-	-	-	-	-	-
Hitachi	-	-	-	-	-	523	53	-	-	-	-	-	32
Hitachi-Sumitomo	-	-	-	-	-	-	-	-	10	-	-	-	-
Hyundai	-	-	-	-	-	399	35	-	-	-	15	-	39
IHIMER	-	-	-	-	-	-	45	-	-	-	7	-	-
Ingersoll-Rand	-	-	-	-	-	-	-	-	-	-	-	-	-
JCB	-	1,003	23	-	-	93	13	-	-	-	36	150	18
Kato	-	-	-	-	-	2	-	-	-	-	-	-	-
Kawasaki	-	-	-	-	-	-	-	-	-	-	-	-	158
Kobelco	-	-	-	-	-	24	-	-	1	-	-	-	-
Komatsu	-	18	-	40	3	237	8	-	-	56	3	-	179
Kubota	-	-	-	-	-	20	191	-	-	-	-	-	-
Liebherr	-	-	-	3	-	61		-	10	-	-	-	25
LiuGong	-	2	6	-	-	37	13	-	-	20	5	-	45

(continued)

Table 3. Turkey: Suppliers of Construction Equipment and Their Sales, 2014 (continued)

(Units)

	Asphalt Finishers	Backhoe Loaders	Compaction Equipment	Crawler Dozers & Loaders	Dump Trucks	Hydraulic Excavators	Mini Excavators	Mobile Compressors	Mobile Cranes	Motor Graders	Skid-Steer Loaders	Telescopic Handlers	Wheeled Loaders
Lonking	-	-	-	-	-	-	-	-	-	-	-	-	35
Manitou	-	-	-	-	-	-	-	-	-	-	-	211	-
Mecalac	-	-	-	-	-	5	-	-	-	-	-	-	-
Merlo	-	-	-	-	-	-	-	-	-	-	-	15	-
MST	-	428	-	-	-	-	-	-	-	-	-	78	-
Mustang	-	-	-	-	-	-	-	-	-	-	3		-
New Holland	-	34	-	-	-	14	1	-	-	-	14	3	4
Sany	-	-	-	-	-	-	-	-	17	-	-		-
Sumitomo	-	-	-	-	-	158	-	-	-	-	-	-	-
Takeuchi	-	-	-	-	-	19	145	-	-	-	-	-	-
Tadano	-	-	-	-	-	-	-	-	1	-	-	-	-
Terex	-	24	-	-	-	-	-	-	25	-	-	-	-
Vögele	61	-	-	-	-	-	-	-	-	-	-	-	-
Volvo	2	123	18	-	63	289	23	-	-	45	-	-	200
Wacker Neuson	-	-	18	-	-	13	104	-	-	-	12	3	10
XCMG	-	-	2	-	-	34	12	-	3	15	-	-	88
Yanmar	-	-	-	-	-	-	29	-	-	-	-	-	-
Zoomlion	-	-	-	-	-	1	-	-	3	-	-	-	-
Others	-	-	-	-	-	-	-	35	-	-	-	-	-
Total	**74**	**3,294**	**565**	**132**	**74**	**3,249**	**747**	**190**	**85**	**244**	**284**	**538**	**1,134**

Source: Company Information

Production

There are four profiles of manufacturers of construction equipment, one of which is currently inactive, in the penultimate section of this report. Most significantly, three builders of backhoe loaders have wholeheartedly taken on the challenge of making machines good enough to compete with sophisticated West European imports, while production of hydraulic excavators, in particular crawler models, has become an important factor in domestic production.

Table 4. Turkey: Production of Construction Equipment by Type, 2014

	Units	%
Backhoe Loaders	3,223	77
Crawler Excavators	736	17
Telescopic Handlers	150	4
Wheeled Excavators	60	1
Wheeled Loaders	40	1
Total Construction Equipment	**4,209**	**100**

Source: Off-Highway Research

Backhoe Loaders: Production has remained above 3,000 units as the domestic market has boomed, even if last year's total output represents a decline of more than 25 per cent compared to 2013. Hidromek remains the largest manufacturer by some margin, although SANKO Makina, the owner of MST, has increased volumes substantially at its new plant in Gaziantep in the last two years. The third manufacturer is Çukurova, which produces a four model range of rigid backhoe loaders in two and four wheel steer configuration.

Hydraulic Excavators: Hidromek began production of hydraulic excavators in 2004 and currently manufactures four crawler and two wheeled excavator models; the launch of a new, larger model of crawler excavator is imminent. Volumes have remained high in the last three years in response to the company's prominent domestic market share. In 2008 Çukurova also began manufacturing one 23 tonne model of crawler excavator at its Çumitas plant, near Adana. Production of Liebherr hydraulic excavators at the company's Çimsataş facility was halted in 2007.

Wheeled Loaders: Production is currently confined to Çukurova which assembles three articulated models at its Çumitas plant. However, Hidromek has revealed a prototype wheeled loader, along with plans for a full range of models, and production could start as early as 2016.

Rough Terrain Lift Trucks: SANKO Makina displayed a two model range of telescopic handlers at the 2007 Bauma exhibition in Munich, and began production at its Gaziantep factory in 2008. The product line now comprises seven models which, in common with the backhoe loader range, are sold under the MST brand name.

Compaction Equipment: Some small producers of light equipment continue to gain a living, as they can make products such as tampers and vibrating plates from imported components and local steel at very low prices. Production of ride-on compactors is confined to Palme, based in Ankara, which manufactures a 2.8 tonne tandem roller.

Mobile Cranes: There is a small number of domestic manufacturers of truck-mounted cranes, catering exclusively to local demand. The majority of these machines are truck-mounted knuckle-boom models, though some suppliers also now produce telescopic units.

Population

Table 5. Turkey: Population of Construction Equipment by Type, 2015

	Units
Asphalt Finishers	700
Backhoe Loaders	33,000
Compaction Equipment*	9,000
Crawler Dozers	3,000
Crawler Excavators	22,000
Crawler Loaders	500
Dump Trucks	1,300
Mini Excavators	2,400
Mobile Compressors	8,000
Mobile Cranes	1,750
Motor Graders	4,500
Rough Terrain Lift Trucks	2,100
Skid-Steer Loaders	1,500
Wheeled Excavators	1,800
Wheeled Loaders	7,500
Total Construction Equipment	**99,050**

* Ride-on types only

Source: Off-Highway Research

In line with the expansion of the total construction machinery market over the past three years, the total population of active machines has also grown strongly. According to estimates made by Off-Highway Research, the total population is now just short of 100,000 units, an increase of 36 per cent since the last report. The biggest gains in absolute terms have been in the two most

popular market: backhoe loaders and crawler excavators. Proportionately, however, the fastest growth has been in the population of mini excavators, which has risen nearly five-fold.

Asphalt Finishers: The major owners now are road contractors, the remainder of the population being divided between the municipalities operating small machines and the general contractors.

Backhoe Loaders: The huge volume of sales during recent years has meant that the backhoe loader population has grown by over a third in the past three years. The average life for a backhoe loader in Turkey is much longer that in other parts of Europe, about 12 years. Municipalities still occasionally favour them as all-purpose tools, although the main buyers are the typical small contractors, often owner-operators.

Compaction Equipment: In the past the main buyers were the state organisations like the highways and rural services authorities, especially for the large machines. These also went in large numbers to the State Hydraulic Works for dams and irrigation canals. Now the contractors have come to the fore.

Crawler Dozers: Approximately 3,000 crawler dozers are active in Turkey, if one assumes that many of the machines bought by the government in the middle of the 1980s are still in operation. Since 1990 nearly all the new machines purchased have gone to the private sector, which tends to use them for the duration of a contract and then scrap them.

Crawler Loaders: The population has fallen at a very steep rate. There are now only around 150 machines working which are 10 years old or less (as opposed to 500 in 1998) and an indefinite number of machines from 10 to 15 years old, with perhaps 500 surviving overall.

Dump Trucks: The population of both rigid and articulated dump trucks is extremely low due to the preference of the quarrying and mining sectors for much cheaper on/off-highway trucks. Articulated trucks are used to a very limited extent on large infrastructure projects whilst the state mining sector is the largest owner of rigid trucks.

Hydraulic Excavators: The population has grown significantly during the last five years as a result of the construction industry boom. 30-tonne crawler excavators are extremely popular and end-users range from small sub-contractors to the largest construction companies in Turkey. The active fleet has almost doubled in the past three years alone, after cumulative sales in this period exceeded 10,000 units.

Mini Excavators: What was a very small population due to the comparatively low cost of manual labour has now grown rapidly to exceed 2,000 units. The machines recently sold are working in cities on gas pipe installations, other utility work, on small refurbishment projects, and on fruit farms and in the forestry sector.

Mobile Compressors: Traditionally the largest users by far are the contractors, such as the civil engineers who need them for drills. The town and village authorities, like the smaller building firms, use the 3.0 and 5.0 m^3/min machines.

Mobile Cranes: Rough terrain cranes have long been the most popular product and still account for nearly half of the total population. They are primarily owned by contractors operating in both domestic and foreign markets. All terrain cranes are mostly in the hands of the rental companies and their growing popularity means they constitute around a quarter of active machines.

Motor Graders: The two biggest owners are the State highways authority and the rural administrations, for maintenance and snow clearing. Graders also play a role in the road building and mining sectors.

Rough Terrain Lift Trucks: The population has grown steadily as demand for telescopic handlers has risen during the last two years. The bulk of machines are to be found in the construction sector, although there is a growing volume of machines operating within the agricultural sector. Within the industrial sector sales have been made to specialised applications like ship building.

Skid-Steer Loaders: General construction and ship trimming constitute the most successful applications for skid-steer loaders. The population has grown relatively slowly during the last five years in particular, and the number of active machines is estimated to have risen to 1,500 units.

Wheeled Loaders: They are used mainly in production applications or in heavy civil engineering tasks such as dam construction. The most significant users are quarries and mines.

Forecast to 2019

Demand for construction equipment was robust in the first half of 2015, as municipalities released public funds in anticipation of the general elections held in June. The results of that

election suggest a slower second half to the year, though most suppliers anticipate this meaning no worse than parity with 2014.

After that, most suppliers are confident that demand will continue to rise in the short to medium term, albeit after another year of stagnation – at a historically-high level – in 2016, and the outlook for sales of new construction equipment remains highly favourable.

The outstanding amount of infrastructure projects and energy related construction in Turkey is enormous, and the requirement for new construction equipment is potentially very large. The government has pledged to invest up to US$1 trillion dollars in a wide range of major infrastructure projects over the next eight years, in the lead up to the 100th anniversary in 2023 of the founding of the Turkish Republic. Of particular significance to suppliers of earthmoving equipment are the proposed $400 billion investment outlined for so-called Urban Transformation projects, which entail the widespread demolition of old buildings and the modernisation of inner city areas throughout Turkey, and $368 billion investment in the transportation industry.

Table 6. Turkey: Forecast Sales of Construction Equipment by Type, 2015-2019

(Units)

	2015	2016	2017	2018	2019
Asphalt Finishers	120	150	125	100	140
Backhoe Loaders	3,300	3,100	3,300	3,400	3,200
Compaction Equipment*	650	600	700	750	800
Crawler Dozers	125	90	100	125	140
Crawler Excavators	3,200	3,000	3,200	3,500	3,900
Crawler Loaders	10	7	8	10	15
Dump Trucks	23	17	17	20	23
Mini Excavators	750	900	1,100	1,300	1,500
Mobile Compressors	190	200	200	225	250
Mobile Cranes	80	85	100	110	125
Motor Graders	250	230	260	285	320
Rough Terrain Lift Trucks	550	500	600	700	800
Skid-Steer Loaders	275	275	300	350	400
Wheeled Excavators	230	230	250	260	280
Wheeled Loaders	1,150	1,100	1,200	1,300	1,400
Total Construction Equipment	**10,903**	**10,484**	**11,460**	**12,435**	**13,293**

* Ride-on types only

Source: Off-Highway Research

The longer term fate of the sector will, however, depend on several factors, most notably a satisfactory resolution of the Syrian crisis and the Turkish government's ability to resolve the country's budget deficit issues. Failure to contain the latter brings with it the very real possibility

that proposed planned construction projects will be postponed or shelved, and that investment will be withdrawn.

Asphalt Finishers: The planned scale of road building projects is extremely large, though much will depend on the release of the requisite funding by the government. Furthermore, buoyant domestic demand will continue to be supplemented by sales of pavers to Turkish contractors working in the CIS, North Africa and the Middle East.

Backhoe Loaders: The large population of backhoe loaders alone is sufficient to ensure a buoyant replacement market for the foreseeable future, although in the longer term some suppliers believe that sales may be impacted to some extent by the growing trend towards compact equipment.

Compaction Equipment: Demand for asphalt and soil compactors has been extremely healthy during three of the last four years and is likely to remain so for the foreseeable future. There is a huge amount of outstanding infrastructure and road building projects to complete over the next 20 years, much of which will require the use of soil and asphalt compactors.

Crawler Dozers: The dozer market is traditionally a stable sector due to regular replacement demand from the mining industry and road building contractors. The massive programme of proposed infrastructure projects due to be completed by 2023 should help to sustain dozer sales at relatively healthy levels for the next five years at least.

Crawler Loaders: Sales will probably be relatively constant over the next five years and the public sector is unlikely to return to the market.

Dump Trucks: The outlook for both articulated and rigid trucks is not particularly encouraging. In the case of articulated trucks, even when the construction industry is growing at a rapid rate, the users buy very few. The on/off-highway truck is still viewed as a more viable alternative and this situation is unlikely to change in the near future. The market for rigid trucks has traditionally been very limited and future demand will inevitably remain muted.

Hydraulic Excavators: The outlook for sales of hydraulic excavators remains highly favourable. A significant working population of machines will ensure high levels of replacement sales, and the popularity of the concept seems set to see it outstrip the backhoe loader at some point in the next five years. Most suppliers are confident that demand will continue to rise in the medium term, after a period of flat sales this year and next.

Mini Excavators: There is little doubt that the rising cost of manual labour and increasingly restrictive legislation governing employment and health and safety issues will continue to create rising demand for compact equipment. Whilst it is currently difficult to forecast the exact rate of growth, many suppliers believe that demand is set to double within the next five years.

Mobile Compressors: Although the mobile compressor will continue to fulfil a niche role in the market, there now seems little prospect of significant future growth despite the highly favourable outlook for the construction industry. Demand is therefore likely to stabilise at current levels for the foreseeable future at least.

Mobile Cranes: The outlook for the crane market is extremely optimistic. The huge requirement in Turkey for energy related construction projects such as wind farms, nuclear and gas power plants will ensure steady demand for high capacity cranes, in particular, for at least the next five to six years. On-going infrastructure and petrochemical construction projects in the CIS, North Africa and the Middle East will also create buoyant demand for new cranes from Turkish contractors operating in these regions.

Motor Graders: The requirement for infrastructure and highway construction is still massive and there is huge potential for the next 20 years. Major investment is planned for new transport systems throughout Turkey and the government has already outlined its priorities for upgrading the country's rural road network. As a result, the market for graders is expected to expand significantly by the end of the forecast period.

Rough Terrain Lift Trucks: There is evidence to suggest that the general construction sector is finally beginning to appreciate the versatility of the telescopic handler. Although suppliers are universally optimistic about the future of compact equipment, none of them believe that the telescopic handler sector will advance at the same rate as that of mini excavators. Nevertheless, the market should continue to grow as the commitment of suppliers to exploiting its potential is now clear.

Skid-Steer Loaders: The market is growing, albeit not at the same pace as other mainline product sectors. The introduction of stricter legislation relating to manual labour, together with increasingly tight restrictions on the use of large equipment on inner city job sites, have inevitably stimulated growing interest in smaller machines. In the medium to long term this will eventually translate to an increase in demand for skid-steer loaders, though the market will likely still be lower than 400 units by the end of the forecast period.

Wheeled Loaders: The wheeled loader sector is traditionally more stable than that of other products since the machines are not used in a wide variety of applications, and demand from the main end-user sector, the marble quarries, is relatively constant. The long term forecast remains optimistic, particularly given the proposed level of investment in infrastructure, housing and energy related projects, and this should translate into a buoyant level of demand during the forecast period.

POLITICS AND THE ECONOMY

Political Background

Turkey's history goes back almost 10,000 years. In ancient times it was known as Asia Minor, the enormous land mass protruding from the depths of Asia into the Eastern Mediterranean comprising harsh mountain ranges, high plateaus and verdant river valleys. A succession of mighty kingdoms, ranging from the Hittites to the Byzantines and from the Romans to the Ottoman Turks, left their mark on what is one of the most historically diverse nations in the world.

Modern Turkey was built on the ruins of the Ottomans, whose 700 year old empire officially collapsed on October 30, 1918 after they were defeated by the Allies at the end of World War 1. Over the past 80 years Turkey has steadily moved from an economically backward and politically repressive country into a regional powerhouse, whose free market economy and solidly secular, multi-party democracy serve as a model for its neighbours in former Soviet Central Asia and in erstwhile protectorates in the Middle East.

The decision by the Allied powers to occupy and partition Turkey after World War 1 eventually pushed the Turks into action and the ensuing War of Independence resulted in victory for the nationalist army of Mustafa Kemal, which succeeded in driving the opposing forces out of Anatolia. The war ended in 1922 and the new republic began life in 1923.

Mustafa Kemal completely remade the country, with a constitution, new legal codes, the Latin alphabet instead of the Arabic, and civil marriage. He abolished polygamy and the fez, and removed Islam as the state religion. In 1935 he obliged all Turks to adopt a family name, which had been optional before that time. He was called Atatürk, or "Father of the Turks" by Parliament and his precepts continue to influence society to this day. Famously, he moved the capital to Ankara from Istanbul, at a time when it had only 30,000 inhabitants, compared to the million and a quarter in Istanbul. He also charged the Army with protecting the constitution and

democracy, hence its involvement in the relatively recent past to prevent the Islamist Welfare Party from pushing Turkey towards becoming a Muslim state.

Indeed, the Turkish military remains one of the most respected institutions in the country and has played a major role in shaping modern Turkey. It has intervened three times over the past four decades to rescue the country from political and economic turmoil and is seen as a stabilising influence in Turkish politics. The army is nominally under the control of the prime minister, but in practice it is independent of political control.

In 1997 the country was blocked from applying for membership of the EU but in April 1999 elections were held. They brought Mr Ecevit, the man who had ordered the invasion of Cyprus in 1976, back to power as leader of the social democrats, in alliance with the far-right Nationalist Action Party (MHP) and the right of centre Motherland Party (ANAP). In December of that year Turkey at last won the right to begin application for membership of the EU. So far it has scrapped the death penalty and given greater cultural rights to the Kurds in order to satisfy the EU, but it still has a way to go on its human rights record.

In November 2002 a very young party, the Islamic Justice and Development Party, AKP, won a landslide election victory, which made Recep Tayyip Erdoğan, the then Mayor of Istanbul, into Prime Minister. The only other party to win any seats was the Kemalist CHP or Republican People's Party, led by Deniz Baykal. Out of 550 members, 500 lost their seats in that amazing election.

The AKP Government was barely in office when events in Iraq came to the fore. Parliament did not give approval for Coalition troops to transit through Turkey. It later agreed to send troops to Iraq, although Turkey and the USA subsequently agreed that this offer would not be taken up. Since then, five key issues have dominated the AKP's political agenda: Iraq, EU accession, Cyprus, the Kurdish peace process, and the economy. The Government has also had to deal with several major terrorist attacks. In November 2003 bombings were targeted at two synagogues, the British Consulate-General and the HSBC bank, all in Istanbul. In July 2008 the United States embassy in Istanbul was subject to terrorist attack and in the same month two bombs, mooted to be the responsibility of Kurdish guerrillas, exploded in a busy pedestrian area of Istanbul killing 16 people.

In March 2004 the AKP Government consolidated its domestic position by winning 42 per cent of the vote in local elections. In the July 2007 general elections it secured a second term in office after winning 47 per cent of the vote and 341 seats, and in June 2011 Recep Tayyip Erdoğan

became the only prime minister in Turkish history to win a third consecutive general election. The party has undertaken significant structural reforms in recent years and during its rule Turkey has seen rapid growth and an end to its three decade long period of hyper-inflation. If it is to succeed in its attempts to gain EU accession, however, the AKP will need to persuade the European Union that the country is fully committed to democratic reforms and a political solution on the Cyprus issue. In the meantime Turkey faces opposition to its membership of the EU from France and Germany, who are concerned about admitting a Muslim nation of 74 million people located on the fringes of the Middle East.

Two issues in 2008 were of major relevance to political stability in Turkey. The first relates to the decision of the country's Constitutional Court to consider banning the AKP party and its leaders from politics as a result of what it alleges are the party's infringements of Turkey's avowedly secular constitution. The second matter was the instigation of criminal proceedings against members of the so-called 'Ergenekon' organisation suspected of plotting a coup against the AKP government. The issue arose in July 2007 with the discovery of arms and munitions in a private house in Istanbul and culminated in July 2008 in the trial of 86 people including high ranking members of the Army, prominent businessmen and members of the press. Significantly, the outfall from both cases may have had potentially damaging consequences for Turkey's EU accession bid.

More recently, the government has had to deal with economic problems that did not seem to exist during the initial period of rapid growth post 2002, problems including a widening budget deficit and a weakening Turkish Lira. It has also faced considerable criticism for what appears to be an increasingly autocratic approach. In May 2013, what started out as a protest against urban development in Gezi park in Istanbul became the national focus for anti-government demonstrations. These spread nationwide and, though often rooted in specific causes, shared the same frustrations at apparently growing restrictions on freedoms of assembly, of the press and of speech in general, of women's rights and concerns over the seeming Islamisation of the state.

Eventually the demonstrations fizzled out, but the long term consequences of the state's perceived heavy-handed response were perhaps evident in the results of the recent general election. This was widely seen, indeed framed by the government, as a referendum on its political approach, as well as its desire to change the constitution again and focus even greater powers in the hands of the President. Thus, while the AKP party nominally won the elections, securing 40.9 per cent of the vote and the largest single number of seats in the parliament, it lost its overall majority. The result was Turkey's first hung parliament since 1999, and also a period

of uncertainty over the direction and indeed composition of the next government; moves to create an executive Presidency appear to have been stymied.

As a result of this election, the constitution and the main institutions remain quite simply explained. Turkey has only one house of parliament, 550 members serving for up to five years. Traditionally these members have elected a figurehead president, who serves only one term, a maximum of seven years. Since 2007, however, the constitution has been amended so that the President is now directly elected for a once-renewable five year term. The President then selects the Prime Minister, who is supposed to be the leader of the largest party in parliament and must then win the support of parliament. Among the ministries those of economics, education and the interior have an unfortunate record of being weakened by partisan appointments and interference, while that of agriculture has on occasion been used simply to buy votes.

The country's local government is done by the 80 *vilayets* or provinces, with a governor appointed from the centre. It is highly centralised but in the last 15 years the municipalities have won some powers and limited resources.

GEOGRAPHY

Turkey lies between 35° and 42° north latitude and 25° and 44° east longitude. A small part of it is in Europe but most is in Asia, in the part known as Anatolia. It is a large country – from Edirne on the Bulgarian border to Kars near Armenia is 1,700 kilometres across very mountainous territory, and the distance from north to south is almost 1,000 kilometres. There are mountain ranges everywhere and the highest mountain is the biblical Mount Ararat, now called Agri Dagi, which is 5,165 metres high. There are seven regions:

- **Marmara:** European Turkey and the southern shore of the Sea of Marmara. This is a very fertile area but with extremes of temperature – 40° in summer and -16° in winter.
- **Aegean:** A coastal region full of fertile plains and river valleys.
- **Mediterranean:** The southern coast stretching from Antalya to Adana. The first part, east of Alana, is a fertile plain. This coast is the warmest and dampest, with 777 millimetres of rain each year.
- **Central Anatolia:** The heartland, full of mountains and steppes. It is dry, but good for growing wheat as well as for grazing sheep.

- **Black Sea Coast:** An area which is only now being opened up, it is 1,700 kilometres long, temperate and damp. In the east it is wet enough to grow tea, and everywhere the climate allows almost any crop to grow.
- **The South-East:** This region is steppe land and is dry and very hot – a maximum of 46.5° in summer. Here the GAP hydroelectric project is in progress. The first irrigation arrived in 1994 and the plan is to create 19 per cent of all irrigated land there in the next century.
- **Eastern Anatolia:** This region is mountainous, dry and very hot – a maximum of 38° to 42° in summer.

Population

According to the official Turkish Statistics Institute (TurkStat) the population was 76.7 million at the end of 2014, and increase of two million in just the three years since the last report. 77 per cent of the population lives in towns and cities; in the countryside the population grew until 1989 but is now falling in absolute terms as a result of continuing internal migration to city areas.

Table 7. Turkey: Populations in Main Cities, 2014

(Million)

Istanbul	14.2
Ankara	4.6
Izmir	2.9
Bursa	1.8
Adana	1.7
Gaziantep	1.6
Konya	1.2

Source: TurkStat

The population is very young by European standards, 50 per cent being below 29 years old. The table above gives estimates for the sizes of the major cities but they are rather likely to be inaccurate because of illegal building, unregistered residence and the recent influx of refugees from neighbouring countries, particularly Syria.

Over 99 per cent of the population is Muslim. The Kurds are the largest minority, about 18 per cent of the population. They come from south-eastern Anatolia and have spread into Iraq, Iran and Syria. About half of them live in the cities of Western Anatolia. 98 per cent of people speak Turkish; about two per cent speak Arabic, mainly inhabitants of the region in the south bordering Syria.

ECONOMIC BACKGROUND

Turkey's largely free-market economy is increasingly driven by its industry and service sectors, although its traditional agriculture sector still accounts for about 25 per cent of employment. An aggressive privatization programme has reduced state involvement in basic industry, banking, transport, and communication, and an emerging cadre of middle-class entrepreneurs is adding dynamism to the economy and expanding production beyond the traditional textiles and clothing sectors.

The automotive, construction, and electronics industries, are rising in importance and have surpassed textiles within Turkey's export mix. Oil began to flow through the Baku-Tbilisi-Ceyhan pipeline in May 2006, marking a major milestone that will bring up to 1 million barrels per day from the Caspian to market. Several gas pipelines projects are also moving forward to help transport Central Asian gas to Europe through Turkey, which over the long term will help address Turkey's dependence on imported oil and gas to meet 97 per cent of its energy needs. Of these, the TANAP (Trans Anatolia Natural Gas Pipeline), which will run from Azerbaijain through Turkey to its border with Europe, saw the ground-breaking ceremony in March this year.

After Turkey experienced a severe financial crisis in 2001, Ankara adopted financial and fiscal reforms as part of an IMF program. The reforms strengthened the country's economic fundamentals and ushered in an era of strong growth - averaging more than six per cent annually until 2008. Global economic conditions and tighter fiscal policy caused GDP to contract in 2009, but Turkey's well-regulated financial markets and banking system helped the country weather the global financial crisis and GDP rebounded strongly to 9.2 per cent in 2010, as exports returned to normal levels following the recession. Turkey's public sector debt to GDP ratio has fallen to roughly 40 per cent.

Table 8. Turkey: Basic Economic Indicators, 2010-2014

(Real Change Per Cent)

	2010	2011	2012	2013	2014
Real GDP Growth	9.2	8.8	2.1	4.2	2.9
Exports	10.3	17.7	13.7	-0.1	4.4
Imports	31.8	31.2	-1.7	6.5	-3.6
Consumer Price Index (%)	8.6	7.8	6.2	7.4	8.2
Unemployment Rate (%)	12.0	9.8	8.4	9.1	10.0

Source: Official Statistics

Continued strong growth has pushed inflation to the eight per cent level, however, and worsened an already high current account deficit, at least until the fall in oil prices in the past year or so reduced the amount spent on energy imports (which normally account for a quarter of total import expenditure). As a result of this timely, if unforeseeable, development, the current account deficit was estimated at $46 billion in 2014, down from $64.7 billion in 2013. Turkey also remains dependent on often volatile, short-term investment to finance its large trade deficit, and has suffered considerably from the weakness of the Turkish Lira that has raised the cost of imports; symptomatic of the problem is the more than 50 per cent fall in the Turkish Lira compared to the US$ since the last report. Moreover, the value of FDI stood at $16.2 billion at year-end 2011, but had fallen to $12.5 billion by the end of 2014. Inflows have slowed considerably in light of continuing economic turmoil in Europe, the source of much of Turkey's FDI.

Further economic and judicial reforms and prospective EU membership are expected to boost Turkey's attractiveness to foreign investors. However, Turkey's relatively high current account deficit, uncertainty related to monetary policy-making, and political turmoil within Turkey's neighbourhood leave the economy vulnerable to destabilizing shifts in investor confidence.

AGRICULTURAL ACTIVITY

Agriculture is still the occupation of a large number of Turkish people and Turkey is one of the few self-sufficient countries in the world in terms of food. Its fertile soil, climate and abundant rainfall permit the growing of almost all types of crops, and farming is conducted in all regions of the country, albeit less so in the mountainous eastern area, where the main activity is based on animal husbandry.

Turkish agriculture, especially cereal production, is heavily dependent on seasonal rainfall. While there are about 8.5 million hectares of land under potential perennial irrigation, only about half of this area, 4.5 million hectares, has been equipped with requisite irrigation infrastructure. It is known that the expansion of irrigated lands helps to improve production, create rural employment and alleviate migration from rural to urban areas. Towards this end, it is envisaged to irrigate an additional 1.7 million hectares in the South eastern Anatolia Project. Already 300,000 hectares have been brought under irrigation in Harran and adjoining areas in the south-east, giving a boost to the production of cotton and other crops.

The land is reasonably evenly distributed and there is no hereditary class of large landowners as one finds elsewhere, except in the south-east where the Kurdish tribal leaders own large tracts

and employ peasant share croppers to work the land. In the Çukurova region near Adana and on the Aegean coast there are large commercial farms growing cotton or citrus fruits, but elsewhere the farms are nearly all small peasant holdings, sometimes worked by landless farmers.

Another characteristic of Turkish agriculture is the small farm size. In the last 20 years the number of farms has fallen from 4 million to 3 million, yet two-thirds of them still own only between 0.1 and 5.0 hectares of land, (22 per cent of total agricultural land), while only one-third of households own more than 5 hectares – covering the remaining 78 per cent of available agricultural land.

The most important crop is wheat and other cereals. Besides producing for a growing population which adores eating bread, Turkish farms produce the raw material to be the world's second greatest exporter of pasta and enough flour to win 10 per cent of the world market. Unfortunately, the weather has not always been reliable and recent wheat crops of 19.0 million tonnes have been well below the high point of 2000, when 21 million tonnes were produced.

Crops are the most important products with 56 per cent of agricultural production by value, split between cereals (12 per cent, industrial crops such as sugar beet and tobacco (six per cent), Vegetables (14 per cent, fruits (17 per cent) and other crops. Wheat is the single most important crop. Livestock production and animal products contribute 25 and 19 per cent of total value respectively.

By international standards, Turkey is a major producer of grain, cotton, tobacco, grapes, sunflower, pulses (chickpeas and lentils), dried fruit (hazelnuts, seedless raisins, figs, and apricots), fresh fruits (apples and citrus), tomatoes, tea and small ruminants (sheep, goats). Cereal production occupies 75 per cent of Turkey's cropland. With a wheat production of 19 million tonnes and barley production of 6.3 million tonnes in 2014, Turkey is one of the world's biggest wheat and barley producers. Besides cotton and tobacco, sugar beet is another important industrial crop.

Tobacco is an important industrial crop and Turkey is the world's fourth largest producer. Turkey has 81.4 million olive trees, 11.1 million orange trees, 7.8 million tangerine trees and 4.9 million lemon trees, making fruit a much more buoyant sector.

Livestock farming is very important but very diverse, from traditional nomadic tending of sheep and goats to industrial enterprises making high quality dairy products. Milk production, however, has been in decline since the mid-1990s.

Forestry is only potentially important. The forests cover a massive area, but most is low grade woodland unsuitable for commercial exploitation. Recent re-afforestation schemes have been focusses on soil preservation and the avoidance of desertification rather than commercial timber.

Farm output therefore remains low in comparison to the country's enormous potential and farmers' average income is also low. It is widely reported that although total Turkish agricultural output is at the same level as that of France, it is achieved with 10 times as many workers. Small farm size and lack of economies of scale, coupled with increases in input prices, dependency on rain fed agriculture, and lack of efficient market mechanisms are leading to a rapid rural exodus.

Support has mainly been channelled through price support (i.e. "deficiency payments" for sunflower seed, soybean, cotton, and olive oil), input subsidies (credit, fertiliser and irrigation) and supply control measures for crops such as tobacco, hazelnuts and tea (Alternative Crop Scheme). The government has also been involved in the purchasing, processing and marketing of crops (often through financial support to farmer-owned co-operatives). In addition, the state banks have provided the sector with interest subsidies, mostly directed towards the market-oriented producers.

MINING AND QUARRYING

The country has a wide range of mineral deposits but, although it is Europe's largest producer of gold, the only important products for the world market are chrome (six per cent of world production and 25 million tonnes of reserves) and the one product in which it has a near world monopoly, boron, which is used for hardening steel. Nevertheless, exports of the mining industry over the last decade increased in value from $700 million to around $4 billion. In 2012, the industry grew by 4.6 per cent and aims to reach $15 billion of exports by 2023, the 100th anniversary of the republic

Almost 40 per cent of the boron mineral production is exported as lumpy ore and concentrate. The remaining is converted to refined boron products. Borate reserves are worked by Turkey's largest state owned mining company, Eti Maden, the only producer and exporter of boron minerals and boron chemicals. Ferrochromium is the most important product in production and exports.

The country produces much lignite for domestic use but 57 per cent of the reserves are of low calorific value. The fuel produces a dirty smoke and the coming of natural gas to replace it in Turkey's cities is being welcomed. The iron ore is now insufficient for the steel industry and the

country has to import ore. The hard coal production is becoming increasingly difficult in geological terms and subsidies are being phased out, although the country's long term potential has recently been positively re-assessed following a re-evaluation of known deposits and an exploration of new ones.

The marble industry is one of the more interesting quarrying activities for the suppliers of loading equipment. Located 90 per cent in western Turkey, on Marmara Island and in the province of Afyon, it has reserves of high grade marble for the next 4,000 years. The 2,100 quarries and 112 processing plants (95 per cent of them private) have enjoyed improved fortunes during recent years. Extraction and processing have improved and intensive marketing in the USA has expanded demand for beige marble and travertine, a variety endowed with holes during its formation and previously not well rated. More recently, exports of marble to China have done very well.

Turkey has a 40 per cent share of world marble reserves, around 3.8 billion m^3. Important marble reserves are found in Afyon, Bilecik, Burdur, Denizli, Muzla, Elazir, Balkesir and Eskiflehir. The annual block marble production is around 2,300,000 tonnes.

The natural stone sector in Turkey has developed significantly in the last 10 years. Total natural stone exports were in excess of US$1,568 million in 2010. Processed marble ranks first with export earnings of over $770 million. Block marble takes second place with $360 million.

The other important minerals commercially mined and exported in Turkey are magnesite, barytes, pumice, bentonite, kaolin, refractory and ceramic clays. Copper, lead, zinc, sulphur, diatomite, feldspar, alumina, salt, calcite, perlite, emery, celestite and zeolite complete the list.

CONSTRUCTION ACTIVITY

As a result of the economic reforms introduced after the 2001 financial crisis, Turkey has enjoyed a more stable financial performance with relatively low inflation and renewed political stability. These factors, coupled with the instigation of EU accession negotiations in 2004, led to a significant increase in business confidence (at least until last year), which in turn has initiated the country's largest ever construction boom. Recent annual growth levels in the construction sector have averaged 16 per cent.

Large infrastructure projects involving investment of billions of dollars have been planned or are already under way. Due to Turkey's recent achievements and security provided under the

prospects of EU membership, foreign direct investment (FDI), much of which has been applied to the construction sector, has increased substantially since 2005, reaching US$16 billion in 2011 alone from an average of US$1 billion between 1990 and 2003. As mentioned already, it has since fallen back, though to still historically-high levels.

In the building sector, rising demand led to a shortage of residential dwellings, as a result of which construction of more than 400,000 new housing units was required each year up to 2010 to meet the housing needs of a growing population; now though, there are concerns that efforts to stimulate the housing market will merely result in the recent excessive housebuilding schemes at last being filled, rather than stimulating much new building work. On the other hand, investment in the private sector from other Middle-Eastern countries has become a significant market stimulus. The government is also taking many initiatives to improve the infrastructure of the fast growing tourism sector over the coming years and is encouraging private investment.

During the last 10 years the country's energy consumption has risen 5.5 per cent per annum on average. Since 2002, the demand for electricity and natural gas has risen by 58 per cent and 150 per cent respectively. As a result, the requirement for energy related construction projects such as wind farms, nuclear, gas and coal fired power plants, has become massive, and is forecast to continue for at least the next 15 years. Two new nuclear power plants are planned for Mersin. The government's decision to liberalise the energy market has also meant a sharp increase in the number of licences granted to private and foreign investors, which has minimised construction initiation delays.

The public works industry is very affected by the political world and the recent period of stability has led to a wave of infrastructure projects which have sustained the large increase in demand for heavy equipment initiated after 2009. The main themes are the progressing, piece by piece, of the GAP project and the slow growth of the modern road network. The main energy-orientated projects at present relate to the distribution of natural gas and the construction of wind farms and power plants.

Recently completed projects of note are the LPG pipeline in the Black Sea area and the oil pipeline from Baku to Ceyhan. The pipeline opened in May 2005 and cost $3.6 billion to build between 1994 and 2005. Previously the oil was transported via pipelines through Russia to the Black Sea and then by tankers through the Straits of the Bosphorus. The 1,770 kilometres long pipeline has the capacity to transport a million barrels per day of Caspian oil to the Turkish port of Ceyhan, on the Mediterranean. The pipeline passes through Azerbaijan (443 kilometres),

Georgia (249 kilometres), and Turkey (1,076 kilometres), passing over mountain plateaux up to 2,500 m above sea level in several places in Georgia and Turkey.

The Great Anatolian Project (GAP) is located in the east of the country. Started in 1981, it is a plan to build a group of 22 dams and 19 hydro-electric plants as well as numerous irrigation schemes, using the waters of the rivers Tigris and Euphrates. It will give cheap electricity and is planned to cover one-third of Turkey's total energy needs. It was budgeted at TL25 billion for 1981-2000 but the overruns on cost are not known and the project has needed another TL6 billion after 2000 to complete it in any case.

The motorway network is another area of considerable expansion. In the 10 years up to the publication of the previous report the motorway network grew by 600 kilometres. Current projects improvement of the route from Istanbul to Ankara, the completion of the Istanbul-Izmir route and upgrading of the road from Istanbul to Eskişehir.

Non-motorway roads are very heavily used and as a result the road network will always need improvement, although until recently the total length of the main road network has been increasing only moderately. Since the middle of the 1990s around 2,000 kilometres have been added, but 7,900 kilometres of bituminous roads have been created, half of them by replacing the crushed stone roads. 97 per cent of the roads outside the villages have a hard surface now.

The 8,697 kilometres long railway network was built before industrialisation and is of little use except for passengers. New branch lines into industrial areas are in the planning stage and the Istanbul-Ankara line has been recently upgraded. Following this success, a new route linking Istanbul and Izmir is now also planned.

Table 9. Turkey: Largest Building Contractors, 2015

Company	Speciality
Alarko	Energy
Dogus	Civil Engineering
Enka	General
Gama	Civil Engineering
Güriş	Civil Engineering
Koray	Industry/Commercial
STFA	Civil Engineering
Tekfen	General
Üstay	Industry/Commercial
Yüksel	Industry

Source: Company Information

Since the late 1990s the large contractors have taken over the execution of projects from state organisations and the phenomenon of BOT (Build-Operate-Transfer) is spreading. The contractor now builds a bridge or digs a tunnel at his own cost but then receives an income from its use (a toll or a payment from the state) for a long period before he gives it over to the state. This means that the contractors are even more important than they were, for they are in both the private and the public sector. They are also far more inclined to use sub-contractors for work, such as steel erection, earthmoving or electrical work, in order to save money. The table above shows the largest contractors and their specialities.

These companies operate in Turkey and outside, and often buy plant in Istanbul and Ankara, then immediately ship it overseas.

A salient feature of the industry in recent years has been the increasing number of large Turkish construction companies working abroad. In the last five years the biggest markets have been Russia, Turkmenistan, Kazakhstan, Saudi Arabia and Afghanistan. Libya used to be by far the biggest market but its share has decreased drastically. However, new markets for Turkish companies have opened up, according to the contractors' association, in such countries as India, Oman, Qatar and other CIS countries such as Azerbaijan and Kyrgystan. The most important fields of activity have been industrial facilities, followed by road, bridge tunnel and petrochemical plants.

In the lead up to the 100th anniversary celebrations in 2023 of the founding of the Turkish Republic, the government has announced a wide ranging programme of planned construction projects, the most important of which are:

- US$368 billion investment in the Transportation Industry (roads, sea, air transport and railways).
- US$140 billion investment in the Energy Sector.
- US$400 billion investment in urban transformation projects to be realised by the end of 2023.
- 20,000 kilometres of new 2-lane roads to be constructed by the end of 2023.
- 5,000 kilometres of new motorways.
- Natural gas lines in 35 cities.
- New projects valued at US$140 billion in the environment and recycling sectors.
- 14,000 kilometres of new railway projects throughout Turkey, and US$100 billion investment in additional railways.
- Construction of 100 new dams.

- New Bosphorus motorway bridge construction in Istanbul and Canakkale.
- Istanbul-Izmir Highway project valued at US$6.9 billion.
- 10 new airport projects.
- Third airport project in Istanbul.
- New harbour investments at a value of US$3.6 billion over the next 12 years.
- Construction of new road and railway tunnels under the Bosphorus in Istanbul.
- US$26.7 billion worth of investment in GAP projects (Southern Anatolian Project).

A final word should go to perhaps the most ambitious project of all, the Istanbul Canal. This proposed new link between the Sea of Marmara and the Black Sea to the west of Istanbul is conceived to relieve the strain on natural and built environment of the Bosphorous caused by current shipping levels.

EQUIPMENT ANALYSES

ASPHALT FINISHERS

Market Size and Trends

Table 10. Turkey: Sales of Asphalt Finishers, 2010-2014

(Units)

2010	2011	2012	2013	2014
55	99	174	120	74

Source: Off-Highway Research

The market for asphalt finishers is highly dependent on government investment in new road construction and maintenance of the existing network. Historically the sector has been characterised by volatility whereby demand has reached 100 machines in good years, and conversely plummeted to below 10 machines per year during times of austerity. As can be seen from the table above, this trend has continued in the recent past, even if the lows are now not as low as they have been.

Asphalt finishers have not always been used for every bituminous surface. Apart from the motorways, ring roads and main roads, many have been covered with a cold-mix tarred aggregate. In this practice the aggregate is rolled flat, sprayed with tar, covered with stone chips and rolled again. It does not involve asphalt finishers, and in 2003 and 2004 the government

covered 3,000 kilometres in the countryside with this surface. However, the roads soon broke up and, as a result, government authorities have now begun to specify the use of full hot mix compacted asphalt surfaces in their contracts to replace this inferior substitute.

In 2007 the municipal authorities' investment in road surfacing doubled in comparison to 2006 and the market made a hesitant recovery. In line with other machine sectors demand fell sharply in 2008 and 2009 following the onset of the global financial crisis, although the subsequent release of government funds for new road construction resulted in a robust recovery in 2011 and 2012. In 2013, sales remained above the assumed long-term average of 100 machines, thanks to continued infrastructure investment. Last year, however, concerns over the economy, in particular the fall in value of the Turkish Lira against the US Dollar and the Euro and the subsequent rise in cost of imported machinery, and increasing political uncertainty, saw the market decline, albeit only as far as 74 units. This is because the volume of road building work being undertaken in the country, even in a cool market, is still comfortably in excess of previous levels. Two statistics prove this point: in the post 12 years, more kilometres of asphalt roads have been built in Turkey than in the previous history of the Turkish Republic; in 2014, asphalt production in Turkey exceeded 50 million tonnes, making it the largest producer in Europe.

It should be noted that a small proportion of new pavers are sold to Turkish contractors who will use them on foreign job sites. The best estimates for the proportion of the market that can be accounted for in such a fashion is less than 10 per cent.

The asphalt finisher sector is dominated by private contractors rather than the municipalities. As a result the types of machines in demand are of high specification and 90 per cent of them are on crawler tracks, reflecting the needs of the builders of roads outside urban areas. These are the people who will order a high compaction screed on occasion, although they more normally require a standard screed of 6.5 to 7.5 metres' working width, with a tamper and vibrator. Electric screed heating is also now the preferred option for the majority of contractors.

The market for mini pavers, of a working width of only 2.5 metres, disappeared when local authorities faced reduced budgets, although is expected to grow in the longer term.

Market Shares

Vögele dominates the market with a share that has increased from 50-60 per cent at the time of the last report to over 80 per cent in the past two years. The company was represented for over 20 years by the road building specialist, Mor Teknik, although the parent company, Wirtgen,

took the decision in 2008 to establish a wholly owned subsidiary company in Turkey which brought the partnership to an end. The most popular machine sold is the Super 1900.

Table 11. Turkey: Suppliers of Asphalt Finishers and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Vögele	122	87	61	82
Atlas Copco	2	1	6	8
Bomag	9	6	3	4
Caterpillar	4	3	3	4
Volvo	3	2	2	2
Total	**140**	**100**	**74**	**100**

Source: Off-Highway Research

Dynapac, now sold as **Atlas Copco**, was represented by the asphalt plant manufacturer Teknomak from 1997 to 2010, after which time the franchise was transferred to the Hitachi dealer, Enka. Following Atlas Copco's acquisition of Dynapac in 2007, some direct sales of pavers are also undertaken by the Atlas Copco subsidiary company in Istanbul. In the past it had been the market leader in asphalt finishers, but the resurgence of Vögele and Volvo in recent years has resulted in a significant loss of market share for the company. Last year, however, a more aggressive strategy was adopted, resulting in a return to second place in the market, albeit a very long way behind the leader.

Bomag, whose finishers are sold by Karyer, has yet to find a way to capitalise on its strength in the compaction sector; **Caterpillar** manages to sell occasional units as part of package deals for its other products. The German-built products of ABG, now marketed under the brand name of **Volvo**, has traditionally proven to be the most successful challenger to the dominance of Vögele, though this challenge has dissipated in recent years.

The full list of suppliers is shown below.

Table 12. Turkey: Distribution Networks of Suppliers of Asphalt Finishers, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Ammann	TSM Global	**Caterpillar**	Borusan Makina
Atlas Copco	Enka	**Vögele**	Wirtgen Ankara
Bomag	Karyer	**Volvo**	Ascendum

Source: Company Information

Population and End-Users

Table 13. Turkey: Population of Asphalt Finishers by Type of User, 2015

	Units	%
Road Contractors	560	80
General Contractors	70	10
Surfacing Specialists	35	5
Municipalities	35	5
Total	**700**	**100**

Source: Off-Highway Research

The major owners now are the 26 members of the asphalt contractors' association, who own the majority of all the asphalt mixing plants in Turkey. This end-user sector is estimated to account for approximately 80 per cent of asphalt finisher sales.

The remainder of the population is divided between the general contractors, municipalities operating small machines, and a small number of specialist road surfacing specialists.

Forecast to 2019

Table 14. Turkey: Forecast Sales of Asphalt Finishers, 2015-2019

(Units)

2015	2016	2017	2018	2019
120	150	125	100	140

Source: Off-Highway Research

The planned scale of road building projects is extremely large, with 20,000 kilometres planned for completion by 2023, but much will depend on the release of the requisite funding by the government. The extensive public spending in advance of the recent general election dictate that the market for pavers will increase again this year, even if the second half of the year is now likely to be not as strong as the first six months. Thereafter, it is likely that demand will be sustained at high levels throughout the forecast period, even if the market will undoubtedly fluctuate in an unpredictable fashion year on year.

Machines Available

Table 15. Turkey: Asphalt Finishers Available, 2015

Manufacturer	Model	Type	Paving Width (metres)	Engine		Product Source
				HP	Manufacturer	
Ammann	AFW150G	W	0.8-1.3	8	Hatz	Switzerland
	AFW270	W	1.4-2.7	45	Deutz	Switzerland
	AFW350	W	1.8-4.5	61	Deutz	Switzerland
	AFW500	W	2.5-6.5	110	Cummins	Switzerland
	AFT270	C	1.4-3.3	45	Deutz	Switzerland
	AFT350	C	1.8-4.5	61	Deutz	Switzerland
	AFT500	C	2.5-6.5	110	Cummins	Switzerland
Atlas Copco	F1200C	C	0.3-3.1	66	Deutz	Germany
	F1200CS	C	0.3-3.1	73	Deutz	Germany
	F1700C	C	0.6-4.4	70	Deutz	Germany
	F800T	C	2.5-5.8	173	Cummins	Germany
	F1000T	C	3.0-7.6	230	Cummins	Germany
	F2500C	C	2.0-8.1	149	Cummins	Germany
	F2500CS	C	2.0-9.0	174	Cummins	Germany
	SD2500C	C	2.0-9.0	174	Cummins	Germany
	SD2500CS	C	2.0-10.0	201	Cummins	Germany
	SD2550C	C	2.0-12.0	230	Cummins	Germany
	SD2550CS	C	2.0-14.0	262	Cummins	Germany
	F1700W	W	0.6-4.1	70	Deutz	Germany
	F1700WS	W	0.6-4.1	70	Deutz	Germany
	F2500W	W	2.0-6.6	149	Cummins	Germany
	SD2500W	W	2.0-7.3	174	Cummins	Germany
	SD2500WS	W	2.0-9.0	174	Cummins	Germany
	F1000W	W	3.0-7.6	230	Cummins	Germany
Bomag	BF223C	C	1.4-4.0	50	Perkins	Italy
	BF300C	C	1.7-4.0	75	Kubota	Italy
	BF600C	C	2.5-7.5	162	Deutz	Italy
	BF800C	C	2.5-10.0	182	Deutz	Italy
	BF800C Soil	C	2.5-10.0	182	Deutz	Italy
	BF900C 4i	C	3.0-13.0	216	Deutz	Italy
	BF300P	W	1.7-4.0	75	Kubota	Italy
	BF600P	W	2.5-6.9	162	Deutz	Italy
	BF800P	W	2.5-10.0	182	Deutz	Italy
Caterpillar	AP225E	C	1.4-2.6	46	Caterpillar	Italy
	AP555E	C	2.5-4.8	144	Caterpillar	Italy
	AP655D	C	2.5-5.0	170	Caterpillar	Italy
	AP655F	C	2.5-5.0	170	Caterpillar	Italy
	AP300D-AS3173	W	1.7	75	Caterpillar	Italy
	AP300D –AS4173	W	1.75	75	Caterpillar	Italy
	AP500E	W	2.55-5.0	143	Caterpillar	Italy
	AP600D	W	2.5-5.0	174	Caterpillar	Italy
	AP600F	W	2.5-5.0	174	Caterpillar	Italy

(continued)

Table 15. Turkey: Asphalt Finishers Available, 2015 (continued)

Manufacturer	Model	Type	Paving Width (metres)	Engine		Product Source
				HP	Manufacturer	
Vögele	Super 700	C	1.1-3.2	61	Deutz	Germany
	Super 800	C	2.0-3.2	61	Deutz	Germany
	Super 1100-2	C	2.0-4.2	78	Deutz	Germany
	Super 1300-2	C	2.0-5.0	101	Deutz	Germany
	Super 1600-2	C	2.5-8.0	148	Perkins	Germany
	Super 1800-2	C	2.5-10.0	195	Perkins	Germany
	Super 1900-2	C	2.5-11.0	218	Deutz	Germany
	Super 2100-2	C	2.5-13.0	280	Deutz	Germany
	Super 3000-2	C	3.0-16.0	402	Deutz	Germany
	Super 1103-2	W	1.7-4.2	78	Deutz	Germany
	Super 1303-2	W	2.0-4.5	101	Deutz	Germany
	Super 1603-2	W	2.5-7.0	135	Perkins	Germany
	Super 1803-2	W	2.5-8.0	174	Perkins	Germany
	Vision 5100-2	C	2.5-5.8	170	Cummins	Germany
	Vision 5200-2	C	2.5-8.6	240	Cummins	Germany
	Vision 5103-2	W	2.5-5.8	170	Cummins	Germany
	Vision 5203-2	W	2.5-7.3	240	Cummins	Germany
Volvo	ABG2820	C	1.5-4.0	85	Deutz	Germany
	ABG5820	C	3.0-8.0	152	Deutz	Germany
	ABG6820	C	3.0-8.0	175	Deutz	Germany
	ABG7820	C	3.0-13.0	228	Volvo	Germany
	ABG8820	C	3.0-13.5	247	Volvo	Germany
	ABG9820	C	3.0-16.0	371	Deutz	Germany
	ABG5770	W	2.5-7.5	166	Deutz	Germany
	ABG5870	W	2.5-8.0	166	Deutz	Germany
	ABG6870	W	2.5-9.0	166	Deutz	Germany

Note: W – Wheeled, C – Crawler

Source: Company Information

BACKHOE LOADERS

Market Size and Trends

The backhoe loader became popular during the 1990s and the recent history of sales has confirmed its position as the leading volume item of construction equipment, accounting for 29 per cent of total new machine sales in 2011 and 31 per cent in 2014. Nevertheless it does not have a long history of use in the country, and arrived as a dominant factor in the market less than 20 years ago. Prior to this time, a number of domestic companies had taken Massey Ferguson Turkish-made tractors and added a bucket at the front, and a backhoe at the rear, to make a substitute for an imported backhoe loader.

Table 16. Turkey: Sales of Backhoe Loaders, 2010-2014

(Units)

2010	2011	2012	2013	2014
2,750	3,195	4,336	4,065	3,294

Source: Off-Highway Research

In the latter half of the 1980s the volume of converted machines declined and one Turkish company, Hidromek, committed itself to producing a genuine backhoe loader based on a specially created chassis. After 1996 the market grew rapidly. The municipalities were willing to start using contractors to do their work, and the larger companies began to sub-contract smaller jobs, both practices which had been uncommon before the 1990s. This created the market, and the ready availability of financing and leasing options encouraged buyers to invest in new imported backhoe loaders.

Sales advanced in the late 1990s to 1,600 units per year but collapsed in the wake of the 2001 crisis. By 2004 the private sector was buoyant again. Investment in housing, tourist developments, factories and inner city refurbishment works all stimulated the market for backhoe loaders. More recently, new applications, most notably waste recycling, have also added to the product's appeal. The pace of purchasing accelerated enormously during the construction boom years of 2005-2007, by which time the market had reached its highest recorded level of 4,200 units.

In 2008, the government implemented a dramatic rise in the VAT rate on leasing contracts from one per cent to 18 per cent, although this was subsequently dropped to eight per cent for backhoe loaders and crawler excavators following lobbying from the domestic manufacturers. However, the net effect was that sales of backhoe loaders collapsed by 55 per cent. The onset of the global financial crisis towards the end of 2008 added to the misery, and in 2009 demand fell by a further 38 per cent to reach its lowest level since the financial crisis of 2001, just 1,150 units.

In common with other product sectors, demand began to recover slowly in the last quarter of 2009 and, following strong growth in the domestic economy coupled with the instigation of many infrastructure projects, the market underwent sustained and robust growth of 111 per cent in 2010. This development continued in 2011 underpinned by a buoyant construction sector and by the end of the year sales had risen by a further 31 per cent to exceed 3,000 units once more.

Sales grew rapidly again in 2012 – a large number likely to have been delayed purchases from 2011 in anticipation of the decrease in the VAT leasing rate from eight per cent to one per cent – resulting in a new record sales figure of 4,336 units. Sales remained in excess of 4,000 units in 2013 before a decline of 20 per cent last year. It should be noted, however, that this reflected the overall loss of confidence in the economy due to exchange rate and budgetary pressures rather than a decline the popularity and importance of the backhoe loader (as might be expected from the experienced of markets in Western Europe, for example). The growth in sales witnessed in the first few months of this year, as public expenditure at municipality level was increased in advance of the general elections in June, bears witness to this.

The standard machine sold in the Turkish market is now rated at 100 net horsepower and in the case of the leading suppliers, Hidromek and JCB, which together account for nearly 70 per cent of the market, around 40 per cent of sales are of four wheel steer models. The Turkish customer does not necessarily want electronics but is keen to make the machine as versatile as possible, by adding forks and using hammers. Some suppliers also note a liking for air conditioning and autoshift gearboxes, resulting in a really high specification product.

Production

The three manufacturers shown below have all been active in the backhoe loader sector since the early 1990s.

Table 17. Turkey: Production of Backhoe Loaders by Manufacturer, 2014

	Units	%
Hidromek	1,690	52
MST	1,183	37
Çukurova	350	11
Total	**3,223**	**100**

Source: Off-Highway Research

Hidromek has long manufactured two standard backhoe loaders rated at 100 horsepower, although in 2010 it launched a mini backhoe loader based on a skid-steer drive principle.

The 102B model is the rigid chassis 4WD type, while the 102S model is the 4-wheel steer and 4WD machine. Both are designed on similar lines to the products of the European market leaders and have capacities to equal or better them. The latest incarnation of the product is the new Supra series launched this year, which features a 4.5 litre turbocharged John Deere engine

compliant with Tier 3 and Stage 3a emissions regulations; Perkins engines are used for machines destined for markets with less strict emissions controls. The machines feature a new cab design, plastic hydraulic tanks, new lights and a Turner rather than ZF transmission.

The HMK62SS mini backhoe loader is powered by a 60 horsepower Kubota engine. This is a rigid frame, skid steer-machine weighing 3.5 tonnes which has been designed and developed in-house. The front loader bucket has a capacity of 0.35 m^3 (with a breakout force of 3,690 kgf) and the sideshift backhoe has a standard backhoe bucket capacity of 0.05 m^3 and digs down to 2.7 metres.

From 1975 to 1989 Mastaş, now owned by SANKO and marketed under the brand name **MST**, was purely a converter of agricultural tractors. It then began to build under licence from Benfra of Italy a fully competitive modern, European-style backhoe loader, but on an articulated chassis, which was not successful. The company continued to be mainly a converter of agricultural tractors until 1995, when it launched a competitor to the Hidromek type of machine. That machine, the MST, was based on the driveline supplied by ITL of the UK, a JCB subsidiary.

In November 2004 SANKO Otomotiv took over the company. It built a new plant in Gaziantep in 2005, and production of all MST-brand backhoe loaders was transferred there. In 2008 production of telescopic handlers was also initiated at the new plant. The Mastaş operation in Izmir remains an OEM manufacturer for mobile crushers and screening equipment, which are marketed in Turkey under the Mastaş brand name, and in export markets under various brand names. It also manufactures components such as frames, hydraulic cylinders and buckets for the production operation in Gaziantep. The backhoe loader product line currently consists of two models which are available as a rigid chassis 4WD type, or a four wheel steer and 4WD machine.

The smallest producer is **Çukurova**, whose product is made alongside its fork lift trucks, wheeled loaders and crawler excavators in a plant near Mersin through sister company Çumitaş. It now makes four different models of rigid two-wheel steered and four-wheel steered backhoe loaders. All models are rated at 100 horsepower.

Component Sourcing

Table 18. Turkey: Component Sourcing for Backhoe Loaders, 2015

	Çukurova	Hidromek	MST
Axles	ZF, Carraro	ZF, Carraro	Carraro
Buckets	In-house	In-house	In-house
Cabs	In-house	Hisarlar	In-house
Chassis	In-house	In-house	In-house
Control Valves	Parker, Bosch Rexroth, David Brown, Doosan	Husco, Bosch Rexroth	Husco
Engines	Perkins, John Deere	Perkins, John Deere	Perkins
Hydraulic Pumps	Eaton, Bosch Rexroth, Kawasaki, David Brown	David Brown	Casappa, Bosch Rexroth
Loaders	In-house	In-house	In-house
Transmissions	ZF, Carraro	ZF, Turner	Carraro
Tyres	Various	LasSA	Various

Source: Company Information

Çukurova has a long standing relationship with the UK engine manufacturer Perkins, which provides the engines for all but the largest model of Çukurova's backhoe loaders, which is fitted with a John Deere engine. ZF of Germany supplies most of the transmissions, and Carraro in Italy supplies the drivetrain on some backhoe loader models.

The **Hidromek** plant in Sincan, Ankara builds the chassis, fabricates buckets and makes both the loaders and the backhoes, as well cylinders. The company buys components with the guiding principle that everything which goes into the machine should be as good as the corresponding elements of any imported machine. Thus it began with JCB transmissions and axles, although the recently launched Supra series now incorporates John Deere engines and Turner drivetrains.

MST follows the same principles of building the chassis, buckets, loader and backhoe. It has switched from ITL to Carraro transmissions and axles, and fits Perkins engines to both models.

Market Shares

The market is effectively dominated by just two suppliers, JCB and the local manufacturer Hidromek, and between them they annually account for around 70 per cent of sales.

Hidromek usurped JCB's leading position in the sector in 2011, and has remained number one ever since. The company remains by far the most important local supplier, with a high reputation in municipalities and with private contractors. As a domestic manufacturer it is undeniably able

to compete aggressively on pricing terms, but the company's growth has also been the result of advances made in technology, greater reliability and robustness of the machines and, particularly in the case of the latest backhoe loaders, a visually appealing product.

Table 19. Turkey: Suppliers of Backhoe Loaders and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Hidromek	1,639	40	1,284	39
JCB	1,261	31	1,003	31
MST	496	12	428	13
Caterpillar	399	10	277	9
Volvo	124	3	123	4
Çukurova	40	1	82	3
New Holland	39	1	34	1
Terex	25	1	24	1
Case	-	-	19	1
Komatsu	42	1	18	1
Liugong	-	-	2	-
Total	**4,065**	**100**	**3,294**	**100**

Source: Off-Highway Research

JCB has historically occupied first place in the market and its dealer, SIF JCB makes most of its sales for JCB in this product. There is a large population of the 3CX model in Turkey, some of it dating from the days when there was a high tariff and it was able to outsell all other imported machines, equalling the volumes achieved by Hidromek.

Amongst the remaining suppliers the most successful is the local manufacturer **MST**, formerly **Mastaş**, which has increased its market share since responsibility for sales and marketing was taken over by the SANKO dealer organisation. **Caterpillar**, with Borusan Makina, and **Volvo**, represented by the Ascendum organisation, are the best-selling imported machines after JCB.

The full list of suppliers is shown below.

Table 20. Turkey: Distribution Networks of Suppliers of Backhoe Loaders, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Case	TürkTraktör	**SANKO (MST)**	SANKO Makina
Caterpillar	Borusan Makina	**New Holland**	TürkTraktör
Çukurova	Çukurova Ziraat	**Terex**	Hasel
Hidromek	Hidromek	**Venieri**	Özmak
JCB	SIF JCB	**Volvo**	Ascendum
Komatsu	Temsa		

Source: Company Information

Population and End-Users

The huge volume of sales during recent years has meant that the backhoe loader population has grown again since the last report in 2012. In the past 10 years alone sales of new machines have totalled some 30,000 units. What's more, the average life for a backhoe loader in Turkey is much longer than in other parts of Europe, about 12 years, and it is unlikely that many machines will have been scrapped during this period. The longevity of these products can be seen in the prices they attain when sold second, third or even fourth hand: a three-year old machine with 5,000 hours on the clock from one of the two leading suppliers can achieve as much as 75 per cent of its initial purchase price.

Municipalities still occasionally favour them as all-purpose tools, which can dig for drains in the summer or shovel snow in the winter. The main buyers, however, are the typical small contractors, often owner-operators, which one would recognise as the ideal users in any other European market.

Table 21. Turkey: Population of Backhoe Loaders by Type of User, 2015

	Units	%
General Construction	19,800	60
Civil Engineering	8,250	25
Local Government	3,300	10
Others	1,650	5
Total	**33,000**	**100**

Source: Off-Highway Research

Forecast to 2019

Table 22. Turkey: Forecast Sales of Backhoe Loaders, 2015-2019

(Units)

2015	2016	2017	2018	2019
3,300	3,100	3,300	3,400	3,200

Source: Off-Highway Research

The market for construction equipment in general rose during the first five months of 2014, as a result of the government's pre-election largess, but a particular beneficiary was the backhoe loader market. There is a direct corollary between public spending on construction work at a municipality level and sales of the ubiquitous backhoes that then put these plans into practice. Nevertheless, this rise in sales is likely to have now peaked after the elections yielded no certain outcome and the fundamental concerns about budget deficits and exchange rates remain. As a result, the market for backhoes is likely to remain flat or slightly up on last year.

Most suppliers are confident that demand will continue to rise in the short to medium term, albeit at a reduced rate compared to that seen in 2010-2011, and the outlook for sales of backhoe loaders remains highly favourable, even if there could be a slow drop-off in sales towards the end of the forecast period. The government has pledged to invest a vast amount of money in several major infrastructure projects over the next 11 years, in anticipation of the 100th anniversary in 2023 of the founding of the Turkish Republic. Of particular significance to suppliers of backhoe loaders is the proposed $400 billion investment outlined for so-called Urban Transformation projects, which entail the widespread demolition of old buildings and the modernisation of inner city areas throughout Turkey.

The large population of backhoe loaders alone is sufficient to ensure a buoyant replacement market for the foreseeable future, although in the longer term some suppliers believe that sales may be impacted to some extent by the growing trend towards compact equipment, specifically mini excavators, whose benefits of lower running costs are slowly being recognised by the backhoe loader customer base.

Machines Available

The types of machine in the table below are:

R – Rigid chassis A – Articulated chassis 4WS – Four wheel steer

Service weights are approximate, as the choice of backhoe can increase the weight by 200 kilograms or more.

Table 23. Turkey: Backhoe Loaders Available, 2015

Manufacturer	Model	Type	Engine		Max Service Weight (Tonnes)	Product Source
			Net HP	Manufacturer		
Case	580 ST	R	97	FPT	8.1	Italy
	590 ST	R	110	FPT	8.1	Italy
	695 ST	4WS	110	FPT	8.8	Italy
Caterpillar	428F	R	95	Caterpillar	10.2	UK
	432F	R	102	Caterpillar	10.8	UK
	444F	4WS	102	Caterpillar	11.3	UK
Çukurova	880	R	94	Perkins	8.5	Turkey
	883	R	100	Perkins	8.7	Turkey
	885	R	100	Perkins	8.9	Turkey
	888	4WS	100	John Deere	9.7	Turkey
Hidromek	62 SS	R	59	Kubota	3.8	Turkey
	102B	R	100	John Deere, Perkins	8.9	Turkey
	102S	4WS	100	Perkins	9.3	Turkey
JCB	1CX	R	50	Perkins	2.9	UK
	JCB 1CXT	R	49	Perkins	4.3	UK
	Midi CX	4WS	50	Perkins	4.2	UK
	JCB 3CX ECO	R	75/92/109	JCB	7.4-8.4	UK
	3CX Super	R	92	JCB	7.4-8.4	UK
	JCB 4CX ECO	4WS	109	JCB	8.2	UK
	JCB 4CN	4WS	109	JCB	8.7	UK
	JCB 5CXWM	4WS	109	JCB	10.6	UK
Komatsu	WB93R-5	2WS	99	Komatsu	8.1	Italy
	WB97R-5	2WS	99	Komatsu	8.2	Italy
	WB93S-5	4WS	99	Komatsu	8.6	Italy
	WB97S-5	4WS	99	Komatsu	8.7	Italy
New Holland	B100C	R	97	FPT	8.1	Italy
	B110C	R	110	FPT	8.2	Italy
	B115C	4WS	110	FPT	9.1	Italy

(continued)

Table 23. Turkey: Backhoe Loaders Available, 2015 (continued)

Manufacturer	Model	Type	Engine		Max Service Weight (Tonnes)	Product Source
			Net HP	Manufacturer		
Sanko	MST542	R	100	Perkins	8.9	Turkey
	MST544	R	100	Perkins	9.2	Turkey
	MST642	R	100	Perkins	8.9	Turkey
	MST644	R	100	Perkins	9.2	Turkey
Terex	TLB840	R	94	Perkins	7.9	UK
	TX760B	4WS	94	Perkins	6.9	UK
	TLB840	4WS	94	Perkins	7.2	UK
	TLB850	4WS	94	Perkins	8.2	UK
	TLB890	4WS	100	Perkins	8.2	UK
	TLB990	4WS	100	Perkins	8.4	UK
Volvo	BL 61B	4WS	83	Volvo	8.2	Poland
	BL 71B	4WS	91	Volvo	8.6	Poland

Source: Company Information

COMPACTION EQUIPMENT

Market Size and Trends

Sales of compaction equipment depend on both soil compaction and asphalt surface preparation, in the ratio of 60 to 40 respectively. There remains also a small market for Pneumatic Tyre Rollers (PTRs), a legacy of a traditional approach to road building no longer widely adopted (see below).

Table 24. Turkey: Sales of Ride-On Compaction Equipment, 2010-2014

(Units)

2010	2011	2012	2013	2014
600	966	800	741	565

Source: Off-Highway Research

Demand is inevitably dependent on government spending on road building programmes, and can therefore vary dramatically from year to year. Self-propelled earth rollers, or single drum soil compactors, tend to be subject to the greatest variance in demand, since they are invariably bought in a hurry by contractors who want to buy wheeled loaders, hydraulic excavators and

trucks, all at the same time, because they have just won a certain job. The recent deals for over 100 rollers for use on the third Istanbul airport are a case in point.

In the aftermath of the 2001 financial crisis all new road work stopped, and sales of all types of compactors slumped to 50 units. The picture finally began to improve by 2003 and, during the next four years, demand surged ahead at an incredible pace as a result of the construction sector boom, culminating in 2006 in the highest recorded level of sales, at around 700 units. The market finally began to slow down in the second half of 2007 as government investment in road building and infrastructure projects declined, and political and economic uncertainty took over. Demand recovered slightly in 2009, and more strongly in 2010 as the Turkish economy began to shake off the effects of the global financial crisis. The instigation of wide ranging construction projects in 2011 led to an unprecedented level of growth in the compaction equipment sector, and sales surged by over 60 per cent.

Since then, the market has been characterised by high levels in 2012 and 2013, albeit sustained by sales to a few major projects – the third Istanbul airport, as already mentioned, and the third Bosphorous crossing, for example. Underlying lack of certainty in the country's politics and economy was revealed last year as sales dropped below 600 units for the first time since 2009.

In the recent past many bituminous road surfaces were not subject to traditional hot-mix asphalt, and therefore the demand for asphalt rollers was limited. Apart from the motorways, ring roads and main roads, many Turkish roads were covered with tarred aggregate. In this practice the aggregate is rolled flat with a self-propelled roller, sprayed with tar, covered with stone chips and rolled again, with a PTR. More recently, the government highway authorities have become aware of the limitations of this inferior substitute and have switched to hot-mix asphalt wherever possible. As a result, demand for asphalt rollers has increased.

The analysis above excludes light compaction equipment. The markets for tampers and plates are dominated by local producers, whose prices are often only one third of those of imported machines. The two most popular products are the 65 kilogram tamper and the single direction vibrating plate, in sizes from 75 to 200 kilograms. Pedestrian rollers are less popular than one might imagine in a country where manual labour is relatively cheap, with annual sales typically between 50 and 200 units each year, although trade association figures suggest a market of 270 units in 2014. Contractors use the small plates to compact earth after the digging of small trenches. If they have major work to do, they prefer large rollers.

In the late 1990s contractors changed their practices and began to buy **tandem rollers** of 1.0 to 4.0 tonnes for repairing the asphalt in cities; and municipalities realised that this size was quite adequate for the type of work which they have to do on the existing road network. A more recent new application for small tandem rollers has been in the compaction of foundations for new buildings. The market is currently split equally between large tandems, of which the most popular size category are 8-10 tonne machines, and small tandems, of which the 2.5 tonne machine predominates.

Self-propelled rollers are used exclusively for earth compaction. Demand for this type of compactor has grown enormously during recent years. The preferred size for a small machine is 12-13 tonnes. These machines can be used by all types of contractor, large and small, and it is in this area where the greatest price competition arises, even if there is no local manufacturer. This sector accounts for around two thirds of total sales. The large machines, which are of 15 to 19 tonnes' weight, are in the hands of the largest companies which can undertake the very big road and dam projects. 19 tonnes is usually the largest size used, because it creates a machine which is about 2.2 metres wide, the practical limit for transport by road without a police escort, although in special cases such as airport projects machines of up to 26 tonnes can be used. The market for 5-7 tonne machines is forecast to grow as they replace the use of small tandem rollers in foundation compaction applications, but currently represents less than 10 per cent of the total.

Pneumatic-tyred rollers are by the nature of their design, very long-lived machines and the replacement level is never likely to be very high. The market was traditionally between 10 and 20 units each year, although during recent years expanded to around 100 units, many of which went abroad. Now a market of some 40 units annually is typical.

Static rollers account for approximately 5 units per year.

Production

More than 10 small producers of light equipment continue to gain a living, as they can make products such as tampers and plates from imported components and local steel at very low prices. As such it is very difficult for the established suppliers to compete against them. The most prominent of these is **Palme**, based in Ankara, which manufactures a wide variety of light compaction equipment ranging from vibrating plates to 2.8 tonne tandem rollers. The company was established in 1996 and exports its products to 26 countries in Europe, Middle East, Russia and the CIS countries.

Market Shares

Table 25. Turkey: Suppliers of Compaction Equipment and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Bomag	235	32	225	40
Hamm	187	25	113	20
Atlas Copco	45	6	65	12
Caterpillar	81	11	45	8
Ammann	120	16	41	7
JCB	37	5	23	4
Volvo	22	3	18	3
Wacker Neuson	-	-	18	3
Hyundai	-	-	9	2
Liugong	10	1	6	1
XCMG	4	1	2	-
Total	**741**	**100**	**565**	**100**

Source: Off-Highway Research

Bomag is still with Karyer, part of the Tatmak group, a dealer that concentrates on the heavier types of compaction equipment. It sells some tampers and plates, but has strong competition from local manufacturers like Dalca, Matsun and Palme. It has long maintained a market share of 40 per cent or above, a position it managed to return to last year after a slump to just 32 per cent in 2013. One trump card it possesses after such a long period of prominence is the value of its machines in the second hand market, which in turn is a major strength in sales of new models.

Hamm's presence in the compaction sector has increased significantly since the establishment of the Wirtgen subsidiary company in Ankara. It is now the leading challenger to Bomag, doing slightly better in the soil-compaction sector than the tandem roller sector.

Atlas Copco has made significant progress recently, thanks to the renewed focus of its dealer, Enka. This has largely come at the expense of **Caterpillar**, which nevertheless benefits from its ability to put together large package deals of assorted equipment, and **Ammann**, sales having been affected by the recent transition to a new dealer.

JCB, **Volvo** and **Wacker Neuson** are all active in this sector, while the significance of package deals to major suppliers has lead **Hyundai** to establish an OEM agreement with Atlas of Germany to allow it to provide own-brand machines to sell alongside its excavators and other products.

The presence of several Chinese manufacturers was a growing feature of the market at the time of the last report. Nevertheless, even the ability of **LiuGong** and **XCMG** to sell machines at up to 50 per cent below the price of Western manufacturers' machines has not facilitated a subsequent expansion of their presence in the sector.

The full list of suppliers is shown below.

Table 26. Turkey: Distribution Networks of Suppliers of Compaction Equipment, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Ammann	TSM Global	**LiuGong**	Uygunlar
Atlas Copco	Enka	**Palme**	Direct Sales
Bomag	Karyer	**Volvo**	Ascendum
Caterpillar	Borusan Makina	**Wacker Neuson**	Wacker Neuson
Hamm	Wirtgen Ankara	**XCMG**	Özmak Makina
JCB	SIF JCB		

Source: Company Information

Population and End-Users

Table 27. Turkey: Population of Ride-on Compaction Equipment by Type of User, 2015

	Units	%
General Contractors	4,200	47
Road Contractors	3,000	33
State Authorities	1,000	11
Municipalities	500	6
Road Surfacing Specialists	300	3
Total	**9,000**	**100**

Source: Off-Highway Research

There are about 3,000 tandem asphalt rollers and 5,500 self-propelled rollers in use; the remainder of the existing fleet is made up of static or PTR machines. The lighter types are impossible to count, but it is an indication of the relative historical unpopularity of the pedestrian type that one cannot estimate its population at any more than 1,000 machines today, a very small amount given their low purchase price and capacity for work, and notwithstanding the relatively high levels of sales recorded last year.

In the past, the state organisations like the highways and rural services authorities were the main buyers, especially for the large machines, and typically accounted for around 60 per cent of overall sales. These machines also went in large numbers to the State Hydraulic Works for dams

and irrigation canals. Increasingly, however, private contractors have become the main end-users of compaction equipment and sub-contract their services to the government and local municipalities. There is also some evidence of a still small but growing segment of the market made up of specialist compaction rental companies such as Kromyol.

Forecast to 2019

Demand for asphalt and soil compactors has been extremely healthy was lower than expected last year given an assumed annual average market of at least 700 machines. This reflects the extent to which sales of these products are related closely to the confidence of contractors in the economy and the government's budgetary and spending plans, both of which are closely linked.

Nevertheless, there is a huge amount of outstanding infrastructure and road building projects to complete over the next 20 years, much of which will require the use of soil and asphalt compactors. The forecast does, however, assume the release of the requisite funding by the government and the maintenance of economic and political stability in the country.

Table 28. Turkey: Forecast Sales of Compaction Equipment, 2015-2019

(Units)

2015	2016	2017	2018	2019
650	600	700	750	800

Source: Off-Highway Research

Machines Available

Table 29. Turkey: Compaction Equipment Available, 2015

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Tandem					
Ammann	ARX12	1.5	18	Yanmar	Switzerland
	ARX16	1.6	18	Yanmar	Switzerland
	ARX20	1.7	18	Yanmar	Switzerland
	ARX23	2.5	27	Yanmar	Switzerland
	ARX26	2.8	27	Yanmar	Switzerland
	ARX32	3.1	27	Yanmar	Switzerland
	ARX33	3.6	27	Yanmar	Switzerland
	ARX40	3.9	27	Yanmar	Switzerland

(continued)

Table 29. Turkey: Compaction Equipment Available, 2015 (continued)

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Ammann (continued)	AV70X	6.9	80	Cummins	Czech Republic
	AV70-2	7.3	84	Cummins	Czech Republic
	AV80X	7.6	80	Cummins	Czech Republic
	AV85-2	8.6	84	Cummins	Czech Republic
	AV95-2	9.5	84	Cummins	Czech Republic
	AV110X	10.4	99	Cummins	Czech Republic
	AV115-2	11.6	110	Cummins	Czech Republic
	AV130X	13.0	130	Cummins	Czech Republic
Atlas Copco	CC800	1.6	23	Perkins	Sweden
	CC900	1.6	23	Perkins	Sweden
	CC900S	1.6	23	Perkins	Sweden
	CC1000	1.7	23	Perkins	Sweden
	CC1100	2.4	35	Kubota	Sweden
	CC1200	2.6	35	Kubota	Sweden
	CC1300	3.9	44	Kubota	Sweden
	CC1100C	2.3	35	Kubota	Sweden
	CC1200C	2.4	35	Kubota	Sweden
	CC1300C	3.8	44	Kubota	Sweden
	CC2200	7.7	99	Deutz	Sweden
	CG2300	8.5	99	Deutz	Sweden
	CG3200	8.1	99	Deutz	Sweden
	CC3300	9.0	99	Deutz	Sweden
	CC3800	9.4	99	Deutz	Sweden
	CC4200	10.2	130	Cummins	Sweden
	CC5200	11.3	130	Cummins	Sweden
	CC6200	12.0	160	Cummins	Sweden
	CC7200	16.8	220	Cummins	Sweden
Bomag	BW80AD-5	1.5	20	Kubota	Germany
	BW90AD-5	1.6	20	Kubota	Germany
	BW90SC-5	1.6	20	Kubota	Germany
	BW100ADM-5	1.7	20	Kubota	Germany
	BW100SC-5	2.4	33	Kubota	Germany
	BW100ACH	2.3	33	Kubota	Germany
	BW120AC-4	2.4	33	Kubota	Germany
	BW125AC-4	3.0	33	Kubota	Germany
	BW135AD	3.6	46	Deutz	Germany
	BW138AC-5	4.3	46	Deutz	Germany
	BW141AD-4	6.9	80	Deutz	Germany
	BW154AD-4	8.7	80	Deutz	Germany
	BW151AC-4	9.8	84	Cummins	Germany
	BW161AD-4	10.3	101	Deutz	Germany
	BW190AD-4	11.5	134	Deutz	Germany
	BW202AD-4	11.5	134	Deutz	Germany
	BW203AD	13.2	134	Deutz	Germany

(continued)

Table 29. Turkey: Compaction Equipment Available, 2015 (continued)

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Caterpillar	CB14B	1.6	22	Caterpillar	France
	CB22	2.5	34	Caterpillar	France
	CB24	2.7	34	Caterpillar	France
	CB32	3.2	34	Caterpillar	France
	CB34	3.9	46	Caterpillar	France
	CB34XW	4.2	46	Caterpillar	France
	CD44B	7.4-8.4	100	Caterpillar	France
	CB44B	8.2-9.3	100	Caterpillar	France
	CD54B	9.0-10.1	131	Caterpillar	France
	CB54B	9.7-10.7	131	Caterpillar	France
Hamm	HD8VV	1.4	21	Hatz	Germany
	HD10CVV	1.6	21	Hatz	Germany
	HD10VV	2.3	30	Hatz	Germany
	HD12VV	2.5	30	Hatz	Germany
	HD13VV	3.7	40	Hatz	Germany
	HD14VV	4.2	40	Hatz	Germany
	HD70	7.3	86	Deutz	Germany
	HD070V ASC	7.7	86	Deutz	Germany
	HD75	7.7	86	Deutz	Germany
	DV65VV	7.9	87	Deutz	Germany
	DV70VV	7.9	87	Deutz	Germany
	HD75.4 ASC	8.0	86	Deutz	Germany
	HD075V ASC	8.1	86	Deutz	Germany
	HD90	9.2	136	Deutz	Germany
	HD+90VV	9.4	136	Deutz	Germany
	DV85VV	9.6	102	Deutz	Germany
	HD090V	9.6	136	Deutz	Germany
	DV90VV	9.6	102	Deutz	Germany
	HD90.4 ASC	9.8	136	Deutz	Germany
	HD110	10.5	136	Deutz	Germany
	HD+110VV	10.7	136	Deutz	Germany
	HD+120VV	12.8	136	Deutz	Germany
	HD+140VV	13.4	136	Deutz	Germany
JCB Vibromax	VMT160	1.6	23	Kubota	Germany
	VMT380/430	3.8-4.3	46	Kohler	Germany
	VMT860	8.7	85	JCB	Germany
Volvo	DD15	1.5	20	Kubota	USA
	DD25	2.5	33	Kubota	Germany
	DD85	8.7	81	Deutz	Germany
	DD95	9.6	81	Deutz	Germany
Wacker Neuson	RD16-90/100	1.5	23	Lombardini	Germany
	RD27-100/120	2.6-2.8	33	Perkins	Germany

(continued)

Table 29. Turkey: Compaction Equipment Available, 2015 (continued)

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Single Drum Vibratory					
Ammann	RW1805	2.1	41	Lombardini	Germany
	RW1815	2.3	41	Lombardini	Germany
	RW3005	3.2	50	Kubota	Germany
	RW5005	4.8	69	Kubota	Germany
	ASC70	7.1	101	Cummins	Czech Republic
	ASC90	8.9	101	Cummins	Czech Republic
	ASC110	11.5	158	Cummins	Czech Republic
	ASC130	12.4	158	Cummins	Czech Republic
	ASC150	14.4	158	Cummins	Czech Republic
	ASC200	20.7	208	Cummins	Czech Republic
	ASC250	25.3	208	Cummins	Czech Republic
Atlas Copco	CA1300D	5.0	74	Deere	Sweden
	CA1300PD	5.0	74	Deere	Sweden
	CA1500D	7.0	74-100	Cummins	Sweden
	CA1500PD	7.0	74-100	Cummins	Sweden
	CA2500D	10.3	111-131	Cummins	Sweden
	CA2500PD	11.2	111-131	Cummins	Sweden
	CA2800D	12.2	131	Cummins	Sweden
	CA3500D	12.1	131-161	Cummins	Sweden
	CA3500PD	12.1	131-161	Cummins	Sweden
	CA3600D	12.5	173-174	Cummins	Sweden
	CA3600PD	12.5	173-174	Cummins	Sweden
	CA400D	13.3	161	Cummins	Sweden
	CA4000PD	13.3	161	Cummins	Sweden
	CA4600D	13.7	131-161	Cummins	Sweden
	CA4600PD	13.6	131-161	Cummins	Sweden
	CA5000D	16.2	131-161	Cummins	Sweden
	CA5000PD	16.5	131-161	Cummins	Sweden
	CA5500D	18.4	131-161	Cummins	Sweden
	CA5500PD	18.2	131-161	Cummins	Sweden
	CA6000D	19.5	203	Cummins	Sweden
	CA6000PD	19.3	203	Cummins	Sweden
	CA6500D	20.9	203	Cummins	Sweden
Bomag	BW124DH-3	3.3	44	Deutz	Germany
	BW145DH-3	3.4	44	Deutz	Germany
	BW177D-4/DH-4	7.4-7.5	75-101	Deutz	Germany
	BW179DH-4	9.4	101	Deutz	Germany
	BW211D-4	11.0	131	Deutz	Germany
	BW213D-4/DH-4	12.5	131-153	Deutz	Germany
	BW214DH-4	14.4	153	Deutz	Germany
	BW216D-4/DH-4	15.7	153-201	Deutz	Germany
	BW219DH-4	19.2	201	Deutz	Germany
	BW226DH-4	25.2	201	Deutz	Germany

(continued)

Table 29. Turkey: Compaction Equipment Available, 2015 (continued)

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Caterpillar	CS44	7.0	101	Caterpillar	France
	CP54	12.4	132	Caterpillar	France
	CS54/CS54XT	12.4	130	Caterpillar	France
	CP56	12.5	158	Caterpillar	France
	CS56	12.6	158	Caterpillar	France
	CS68B	14.3	157	Caterpillar	France
	CP64	14.5	158	Caterpillar	France
	CS64	14.5	158	Caterpillar	France
	CP74	15.6	158	Caterpillar	France
	CS74	15.7	158	Caterpillar	France
	CP76	17.1	177	Caterpillar	France
	CS78B	18.7	174	Caterpillar	France
	CS76/CS76XT	18.9	177	Caterpillar	France
Hamm	H11i	11.5	141	Deutz	Germany
	H11iP	11.9	141	Deutz	Germany
	H13i	13.0	141	Deutz	Germany
	H13iP	13.4	141	Deutz	Germany
	H13i Vio	12.7	141	Deutz	Germany
	H16i	16.1	141	Deutz	Germany
	H16iP	16.2	141	Deutz	Germany
	H18i	21.9	214	Deutz	Germany
	H18iP	22.3	214	Deutz	Germany
	H20i	19.6	214	Deutz	Germany
	H20iP	21.8	214	Deutz	Germany
	H25i	24.8	214	Deutz	Germany
	HD13VT	3.5	40	Hatz	Germany
	HD14VT	3.8	40	Hatz	Germany
	HD70K	7.0	86	Deutz	Germany
	HD75K	7.3	86	Deutz	Germany
	DV65TV	7.5	87	Deutz	Germany
	DV70TV	7.5	87	Deutz	Germany
	HD90K	8.6	136	Deutz	Germany
	DV85TV	8.9	102	Deutz	Germany
	DV90TV	8.9	102	Deutz	Germany
	HD110K	9.2	136	Deutz	Germany
JCB Vibromax	VM 46D/PD	4.6	60	Cummins	Germany
	VM 75D/PD	7.3	84	JCB	Germany
	VM 115D/PD	11.3	130	JCB	Germany
	VM 132D/PD	12.2	145	JCB	Germany
	VM 146D/PD	13.0	161	JCB	Germany
	VM 166D/PD	16.4	173	Cummins	Germany
	VM 200D/PD	19.7	173	Cummins	Germany
LiuGong	612H	12.3	150	Cummins	Germany
Volvo	SD130	12.8	162	Cummins	Germany

(continued)

Table 29. Turkey: Compaction Equipment Available, 2015 (continued)

Type/Manufacturer	Model	Operating Weight (Tonnes)	Engine		Product Source
			HP	Manufacturer	
XCMG	XS122	12.0	125	Perkins	China
Pneumatic-Tyred Rollers					
Ammann	AP240H	9.9-9.4	99	Cummins	Czech Republic
Atlas Copco	CP142	6.0	99	Cummins	Sweden
	CP224	9.5	99	Cummins	Brazil
	CP274	10.8	99	Cummins	Brazil
Bomag	BW24R	10.0	95	Cummins	Germany
	BW24RH	8.7	99	Deutz	Germany
	BW27RH	13.2	99	Deutz	Germany
Caterpillar	CW34	10.0	131	Caterpillar	USA
Hamm	GRW280i-10	9.3	114	Deutz	Germany
	GRW280i-12	11.6	114	Deutz	Germany
	GRW280i-16	15.4	114	Deutz	Germany
	GRW280i-20	19.6	114	Deutz	Germany
	GRW280i-24	23.7	114	Deutz	Germany
	GRW280i-28	27.3	114	Deutz	Germany
Volvo	PT240R	26.0	99	Cummins	Germany
Static					
Hamm	HW90B/10	10.7	77	Deutz	Germany
	HW90B/12	12.5	77	Deutz	Germany
Dynapac	CS142	13.2	99	Cummins	Sweden

Source: Company Information

CRAWLER DOZERS

Market Size and Trends

Demand for crawler dozers has essentially remained stable at around 100 units annually due to the on-going requirement for road and railway construction and for the removal of overburden in the coal mining sector and, to a lesser extent, in copper, gold and silver mines. Such variation as does occur in the market is due to the periodic starting of specific major projects. Of particular significance to dozer sales in the recent past has been the third Istanbul airport. Sales of dozers to this one project accounted for roughly half of all those recorded in the country last year. It might be argued that this high proportion of sales going to one project masks a decline in the

'real' market. However, the 'reality' of the current domestic construction machinery market is that such major projects constitute a significant if irregular source of machine sales, and must therefore not be dismissed as misleading one-offs.

The predominant size of dozer sold in Turkey is of 310 or 350 horsepower, typified by the Caterpillar D8 and Komatsu D155, which is the class of machine most frequently specified by the coal mining industry and by contractors working on highway or dam construction. There is also growing demand for 250 horsepower dozers in the Caterpillar D7 or Komatsu D85 class for use on smaller road construction and maintenance projects, or for layering of overburden.

Dozers tend to be specified fairly simply, with the customer looking for robustness more than sophistication. In nearly all cases the dozer is used for ripping duties and the removal of very hard surface materials as opposed to light duty earthmoving applications, which are typically carried out by graders, wheeled loaders or hydraulic excavators. As a result there is little or no demand for 150 horsepower dozers in the Caterpillar D6 class.

Table 30. Turkey: Sales of Crawler Dozers, 2010-2014

(Units)

2010	2011	2012	2013	2014
84	101	99	95	125

Source: Off-Highway Research

Market Shares

Caterpillar has traditionally been the largest supplier of crawler dozers to Turkey and is particularly successful in the high horsepower categories with its D8 and D9 machines.

Komatsu is an effective challenger to Caterpillar and has begun to recoup some of the ground lost earlier in the decade as a result of unfavourable currency exchange rates which rendered its Japanese sourced machines less competitive. In recent years its dealer, Temsa, has adopted a specific marketing policy directed at large Turkish contracting companies working abroad, and at the domestic mining and quarrying sectors.

Liebherr machines were sold until the beginning of 2008 by the company which used to represent Caterpillar, namely Çukurova Ithalat. Liebherr has now established its own subsidiary company in Turkey, although secures only a small volume of incremental sales.

Table 31. Turkey: Suppliers of Crawler Dozers and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Caterpillar	55	58	83	66
Komatsu	31	33	40	32
Liebherr	2	2	2	2
LiuGong	7	7	-	-
Total	**95**	**100**	**125**	**100**

Source: Off-Highway Research

The only other active supplier is **LiuGong**, which is confident of increasing its presence in the sector, having already sold four units in 2015.

The full list of suppliers is shown below.

Table 32. Turkey: Distribution Networks of Suppliers of Crawler Dozers, 2015

Manufacturer	Supplier
Caterpillar	Borusan Makina
Komatsu	Temsa
Liebherr	Liebherr Turkey
LiuGong	Uygunlar

Source: Company Information

Population and End-Users

Approximately 3,000 crawler dozers are still active in Turkey, if one assumes that many of the machines bought by the government in the middle of the 1980s are still in operation. Since 1990 nearly all the new machines purchased have gone to the private sector, which tends to use them for the duration of a contract and then scrap them.

Table 33. Turkey: Population of Crawler Dozers by Type of User, 2015

	Units	%
Government Directorates	1,800	60
Civil Engineering	900	30
Mining	300	10
Total	**3,000**	**100**

Source: Off-Highway Research

Forecast to 2019

Table 34. Turkey: Forecast Sales of Crawler Dozers, 2015-2019

(Units)

2015	2016	2017	2018	2019
125	90	100	125	140

Source: Off-Highway Research

The dozer market is traditionally a stable sector due to regular replacement demand from the mining industry and road building contractors. The massive programme of proposed infrastructure projects due to be completed by 2023 should help to sustain dozer sales at relatively healthy levels for the next five years at least, though the market will undoubtedly fluctuate from year to year depending on the timing of certain big projects.

Machines Available

Table 35. Turkey: Crawler Dozers Available, 2015

Manufacturer	Model	Engine		Weight (Tonnes)	Product Source
		HP	Manufacturer		
Caterpillar	D4K-2 XL/LGP	92	Caterpillar	8.2	Japan
	D5K-2 XL/LGP	104	Caterpillar	9.3	Japan
	D6N XL/LGP	151	Caterpillar	16.6	France
	D6T/WH	207	Caterpillar	20.9	France
	D7E/WH	237	Caterpillar	26.7	USA
	D8T/WH	313	Caterpillar	39.8	USA
	D9T/WH	414	Caterpillar	50.1	USA
	D10T/WH	586	Caterpillar	66.5	USA
	D11T	858	Caterpillar	104.3	USA
Komatsu	D37EX/PX-22	91	Komatsu	8.3-8.7	Japan
	D51EX/PX-22	133	Komatsu	12.8-13.1	Brazil
	D61EX/PX-23	169	Komatsu	17.8-18.7	Brazil
	D65EX/PX-17	219	Komatsu	22.6-22.9	Japan
	D85EX/PX-15	261	Komatsu	27.7-28.1	Japan
	D155AX-6	354	Komatsu	39.5	Japan
	D275AX-5	452	Komatsu	49.9	Japan
	D375A-6	636	Komatsu	71.6	Japan
	D475A-5	900	Komatsu	108.0	Japan
	D575	1,150	Komatsu	131.4	Japan
Liebherr	PR714	121	Liebherr	11.8-13.6	Austria
	PR724	161	Liebherr	16.7-19.5	Austria
	PR734	201	Liebherr	20.4-24.9	Austria

(continued)

Table 35. Turkey: Crawler Dozers Available, 2015 (continued)

Manufacturer	Model	Engine		Weight	Product
		HP	Manufacturer	(Tonnes)	Source
Liebherr (continued)	PR744	248	Liebherr	24.6-31.7	Austria
	PR754	335	Liebherr	34.9-40.8	Austria
	PR764	417	Liebherr	44.2-52.6	Austria
LiuGong	CLGB160	170	Weichai	16.6	China
	CLGB161	180	Weichai	18.9	China
	CLGB230	220	Cummins	23.5	China
	CLGB320	325	Cummins	35.9	China

Source: Company Information

CRAWLER LOADERS

Market Size and Trends

Table 36. Turkey: Sales of Crawler Loaders, 2010-2014

(Units)

2010	2011	2012	2013	2014
12	19	8	7	7

Source: Off-Highway Research

Until the late 1980s the crawler loader was the favourite general purpose loading and excavating machine for all work – whether in the public sector or the private. The government bought hundreds of them in the 1980s but then, as those tenders disappeared the private sector reappraised the tasks which they performed and came out in favour of hydraulic excavators for the excavating work.

By the mid-1990s interest in buying new machines fell to an extremely low level and the market collapsed to under 20 units per year, a level from which it has not recovered. Users carried on rebuilding some of the existing machines, for the population largely consists of Caterpillar models 955 and 953 for which parts are easily obtained.

Market Shares

Table 37. Turkey: Suppliers of Crawler Loaders and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Caterpillar	6	86	6	86
Liebherr	1	14	1	14
Total	**7**	**100**	**7**	**100**

Source: Off-Highway Research

Caterpillar has historically been the largest supplier of crawler loaders to Turkey, and the company has a very long history with the product since the days when the domestic manufacturer Çukurova used to produce Caterpillar crawler loaders under licence. This has continued with Borusan Makina, the new dealer, which continues to pick up replacement business with those few who stay loyal to the machine. The only other supplier active in the sector is **Liebherr**, which has achieved a nominal number of sales over the years.

Table 38. Turkey: Distribution Networks of Suppliers of Crawler Loaders, 2015

Manufacturer	Supplier
Caterpillar	Borusan Makina
Liebherr	Liebherr Turkey

Source: Company Information

Population and End-Users

In the 1990s the population of crawler loaders halved to around 1,500, admittedly old, machines at work in various parts of the country. There are now only around 100-150 machines working which are 10 years old or less (as opposed to 500 in 1998) and an indeterminate number of machines from 10 to 15 years old, perhaps 500 surviving. The alternative offered by the hydraulic excavator has virtually wiped out demand for the crawler loader, in Turkey as in almost every European market.

The main users now are private contractors.

Table 39. Turkey: Population of Crawler Loaders by Type of User, 2015

	Units	%
General Contractors	250	50
Industry	100	20
Government Directorates	75	15
Army	50	10
Quarries and Mines	25	5
Total	**500**	**100**

Source: Off-Highway Research

Forecast to 2019

The steel industry needs crawler loaders in slag collection and disposal, with many small electric arc furnaces around the coast still processing European scrap metal into steel wire. Municipalities need them on refuse tips and some contractors need them on difficult ground. Sales will probably be relatively constant over the next five years, though at a very low level as the public sector is unlikely to return to the market.

Table 40. Turkey: Forecast Sales of Crawler Loaders, 2015-2019

(Units)

2015	2016	2017	2018	2019
10	7	8	10	15

Source: Off-Highway Research

Machines Available

Table 41. Turkey: Crawler Loaders Available, 2015

		Engine		Weight	Product
Manufacturer	**Model**	**HP**	**Manufacturer**	**(Tonnes)**	**Source**
Caterpillar	953D	148	Caterpillar	15.6	France
	963D	189	Caterpillar	21.4	France
	973D	263	Caterpillar	28.0	France
Liebherr	LR624	143	Liebherr	16.9-18.6	Austria
	LR634	175	Liebherr	20.8-22.7	Austria

Source: Off-Highway Research

DUMP TRUCKS

Market Size and Trends

Table 42. Turkey: Sales of Dump Trucks by Type, 2010-2014

	2010		2011		2012		2013		2014	
	Units	%	Units	%	Units	%	Units	%	Units	%
Articulated	29	100	96	100	19	100	13	57	68	92
Rigid	-	-	-	-	-	-	10	43	6	8
Total	**29**	**100**	**96**	**100**	**19**	**100**	**23**	**100**	**74**	**100**

Source: Off-Highway Research

Articulated Dump Trucks

Interest in using articulated dump trucks in quarrying or civil engineering has not yet developed in Turkey. The reason is that potential users prefer locally produced on/off-highway trucks, which cost around a quarter of the price of an articulated dump truck. Indeed many of the mines and quarries do not regard the articulated dump truck as an important item of machinery, and prefer to invest their capital in crawler excavators and wheeled loaders. The true articulated dump truck is, nevertheless, known and appreciated in certain restricted applications. It began in tunnelling and mining applications, and its use subsequently spread to the road building and quarry sectors, although in reality the volumes remain very low.

Typically, around 90 per cent of the demand for new machines, predominantly 30 tonne capacity trucks, comes from the large marble quarries, whilst a small number of trucks are bought by silver and gold mines. Limestone and crushed rock quarries and smaller mines use exclusively on/off-highway trucks. Annual sales of new articulated dump trucks average just 10-15 units, although the total market equates to up to 100 units, made up almost entirely of second-hand Volvo, Caterpillar and Bell trucks.

As with the market for crawler dozers, the only exception to this long term average comes from specific projects. The unusually large volume of new articulated trucks sold in 2011 was due to a single order for 70 Volvo units from the Yildizlar SSS Holdings silver mine, while last year's peak was due to Volvo's success in supplying machines to the third Istanbul airport.

Rigid Dump Trucks

In the middle of the 1980s, Turkey was one of the biggest markets in the world for rigid dump trucks, as TKI, the state lignite operator, and Etibank in hard coal, invested heavily. In the 1990s orders for rigid trucks still came, but for smaller machines for road making projects or dams. Nearly all sales were trucks of 35 or 37 tonnes' payload.

Since 2000 the loss making mines have been restructured and either partially-sold to private operators or at least a lot more reliant on the use of contractors, neither favouring the use of rigid dumpers. Today, both the quarrying and marble mining sectors are characterised by small, family-owned concerns who favour off-highway trucks, such as those built by Astra and Iveco, due to their cheaper purchasing and maintenance costs in comparison to rigid dump trucks. These trucks are typically operated for an average of two years and are then scrapped.

As a result, only a handful of rigid trucks above 100 tonnes operate in the mining sector; in nearly all cases the machines are very old and are regularly refurbished. Demand for new rigid trucks is therefore essentially minimal, although 2007 was an exceptional year in that an order for 25 rigid dump trucks was secured by the Caterpillar dealer, Borusan.

Market Shares

Table 43. Turkey: Suppliers of Dump Trucks and Their Market Share, 2013-2014

	2013				2014			
	Articulated		Rigid		Articulated		Rigid	
	Units	%	Units	%	Units	%	Units	%
Volvo	11	84	-	-	63	93	-	-
Caterpillar	1	8	6	60	3	4	3	50
Komatsu	-	-	4	40	-	-	3	50
Bell	1	8	-	-	2	3	-	-
Total	**13**	**100**	**10**	**100**	**68**	**100**	**6**	**100**

Source: Off-Highway Research

Volvo is the dominant presence in the articulated dump truck market, and in 2014 successfully secured a single order for 63 trucks to the third Istanbul airport project. The remainder of sales are usually split between **Bell** and **Caterpillar**, with occasional sales achieved by **Komatsu**.

The full list of suppliers is shown below.

Table 44. Turkey: Distribution Networks of Suppliers of Dump Trucks, 2015

Manufacturer	Importer	Manufacturer	Importer
Bell	Enka	**Liebherr**	Liebherr Turkey
Caterpillar	Borusan Makina	**Terex**	Dizel Turbo
Doosan	SANKO Makina	**Volvo**	Ascendum
Komatsu	Temsa		

Source: Company Information

Population and End-Users

The import of second hand articulated dump trucks means the existing fleet is significantly higher than could be deduced from looking at the market for new sales alone. Taking this into account, the active population is estimated at around 500 machines.

There is a large stock of old rigid dump trucks in the country left over from the work building the Atatürk dam and others in the GAP area, estimated to be in the region of 600 units. There are probably only about 200 machines which were imported as new units and are younger than these.

Forecast to 2019

Table 45. Turkey: Forecast Sales of Dump Trucks by Type, 2015-2019

	2015		2016		2017		2018		2019	
	Units	%	Units	%	Units	%	Units	%	Units	%
Articulated	15	65	12	71	12	71	15	75	15	65
Rigid	8	35	5	29	5	29	5	25	8	35
Total	**23**	**100**	**17**	**100**	**17**	**100**	**20**	**100**	**23**	**100**

Source: Off-Highway Research

There is little evidence to suggest that the pattern of demand for articulated dump trucks will alter significantly in the foreseeable future despite the projected increase in infrastructure construction. Specialist on/off-highway trucks will continue to represent a more viable alternative for the quarry owners, and the market can be expected to remain at 10-15 units per year.

Rigid trucks face a future as uncertain as the past, with orders arriving irregularly. Again, the use of much cheaper on/off-highway trucks predominates in the quarrying and marble sectors, and it is therefore unlikely that any significant sales of rigid trucks will be made within the forecast period.

Machines Available

Table 46. Turkey: Articulated Dump Trucks Available, 2015

Manufacturer	Model	Payload (Tonnes)	Engine		Product Source
			Manufacturer	HP	
Bell	B18E	204	Mercedes-Benz	18.0	South Africa
	B25E	272	Mercedes-Benz	24.0	Germany
	B30E	311	Mercedes-Benz	28.0	Germany
	B35D	389	Mercedes-Benz	32.5	Germany
	B40D	436	Mercedes-Benz	37.0	Germany
	B45D	499	Mercedes-Benz	41.0	Germany
	B50D	499	Mercedes-Benz	45.4	Germany
Caterpillar	725C	303	Caterpillar	23.6	UK
	730C	370	Caterpillar	28.0	UK
	730 EJ	370	Caterpillar	28.0	UK
	735B	447	Caterpillar	32.7	UK
	740B	484	Caterpillar	39.5	UK
	740B EJ	484	Caterpillar	38.0	UK
Doosan	DA30	362	Scania	28.0	Norway
	DA40	497	Scania	40.0	Norway
Komatsu	HM300-3	332	Komatsu	28.0	Japan
	HM350-2	408	Komatsu	32.3	Japan
	HM400-3	473	Komatsu	40.0	Japan
Liebherr	TA230	367	Liebherr	30.0	Germany
Terex Trucks	TA250	315	Cummins	25.0	UK
	TA300	370	Cummins	28.0	UK
	TA400	444	DDC	38.0	UK
Volvo	A25F	315	Volvo	24.0	Sweden
	A30F	357	Volvo	28.0	Sweden
	A35F/FS	438	Volvo	33.5	Sweden
	A40F/FS	465	Volvo	39.0	Sweden

Source: Company Information

Table 47. Turkey: Rigid Dump Trucks Available, 2015

Manufacturer	Model	Payload (Tonnes)	Engine		Product Source
			Manufacturer	HP	
Caterpillar	770	476	Caterpillar	36.3	USA
	770G	476	Caterpillar	38.6	USA
	772	543	Caterpillar	45.0	USA
	772G	550	Caterpillar	46.8	USA
	773G	733	Caterpillar	54.0	USA
	775G	783	Caterpillar	64.0	USA
	777G	945	Caterpillar	91.0	USA
	789D	1,771	Caterpillar	181.0	USA
	793F	2,478	Caterpillar	227.0	USA
Hitachi	EH1100-3	697	Detroit Diesel	64.9	Canada
	EH1700-3	1050	Detroit Diesel	95.2	Canada
	EH3500AC II	2,000	Cummins	168.0	Japan
	EH4000AC II	2,500	Cummins	222.0	Japan
	EH5000AC II	2,700	Detroit Diesel	296.0	Japan
Komatsu	HD325-7	518	Komatsu	36.5	Japan
	HD405-7	518	Komatsu	40.0	Japan
	HD465-7	740	Komatsu	55.0	Japan
	HD605-7	740	Komatsu	63.0	Japan
	HD785-7	1,200	Komatsu	91.0	Japan
Terex Trucks	TR35	348	Cummins	31.8	UK
	TR45	495	Cummins	41.0	UK
	TR60	545	Cummins	55.0	UK
	TR100	975	Cummins	91.0	UK

Source: Company Information

HYDRAULIC EXCAVATORS

Market Size and Trends

Table 48. Turkey: Sales of Hydraulic Excavators by Type, 2010-2014

	2010		2011		2012		2013		2014	
	Units	%	Units	%	Units	%	Units	%	Units	%
Crawler	2,120	91	3,043	91	3,542	93	3,948	94	3,019	93
Wheeled	197	9	286	9	260	7	235	6	230	7
Total	**2,317**	**100**	**3,329**	**100**	**3,802**	**100**	**4,183**	**100**	**3,249**	**100**

Source: Off-Highway Research

Prior to 2005 the market for hydraulic excavators moved between 1,000 and 1,500 units annually, faltering only in the aftermath of the 2001 financial crisis before recovering in 2004 to 1,700 units.

The subsequent three years saw extraordinary growth in demand, specifically for crawler excavators, as a result of several factors. Dramatic growth in the economy and sustained political stability both acted to bolster business confidence and willingness to invest in new machinery. In addition, considerable government investment and Foreign Direct Investment (FDI) in the country's construction sector, particularly large infrastructure projects and energy related projects such as dams, hydro-electric power plants and wind farms, created an immediate demand for hydraulic excavators. By 2007 the market had reached its highest recorded level of nearly 3,800 units, and well over double the volume just three years earlier.

In 2008 the government implemented a dramatic rise in the VAT rate on leasing contracts from one per cent to 18 per cent, although this was subsequently dropped to eight per cent for backhoe loaders and crawler excavators following lobbying from the domestic manufacturers. However, the damage was already done and sales of excavators collapsed by 44 per cent. The onset of the global financial crisis towards the end of 2008 merely accentuated the problem, and in 2009 demand fell by a further 42 per cent to reach its lowest level since 2003, just 1,100 units.

The first shoots of recovery emerged in the last quarter of 2009 and, following strong growth in the domestic economy coupled with the instigation of many new infrastructure projects, the market posted robust growth of 88 per cent in 2010. This development continued in 2011 underpinned by a buoyant construction sector and, by the end of the year, sales had risen by a further 44 per cent to exceed 3,000 units once more.

In 2012 sales of crawler excavators recorded a further rise of 14 per cent compared to 2011, a feat that was then followed by another 10 per cent expansion in 2013. This lead to a new record annual sales figure well in excess of 4,000 units. Unfortunately, confidence in the economy and therefore in the wisdom of continuing to invest in new machines at such a rate was then undermined by fears over the budget deficit and exchange rate, exacerbated by growing political uncertainty. The subsequent 22 per cent fall in sales last year was inevitably received with disappointment, though overall sales remained at a historically high level and comparable with those seen in the then boom year of 2011.

Crawler Excavators

Table 49. Turkey: Sales of Crawler Excavators by Weight Category, 2014

Tonnes	Units	%
10-15	91	3
15-19	30	1
20-22	450	15
22-27	364	12
27-32	696	23
32-40	809	27
40-50	424	14
Over 50	155	5
Total	**3,019**	**100**

Source: Off-Highway Research

There is very little demand for small crawler excavators under 19 tonnes, and the 20 tonne machine is the most popular size for a "small" public works machine accounting for around 15 per cent of overall demand. They are typically used for road widening and site preparation for commercial and industrial property.

Civil engineering applications have sustained the market for machines from 24 to 50 tonnes and this sector now accounts for around three quarters of overall sales. The single largest selling category of machine remains the 30 tonne crawler excavator, although there has been an increasing trend towards the use of bigger and more fuel efficient machines in the 35-40 tonne class, in which the 35 tonne crawler predominates. This development has come about partly as a consequence of the use of larger trucks for carrying spoil, but also as a result of the greater number of large infrastructure projects recently initiated that require the use of heavier excavators.

There is also a healthy demand for 40-50 tonne machines, particularly from the coal mining and marble quarry sectors, whilst the larger mines use excavators up to 70 tonnes.

Wheeled Excavators

Wheeled excavators have never achieved a significant measure of popularity due to the preponderance in Turkey of the ubiquitous backhoe loader. The bulk of sales are now confined to machines from 17-20 tonnes and the market in good years equates to only around 300 units. Wheeled excavators over 20 tonnes exceed the weight limits for driving on the roads, although

they can be carried on low loaders, of course. They are more likely to be put to work in timber yards and on metal scrap processing. They are sold with extra-long booms and magnets, grabs or clamshells, and sales do not depend on construction.

Production

Table 50. Turkey: Production of Hydraulic Excavators by Manufacturer, 2012-2014

	2012		2013		2014	
	Units	%	Units	%	Units	%
Hidromek						
– Crawler	715	83	843	89	615	88
– Wheeled	125	15	86	9	59	9
Çukurova	20	2	20	2	20	3
Total	**860**	**100**	**949**	**100**	**694**	**100**

Source: Off-Highway Research

Hidromek and Çukurova are the only manufacturers building hydraulic excavators in Turkey. Although Çukurova terminated the production of Liebherr crawler and wheeled excavators at its Mersin plant in 2007, it has begun limited production of a single model of crawler excavator under its own brand name at its Çumitas plant, near Adana.

Hidromek currently produces four crawler excavator models ranging from 15 to 37 tonnes and two wheeled excavators with service weights of 15 and 21 tonnes. Starting within a size that is very popular in the region, it launched a 22 tonne crawler type, with a Cummins engine and classic Japanese hydraulic system in 2002, followed by the wheeled type, on a European base but with the same hydraulic system, in 2003. In 2005 it began to offer an alternative of a Mitsubishi engine in the crawler excavator but a more significant introduction came in 2006, in the form of the 31 tonne 300LC. Three years later, in 2009, came the launch of the 37 tonne type, the 370LC, at the same time as the second wheeled excavator, the 15 tonne 140W. At the end of 2010 production of a crawler equivalent, the 140LC began.

More recently, Hidromek has put into action its plan to expand its range even further into the important 50 tonne sector, central to the award of large ‘package’ deals for some customers. A first production machine was displayed at this year’s Intermat machinery exhibition in Paris.

Çukurova began limited production of a single 23 tonne crawler excavator in 2008, which sells in very small quantities.

A full description of both companies' manufacturing operations is contained within the Manufacturer Profiles section of this report.

Component Sourcing

Table 51. Turkey: Component Sourcing for Hydraulic Excavators, by Manufacturer 2015

	Çukurova	Hidromek
Axles	-	NAF, ZF
Buckets	In-house	In-house
Cabs	In-house	Hisarlar
Chassis	In-house	In-house
Control Valves	Parker, Bosch Rexroth, David Brown, Doosan	Toshiba, Kayaba
Engines	John Deere	Mitsubishi, Isuzu
Hydraulic Motors	Bosch Rexroth	Travel motors: Teijin Seiki, Bosch Rexroth Swing motors: Toshiba
Hydraulic Pumps	Eaton, Bosch Rexroth, Kawasaki, David Brown	Kawasaki
Transmissions	-	ZF (wheeled)
Tyres	-	LasSA
Undercarriages	In-house	In-house

Source: Company Information

Market Shares

Crawler Excavators

The crawler excavator sector is arguably the most competitive area in the whole construction equipment market. The quality of the representation is very important but every supplier is prepared to admit, off the record, that this is a product where it is extremely difficult to build up customer loyalty. Winning market share inevitably takes into account favourable pricing, whatever the qualities of the product and its supplier. The result is that even the best established of OEMs can find their performance in Turkey varying wildly from one year to another, all the more so in the past three years during which there have been significant currency fluctuations.

Hidromek has increased its market share significantly during the last two years as the acceptance of its product has grown. Whilst its domestic manufacturer status undeniably enables it to operate a more competitive pricing policy than many other suppliers reliant on imported products, one must also acknowledge the fact that the company has strived hard to improve the quality, technological development and reliability of its machines in recent years. Furthermore, the growing population of Hidromek excavators has ensured that their residual values have become more robust, which has also helped to stimulate sales; indeed, this is an essential aspect of the market. Government tender contracts remain an important source of business for

Hidromek and the company has forged close links with local municipalities' buying departments which understandably favour purchasing machines from domestic manufacturers.

Table 52. Turkey: Suppliers of Crawler Excavators and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Hidromek	798	20	616	20
Hitachi	579	15	493	16
Caterpillar	474	12	419	14
Hyundai	496	13	343	11
Volvo	377	10	287	10
Komatsu	342	9	233	8
Doosan	193	5	161	5
Sumitomo	456	12	158	5
JCB	92	2	71	2
Liebherr	65	2	50	2
LiuGong	37	1	37	1
XCMG	-	-	34	1
Kobelco	-	-	24	1
Others*	37	1	93	3
Total	**3,948**	**100**	**3,019**	**100**

* Includes Kubota, Takeuchi, New Holland, Case, Wacker Neuson, Bobcat, Çukurova, Kato, Mecalac and Zoomlion

Source: Off-Highway Research

Hitachi has traditionally been one of the strongest suppliers of crawler excavators, although the appreciation of the Japanese Yen after 2009 affected the competitiveness of the product, resulting in a significant loss of market share in 2010 and 2011. More recently, however, the pendulum has swung back in its favour, and the reputation of the product and the brand, not to mention the dealer, has seen it return to second place in the market. The dealer, Enka, also has the advantage that its own construction company satisfies all its excavator requirements in-house.

Caterpillar achieved market leadership in 2011, and has remained in a typically strong position since then.

Hyundai has enjoyed an excellent performance since the franchise was incorporated into the HMF organisation. The dealer has worked hard to promote the Korean products to Turkish contractors and its high quality of after-sales service, allied to aggressive pricing, has brought dividends.

Volvo products are distributed by the multi-national Ascendum organisation which took over the former Volvo subsidiary company in 2010. The new dealer has made significant advances in promoting the Korean-sourced excavators and the company's market share rose rapidly as a consequence, though it has now plateaued at 10 per cent.

Wheeled Excavators

Table 53. Turkey: Suppliers of Wheeled Excavators and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Hyundai	54	23	56	24
Hidromek	53	23	49	21
Hitachi	22	9	30	13
Caterpillar	34	14	29	13
Doosan	41	17	27	12
JCB	12	5	22	10
Liebherr	7	3	11	4
Komatsu	7	3	4	2
Volvo	5	2	2	1
Total	**235**	**100**	**230**	**100**

Source: Off-Highway Research

Hidromek and **Hyundai** have been the clear market leaders during recent years. Both companies benefit from keen pricing whilst Hydromek's status as a domestic manufacturer enables it to secure valuable government tender contracts. The remainder of sales are shared between a group of about eight suppliers of whom **Hitachi**, **Caterpillar** and **Doosan** have been the most successful in recent times.

The full list of suppliers is shown below.

Table 54. Turkey: Distribution Networks of Suppliers of Hydraulic Excavators, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Case	TürkTraktör	**Kobelco**	Hasel
Caterpillar	Borusan Makina	**Komatsu**	Temsa
Çukurova	Çukurova	**Liebherr**	Liebherr Turkey
Doosan	SANKO	**LiuGong**	Uygunlar
Hidromek	Hidromek	**New Holland**	TürkTraktör
Hitachi	Enka	**Sumitomo**	TSM
Hyundai	HMF	**Volvo**	Ascendum
JCB	SIF-JCB	**XCMG**	Ozmak

Source: Company Information

Population and End-Users

The life expectancy of excavators varies, although almost none are sold on with fewer than 5,000 hours on the clock. Large contractors replace excavators after five years; small and medium contractors can keep them from eight to 10 years. There is an active second-hand market, ensuring the continued use of machines beyond this age. Even allowing for such machines being sold abroad – half of new sales are estimated to involve a trade-in, with dealers better placed to sell abroad than private owners – Off-Highway Research estimates the total population of machines at 22,000 crawler excavators, equivalent to all new sales recorded in the past eight years, and 1,800 wheeled excavators.

Table 55. Turkey: Population of Hydraulic Excavators by Type of User, 2015

	Units	%
Construction		
– General	11,510	48
– Civil Engineering	7,270	31
Municipalities	2,140	9
Government Directorates	1,430	6
Quarries	950	4
Rental Fleets	500	2
Total	**23,800**	**100**

Source: Off-Highway Research

The sales to the private sector have moved very much in favour of the smaller type of sub-contractor. He can obtain leasing finance from any source relatively easily if he does not have a bad record, and then he can go to work with his machine. His clients will be the large companies who were the main buyers 10 years ago. Equally he may work for the state, which owns old machines and now rarely buys new ones.

There is a small and slowly-growing fleet of rental machines, led by the captive rental fleets of the dealers for suppliers such as Caterpillar, Komatsu and Volvo, although the majority of rental remains rent to sell rather than rental for rental's sake.

Forecast to 2019

The overall market for hydraulic excavators is likely to rise this year on the strength of the high levels of public investment prior to the general elections in June, even if sales will slow in the second half of the year. Most suppliers are confident that demand will continue to rise in the

medium term, notwithstanding a slightly reduction in sales next year following this year's boost in public sector spending. It is widely assumed that, barring any further economic or political uncertainty, the scale of work on the horizon justifies expectations of a 30 per cent increase in sales by the end of the forecast period.

Table 56. Turkey: Forecast Sales of Hydraulic Excavators by Type, 2015-2019

	2015		2016		2017		2018		2019	
	Units	%	Units	%	Units	%	Units	%	Units	%
Crawler	3,200	93	3,000	93	3,200	93	3,500	93	3,900	93
Wheeled	230	7	230	7	250	7	260	7	280	7
Total	**3,430**	**100**	**3,230**	**100**	**3,450**	**100**	**3,760**	**100**	**4,180**	**100**

Source: Off-Highway Research

The outstanding amount of infrastructure projects and energy related construction in Turkey is enormous, and the requirement for new construction equipment is potentially very large. The government has pledged to invest a vast amount of money in several major infrastructure projects over the next eight years, in anticipation of the 100th anniversary in 2023 of the founding of the Turkish Republic. Of particular significance to suppliers of hydraulic excavators is the proposed $400 billion investment outlined for so-called Urban Transformation projects, which entail the widespread demolition of old buildings and the modernisation of inner city areas throughout Turkey.

Longer term development of the sector will, however, depend on several factors, most notably a satisfactory resolution of the Syrian crisis and the Turkish government's ability to resolve the country's budget deficit issues. Failure to contain the latter brings with it the very real possibility that proposed planned construction projects will be postponed or shelved, and that investment will be withdrawn.

Machines Available

Table 57. Turkey: Crawler Excavators Available, 2015

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Bobcat	E62	49	Yanmar	6.1	Korea
	E80	55	Yanmar	8.4	Korea
	E85	60	Yanmar	8.5	Korea

(continued)

Table 57. Turkey: Crawler Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Case	CX75CSR	56	Isuzu	8.0	Japan
	CX80CSR	56	Isuzu	8.6	Japan
	CX130C	100	Isuzu	13.2	Japan
	CX145CSR	100	Isuzu	14.5	Japan
	CX160C	124	Isuzu	17.2	Japan
	CX180C	124	Isuzu	17.4	Japan
	CX210C	160	Isuzu	21.2	Japan
	CX230C	160	Isuzu	22.8	Japan
	CX235CSR	160	Isuzu	25.8	Japan
	CX250C	177	Isuzu	24.7	Japan
	CX300C	206	Isuzu	29.4	Japan
	CX350C	266	Isuzu	34.6	Japan
	CX370C	266	Isuzu	36.7	Japan
	CX470C	362	Isuzu	49.3	Japan
Caterpillar	311F LRR	71	Caterpillar	13.9	Japan
	312F/L	94	Caterpillar	14.5	Japan
	313F/LGC	70	Caterpillar	13.2	Japan
	314E/LCR	89	Caterpillar	15.8	Japan
	316EL	116	Caterpillar	17.6	Japan
	318EL	113	Caterpillar	18.6	Japan
	320EL/N/LRR	143	Caterpillar	23.6	Japan
	323E/LN/SA	155	Caterpillar	24.2	Japan
	324EL/LN	174	Caterpillar	29.7	Japan
	329EL/LN	216	Caterpillar	31.6	Japan
	335FL/LR	200	Caterpillar	38.4	Belgium
	336EL/LN Hybrid	318	Caterpillar	37.0	Belgium
	336FL/LN	307	Caterpillar	38.9	Belgium
	349EL	396	Caterpillar	53.3	Belgium
	374FL	479	Caterpillar	75.2	Belgium
	390FL	532	Caterpillar	92.0	Belgium
Çukurova	CMI 723	156	John Deere	23.0	Turkey
Doosan	DX62R-3	49	Doosan	6.4	Belgium, Korea
	DX63-3	49	Doosan	6.4	Belgium, Korea
	DX85R-3	59	Doosan	8.6	Belgium, Korea
	DX140LC/R-3	109	Doosan	14.5	Belgium, Korea
	DX160LC-3	109	Doosan	14.4	Belgium
	DX180LC-3	125	Doosan	19.1	Belgium, Korea
	DX225LC-3	167	Doosan	22.8	Belgium, Korea
	DX235NLC-5	166	Doosan	22.4	Belgium
	DX235LCR-5	189	Doosan	24.3	Korea
	DX255L-5	190	Doosan	25.5	Belgium, Korea
	DX300-5	271	Doosan	30.9	Belgium, Korea
	DX340-5	318	Doosan	36.2	Korea
	DX380LC-5	318	Doosan	40.2	Korea
	DX420LC-5	345	Doosan	42.6	Korea

(continued)

Table 57. Turkey: Crawler Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Doosan (continued)	DX490LC-5	380	Doosan	49.5	Korea
	DX530LC-5	380	Doosan	52.1	Korea
Hidromek	HMK 140 LC	124	Mitsubishi	14.4	Turkey
	HMK 220 LC	162	Isuzu	22.6	Turkey
	HMK 300 LC	202	Isuzu	31.3	Turkey
	HMK 370 LC	271	Isuzu	38.5	Turkey
Hitachi	ZX85US-5A	46	Yanmar	8.9	Japan
	ZX85USR-5A	46	Yanmar	9.1	Japan
	ZX130LCN-5B	98	Isuzu	14.9	Netherlands
	ZX135US-5B	98	Isuzu	14.9	Netherlands
	ZX160-5B	121	Isuzu	18.0	Netherlands
	ZX180-5B	121	Isuzu	20.1	Netherlands
	ZX210LCN-5B	164	Isuzu	21.6	Netherlands
	ZX225US-5B	164	Isuzu	24.9	Netherlands
	ZX225USR-5B	164	Isuzu	24.9	Netherlands
	ZX250LC-5B	177	Isuzu	27.3	Netherlands
	ZX290LC-5B	188	Isuzu	29.5	Netherlands
	ZX350LC-5B	271	Isuzu	35.5	Netherlands
	ZX470LCH-5	349	Isuzu	48.9	Netherlands
	ZX520LHR-5B	349	Isuzu	52.5	Japan
	ZX670LHR-5B	463	Isuzu	68.4	Japan
	ZX870LCH-5B	532	Isuzu	86.0	Japan
Hyundai	R80CR-9A	65	Yanmar	8.4	Korea
	R125LCR-9A	92	Perkins	12.5	Korea
	R140C-9A	116	Perkins	14.0	Korea
	R145LCR-9A	124	Perkins	14.6	Korea
	R160LC-9A	137	Perkins	17.8	Korea
	R180LC-9A	137	Perkins	18.6	Korea
	R220LC-9A	167	Cummins	21.9	Korea
	R235LCR-9A	167	Cummins	23.8	Korea
	R260LC-9A	225	Cummins	25.2	Korea
	R300LC-9A	225	Cummins	29.8	Korea
	R330LC-9A	282	Cummins	33.0	Korea
	R380LC-9A	310	Cummins	38.2	Korea
	R430LC-9A	310	Cummins	42.6	Korea
	R480LC-9A	372	Cummins	48.1	Korea
	R520LC-9A	372	Cummins	51.0	Korea
	R800LC-9A	517	Cummins	83.2	Korea
JCB	65R-1	50	Perkins	6.7	UK
	67C-1	50	Perkins	6.8	UK
	85Z-1	65	Kohler	8.3	UK
	86C-1	65	Kohler	8.6	UK
	90Z-1	74	Kohler	8.6	UK
	100C-1	74	Kohler	9.7	UK

(continued)

Table 57. Turkey: Crawler Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
JCB (continued)	JS115	109	JCB	12.3	UK
	JS130	109	JCB	13.2	UK
	JS145	109	JCB	14.3	UK
	JS160	125	JCB	18.4	UK
	JS180	126	JCB	19.4	UK
	JS190	126	JCB	20.0	UK
	JS210	173	JCB	21.7	UK
	JS220	173	JCB	22.5	UK
	JS235HD	173	JCB	24.2	UK
	JS240	188	Isuzu	26.5	UK
	JS260	188	Isuzu	28.5	UK
	JS330	281	Isuzu	33.4	UK
	JS370	281	Isuzu	38.0	UK
Kato	HD823MRIII	149	Mitsubishi	22.0	Japan
Kobelco	SK210LC-9	168	Hino	22.0	Japan
	SK260LC-9	177	Hino	26.4	Japan
	SK350LC-9	272	Hino	36.9	Japan
Komatsu	PC80MR-8	64	Komatsu	8.6	Italy
	PC88MR-8	68	Komatsu	8.8	Italy
	PC118MR-8	97	Komatsu	12.5	Italy
	PC130-8	92	Komatsu	12.8	UK
	PC138US-10	98	Komatsu	14.9	Italy
	PC160LC-8	121	Komatsu	18.4	UK
	PC170LC-10	121	Komatsu	17.9	Italy
	PC190N/LC-8	130	Komatsu	20.0	UK
	PC210N/LC-8	156	Komatsu	23.8	UK
	PC210LC-10	165	Komatsu	23.4	UK
	HB215LC-1	148	Komatsu	21.2	UK
	HB215LC-3	148	Komatsu	23.4	UK
	PC228USLC-8	156	Komatsu	23.3	UK
	PC228USLC-10	165	Komatsu	24.4	UK
	PC230NHD-8	156	Komatsu	24.1	UK
	PC240N/LC-10	189	Komatsu	26.1	UK
	PC240N/LC-11	189	Komatsu	26.2	UK
	PC290N/LC-10	213	Komatsu	30.9	UK
	PC290N/LC-11	213	Komatsu	30.9	UK
	PC350LC-8LR	260	Komatsu	42.0	UK
	PC360N/LC-10	271	Komatsu	35.4	UK
	PC360N/LC-11	271	Komatsu	36.9	UK
	PC490LC-10	362	Komatsu	48.5	UK
	PC490LC-11	362	Komatsu	48.9	UK
	PC700LC-8	433	Komatsu	67.1	UK
	PC800LC-8	496	Komatsu	84.7	UK
Kubota	KX080-4	65	Kubota	8.3	Japan

(continued)

Table 57. Turkey: Crawler Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Liebherr	R914 Compact	109	Deutz	17.2	Germany
	R918	116	Liebherr	21.8	Germany
	R920	129	Liebherr	23.6	Germany
	R922	143	Liebherr	23.7	France
	R924	156	Liebherr	27.6	France
	R926 Compact	163	Liebherr	28.9	France
	R926	175	Liebherr	29.0	France
	R936	218	Liebherr	34.8	France
	R946	272	Liebherr	42.0	France
	R950SME	300	Liebherr	44.8	France
	R956	326	Liebherr	57.1	France
	R960SME	340	Liebherr	61.8	France
	R966	435	Liebherr	76.3	France
	R970SME	449	Liebherr	78.6	France
	R976	544	Liebherr	95.5	France
	R980SME	571	Liebherr	102.3	France
LiuGong	CLG908CIII	77	Yanmar	7.7	China
	CLG915LC	111	Cummins	13.5	China
	CLG922LC	145	Cummins	21.9	China
	CLG922LC	145	Cummins	21.9	China
	CLG925LC	170	Cummins	26.0	China
Mecalac	10MSX	68	Cummins	7.1	France
	12MSX	82	Cummins	9.5	France
	12MTX	109	Deutz	9.7	France
	714MWe	122	Deutz	15.2	France
New Holland	E75CSR	56	Isuzu	7.5	Italy
	E85CMSR	56	Isuzu	8.3	Italy
	E135B	99	Mitsubishi	15.2	Italy
	E175C	129	FPT	18.8	Italy
	E195C	129	FPT	19.8	Italy
	E215C	173	FPT	22.2	Italy
	E245C	173	FPT	25.4	Italy
	E265C	190	FPT	26.3	Italy
	E305C	204	FPT	29.8	Italy
	E385C	286	Hino	37.7	Italy
	E485C	364	Hino	51.1	Italy
Sumitomo	SH210LC-5	160	Isuzu	21.2	Japan
	SH240-5	180	Isuzu	25.0	Japan
	SH300-5	209	Isuzu	29.8	Japan
	SH350HD	271	Isuzu	35.2	Japan
	SH700HD-3	469	Isuzu	68.9	Japan

(continued)

Table 57. Turkey: Crawler Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Takeuchi	TB180FR	61	Yanmar	8.4	Japan
	TB290	67	Yanmar	8.8	Japan
	TB1140	104	Isuzu	15.4	Japan
Volvo	ECR88D	58	Volvo	9.5	Germany
	EC140D	116	Volvo	16.2	Germany
	ECR145D	113	Volvo	16.4	Germany
	EC160D	143	Volvo	19.2	Germany
	EC180D	143	Volvo	19.3	Germany
	EC220D	175	Volvo	24.6	Germany
	EC220E	175	Volvo	25.8	Germany
	ECR235D	172	Volvo	27.1	Korea
	EC250E	216	Volvo	28.9	Korea
	EC300E	243	Volvo	32.7	Korea
	EC380E	307	Volvo	43.0	Korea
	EC480E	378	Volvo	53.9	Korea
	EC700C	458	Volvo	71.7	Korea
Wacker Neuson	75Z3	59	Yanmar	7.8	Austria
	8003	59	Yanmar	8.1	Austria
	14504	101	Deutz	15.6	Austria
Yanmar	B7-5B	56	Yanmar	8.0	Japan
	ViO80	55	Yanmar	8.1	Japan
	SV100-2	70	Yanmar	9.6	Japan
XCMG	XE80	81	Cummins	7.9	China
	XE150	115	Cummins	14.5	China
	XE210	144	Cummins	21.5	China
	XE250	192	Cummins	24.3	China
	XE370	249	Cummins	36.6	China

Source: Company Information

Table 58. Turkey: Wheeled Excavators Available, 2015

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Case	WX148	121	FPT	16.4	Italy
	WX168	141	FPT	18.1	Italy
	WX188	158	FPT	19.8	Italy
	WX218	178	FPT	21.4	Italy
Caterpillar	M313D	129	Caterpillar	16.2	France
	M315D	137	Caterpillar	18.2	France

(continued)

Table 58. Turkey: Wheeled Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Caterpillar (continued)	M318D MH	169	Caterpillar	22.7	France
	M318F	169	Caterpillar	19.7	France
	M320F	169	Caterpillar	20.7	France
	M322D MH	167	Caterpillar	25.7	France
	M322D	167	Caterpillar	22.5	France
Doosan	DX140W-3	132	Doosan	16.7	Korea, Belgium
	DX160W-3	132	Doosan	16.7	Belgium
	DX170W-5	152	Doosan	18.3	Korea
	DX190W-3	174	Doosan	20.3	Korea
	DX210W-5	189	Doosan	21.7	Korea
	DX210W MH	162	Doosan	23.0	Korea
Hidromek	HMK 140 W	124	Mitsubishi	15.8	Turkey
	HMK 200 W	162	Isuzu	21.8	Turkey
Hitachi	ZX140W-3	121	Isuzu	15.2	Netherlands
	ZX170W-3	143	Isuzu	17.2	Netherlands
	ZX190W-3	163	Isuzu	18.8	Netherlands
	ZX210W	163	Isuzu	20.7	Netherlands
Hyundai	R140W-9A	146	Cummins	13.7	Korea
	R180W-9A	165	Cummins	17.3	Korea
	R210W-9A	173	Cummins	20.5	Korea
JCB	JS145W	125	JCB	17.6	UK
	JS160W	125	JCB	18.2	UK
	JS175W	174	JCB	18.2	UK
	JS200W	174	JCB	23.8	UK
Komatsu	PW98MR-8	68	Komatsu	10.3	Italy
	PW118MR-8	97	Komatsu	12.9	Italy
	PW148-10	121	Komatsu	16.2	Germany
	PW160-8	130	Komatsu	17.1	Germany
	PW180-10	165	Komatsu	18.9	Germany
	PW200-7	180	Komatsu	22.1	Germany
Liebherr	A900C Litronic	129	Liebherr	19.5	Germany
	A904C Litronic	143	Liebherr	21.1	Germany
	A924 Litronic	175	Liebherr	26.5	Germany
New Holland	WE150B Pro	121	FPT	16.4	Italy
	WE170B Pro	141	FPT	18.1	Italy
	WE190B Pro	158	FPT	19.8	Italy
	WE210B Pro	173	FPT	21.6	Italy
Takeuchi	TB295W	95	Isuzu	9.8	Germany

(continued)

Table 58. Turkey: Wheeled Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Service Weight (Tonnes)	Product Source
		HP	Manufacturer		
Volvo	EW140D	143	Volvo	15.9	Germany
	EW160D	156	Volvo	17.8	Germany
	EW160E	156	Volvo	17.9	Germany
	EW180D	175	Volvo	20.3	Germany
	EW180E	175	Volvo	20.8	Germany
	EW210D	173	Volvo	22.8	Germany

Source: Company Information

MINI EXCAVATORS

Market Size and Trends

Table 59. Turkey: Sales of Mini Excavators, 2010-2014

(Units)

2010	2011	2012	2013	2014
180	278	576	610	747

Source: Off-Highway Research

Traditionally, mini excavators have had to fight against the competition of manual labour, which is very cheap, and the popularity of the ubiquitous backhoe loader, over 3,000 units of which are sold annually. As a result, many of the OEMs present in Turkey were not interested in spending money and time on promoting mini excavators, and subsequently the volumes sold have traditionally been small.

During the last three years, however, sales of mini excavators have shown a considerable increase and it is the opinion of most of the suppliers interviewed that the compact equipment sector is set to develop significantly over the long term. Certainly, in the past five years, sales have more than trebled. The specific demand created by forestry (see below) could be seen to have skewed this growth and hidden a continued caution to embracing the mini excavator concept. However, this would overlook the continued growth last year, by which time demand for forestry-related sales had almost disappeared after projects had been completed; this alone suggests the clear underlying potential may at last be about to be exploited.

As a result, and despite the widespread acceptance of the backhoe loader, there is evidence to suggest that some contractors and municipalities are beginning to question whether the use of a mini excavator might offer a more efficient alternative. Issues such as fuel consumption, ease of transportation and manoeuvrability on restricted job sites, particularly in inner city areas, are being increasingly scrutinised by operators, and the cheaper running costs of a mini excavator represent an important consideration in a market where contract profit margins are becoming increasingly squeezed. Awareness of whole life costs, as opposed to the initial purchase price, is also increasing, along with an understanding of the efficiency virtues of having the right machine for the job.

Furthermore, the slowly rising trend towards equipment rental, in particular of compact machines, in Turkey means that rental companies are creating larger fleets containing more diverse machine types, and this has afforded the mini excavator wider exposure than in the past. As a consequence, more contractors have been encouraged to test the compact machinery concept against their more traditional working practices.

More recently the use of mini excavators in the agricultural sector has also become more widespread, as the sourcing of manual labour has become more difficult and expensive than in past years. Machines up to 5 tonnes' operating weight are now used on fruit farms, vineyards, banana plantations, olive and peanut farms. They are also used in forestry for ground levelling work and opening up of fire roads. Indeed, forestry work was a particular driver for sales from 2011 to 2013, as large terracing and plantation projects in south-east Turkey and the western coastal region created demand for several hundred units a year, mainly 5 tonne machines. Other areas of growing interest include maintenance and utility work in urban areas, demolition projects and landscaping, even if the high level of manual labour is evident to anyone who spends any time driving around Istanbul.

Finally, there is little doubt, too, that the promotional efforts of two specialist suppliers, Kubota and Takeuchi, have done much to stimulate the rising demand for mini excavators. Their respective dealers, Kale and Cermak, are both young and dynamic companies almost exclusively focused on expanding the concept of compact equipment, and their aggressive marketing of the product is likely to underpin future development of the sector. This has begun to be mirrored by those major suppliers without a strong presence and therefore vested interest in the backhoe loader market.

Production

The small size of the domestic market means there has been no desire for international manufacturers to base production in the country. The only exception to this is the **Mecalac** assembly facility in Izmir. It was opened in 2011, and is as much depot and warehouse for imported machines as it is production plant. Only one model of the company's range of utility machines is made here, the 6MCR; almost all units are re-exported, and overall volumes are low at fewer than 100 per year.

Market Shares

Table 60. Turkey: Suppliers of Mini Excavators and Their Market Share, 2013-2014

	2013		2014	
	Units	%	Units	%
Kubota	162	27	191	26
Takeuchi	114	19	145	19
Wacker Neuson	24	4	104	14
Hitachi	50	8	53	7
Caterpillar	86	14	47	6
IHIMER	17	3	45	6
Hyundai	27	4	35	5
Yanmar	28	5	29	4
Volvo	28	5	23	3
Bobcat	19	3	20	3
JCB	14	2	13	2
Liugong	27	4	13	2
XCMG	-	-	12	2
Doosan	6	1	8	1
Komatsu	6	1	8	1
New Holland	3	-	1	-
Total	**610**	**100**	**747**	**100**

Source: Off-Highway Research

Kubota, sold by the Kale organisation, is a relatively new entrant in the market, although it rapidly advanced to market leader in 2011. The dealer is also an active participant in the skid-steer loader sector with the Gehl brand. It has now succeeded in establishing Kubota in the number one position in the market that it maintains in many countries across Europe.

The **Takeuchi** dealer, Cermak, only entered the sector at the beginning of 2011, although it had previously been a sub-dealer for JCB backhoe loaders since 1997. Despite unfavourable exchange rates against the Japanese Yen, it rapidly made its presence felt. It is now benefitting

from the growing brand recognition created by its strong early push into this sector, resulting in improved second hand sales prices and increasing customer loyalty.

Wacker Neuson, distributed by its wholly-owned local subsidiary, is the third specialist brand to have made a name for itself, thanks to a recent aggressive marketing and pricing policy. This is followed by **Hitachi**, with its dealer Enka aware of the benefits of a market that is developing as an alternative to the backhoe sector in which it has no presence, and **Caterpillar**, with its expanding compact equipment rental fleet. **IHIMER**, from Italy, is distributed by INAN Makina on the premise that its presence as a domestic manufacturer for the attachment business will facilitate sales growth for both sides of the business, not least because an estimated one in two mini excavators are sold with hammers.

The full list of suppliers is shown below.

Table 61. Turkey: Distribution Networks of Suppliers of Mini Excavators, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Bobcat	Hamamcioğlu	**Kubota**	Kale
Case	TürkTraktör	**LiuGong**	Uygunlar
Caterpillar	Borusan Makina	**New Holland**	TürkTraktör
Doosan	SANKO	**Takeuchi**	Cermak
Hitachi	Enka	**Terex**	Hasel
Hyundai	HMF	**Volvo**	Ascendum
IHIMER	Inan Makina	**Wacker Neuson**	Wacker Neuson
JCB	SIF-JCB	**Yanmar**	Hidromek
Komatsu	Temsa		

Source: Company Information

Population and End-Users

The population at the time of the last report was estimated at around only 500 machines, most of which were working in urban redevelopment and refurbishment programmes. With more than 1,900 sales of new machines in the three years since then, it is clear that the population of machines has increased rapidly. There has been a particular increase in the number of machines employed in the agricultural sector in southern Turkey, and also in forestry applications as previously explained.

Table 62. Turkey: Population of Mini Excavators by Type of User, 2015

	Units	%
Urban Sub-Contractors	720	30
Forestry	500	21
General Contractors (incl. Demolition)	390	16
Agriculture	250	10
Municipalities	240	10
Rental	200	8
Landscaping Contractors	100	4
Total	**2,400**	**100**

Source: Off-Highway Research

Forecast to 2019

Table 63. Turkey: Forecast Sales of Mini Excavators, 2015-2019

(Units)

2015	2016	2017	2018	2019
750	900	1,100	1,300	1,500

Source: Off-Highway Research

The outlook for compact equipment is very favourable and suppliers interviewed for the purposes of this study were unanimous in their belief that demand for mini excavators will continue to grow significantly in the medium to long term. Urban transformation projects will underpin much of this growth, although agriculture can be expected to furnish increasing demand for the product.

Whilst it is inevitable that sales of mini excavators will, to some extent, have a negative impact on future demand for backhoe loaders, it is generally accepted that the latter will continue to play an important role in the Turkish market. It is believed that, initially at least, many contractors and municipalities will view the mini excavator as a useful complementary product for their fleets, rather than necessarily as a direct replacement for the backhoe loader; this process is likely to develop later.

The most optimistic estimates place the mini excavator market at the end of the forecast period at 2,000 units annually. At the risk of underselling the potential of this market, a more realistic assessment is that the market will have doubled by 2019.

Machines Available

The table below shows the ranges available from established suppliers in Turkey. Machines with service weights over 6 tonnes are excluded.

Table 64. Turkey: Mini Excavators Available, 2015

Manufacturer	Model	Engine		Weight (Kg)	Product Source
		Manufacturer	HP		
Bobcat	E08	Kubota	10	1,138	Czech Republic
	E10	Kubota	10	1,176	Czech Republic
	E14	Kubota	13	1,303	Czech Republic
	E16	Kubota	13	1,513	Czech Republic
	E25	Kubota	25	2,570	USA
	E26	Kubota	22	2,705	USA
	E32	Kubota	31	3,219	USA
	E35	Kubota	31	3,349	USA
	E45	Kubota	40	4,634	USA
	E50	Kubota	48	4,905	USA
	E55	Kubota	48	5,570	USA
Case	CX15B	Mitsubishi	15	1,580	Italy
	CX17BZTS	Mitsubishi	15	1,750	Italy
	CX18B	Mitsubishi	15	1,780	Italy
	CX26BZTS	Yanmar	23	2,700	Italy
	CX30BZTS	Yanmar	33	2,870	Italy
	CX35BZTS	Yanmar	30	3,500	Italy
	CX39BZTS	Yanmar	30	3,900	Italy
	CX45BZTS	Yanmar	43	4,540	Italy
	CX50BZTS	Yanmar	43	4,950	Italy
	CX55B	Yanmar	43	5,300	Italy
Caterpillar	300.9D	Yanmar	15	935	Austria
	301.4C	Yanmar	20	1,790	Austria
	301.6C	Mitsubishi	21	1,730	Austria
	301.8C	Mitsubishi	21	1,790	Austria
	302.5C	Mitsubishi	29	2,870	Austria
	303.5D CR	Mitsubishi	34	3,540	Japan
	304D CR	Mitsubishi	45	3,855	Japan
	305D CR	Mitsubishi	48	4,995	Japan
	305.5D CR	Mitsubishi	54	5,305	Japan
Doosan	DX27Z	Yanmar	21	2,790	Korea
	DX30Z	Yanmar	24	3,180	Korea
	DX35Z	Yanmar	26	3,660	Korea
	DX55	Yanmar	56	5,600	Korea
	DX60R	Yanmar	50	5,930	Korea
	DX55W	Yanmar	55	5,550	Korea

(continued)

Table 64. Turkey: Mini Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Weight (Kg)	Product Source
		Manufacturer	HP		
Hitachi	ZX10-U2	Kubota	15	1,110	Japan
	ZX16-3	Yanmar	14	1,770	Netherlands
	ZX17U2	Yanmar	15	1,850	Japan
	ZX18-3	Yanmar	14	1,930	Netherlands
	ZX22U2	Yanmar	20	2,210	Japan
	ZX27-3	Kubota	26	2,790	Netherlands
	ZX29U-3	Yanmar	26	3,230	Japan
	ZX33U5	Yanmar	29	3,720	Japan
	ZX38U5	Yanmar	29	4,170	Japan
	ZX48U5	Yanmar	38	5,060	Japan
	ZX55U5	Yanmar	38	5,370	Japan
Hyundai	R16-9	Mitsubishi	17	1,650	Japan
	R25Z-9	Mitsubishi	17	2,600	Japan
	R27Z-9	Mitsubishi	24	2,880	Japan
	R35Z-9	Yanmar	28	3,650	Japan
	R55-9	Yanmar	57	5,650	Korea
	R60CR-9	Yanmar	57	5,900	Korea
	R55W-9	Yanmar	57	5,550	Korea
IHIMER	9VXE	Yanmar	13	890	Italy
	12VXE	Yanmar	18	1,180	Italy
	15VXT	Yanmar	14	1,525	Italy
	16VXT	Yanmar	14	1,625	Italy
	17VXE	Yanmar	19	1,675	Italy
	19VXE	Yanmar	14	1,745	Italy
	20VX3	Yanmar	25	2,245	Japan
	25VX3	Yanmar	25	2,835	Japan
	30VX3	Yanmar	25	3,265	Japan
	35VX3	Yanmar	28	3,615	Japan
	40VX3	Yanmar	39	4,685	Japan
	50VX3	Yanmar	35	4,990	Japan
	55VX3	Yanmar	35	5,480	Japan
	55N	Yanmar	56	5,405	Japan
JCB	8008CTS	Perkins	12	950	UK
	8010CTS	Perkins	18	1,028	UK
	8014CTS	Perkins	20	1,634	UK
	8016CTS	Perkins	20	1,657	UK
	8018CTS	Perkins	20	1,822	UK
	8020CTS	Perkins	20	2,067	UK
	8025ZTS	Perkins	28	2,833	UK
	8026CTS	Perkins	25	2,867	UK
	8030ZTS	Perkins	28	3,217	UK
	8035ZTS	Perkins	32	3,651	UK
	8040ZTS	Perkins	46	4,300	UK
	8045ZTS	Perkins	46	4,750	UK
	8050ZTS	Perkins	46	5,235	UK

(continued)

Table 64. Turkey: Mini Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Weight (Kg)	Product Source
		Manufacturer	HP		
JCB	8055ZTS	Perkins	46	5,500	UK
(continued)	8055RTS	Perkins	46	5,500	UK
Kobelco	SK35SR-5	Yanmar	30	3,720	Japan
	SK55SRX-6	Yanmar	40	5,020	Japan
Komatsu	PC09.1	Komatsu	9	1,080	Italy
	PC14R-3	Komatsu	16	1,440	Italy
	PC16R-3	Komatsu	16	1,570	Italy
	PC18MR-3	Komatsu	16	1,840	Italy
	PC20MR-2	Komatsu	21	2,140	Italy
	PC22MR-3	Komatsu	21	2,250	Italy
	PC26MR-3	Komatsu	21	2,550	Italy
	PC30MR-3	Komatsu	29	3,140	Italy
	PC35MR-3	Komatsu	29	3,580	Italy
	PC45MR-3	Komatsu	40	4,590	Italy
	PC50MR-2	Komatsu	40	4,770	Italy
	PC55MR-3	Komatsu	40	5,160	Italy
Kubota	KX008-3	Kubota	10	980	Japan
	KX016-4	Kubota	13	1,540	Germany
	KX018-4	Kubota	16	1,720	Germany
	KX019-4	Kubota	16	1,780	Germany
	KX61-3	Kubota	25	2,600	Germany
	KX71-3	Kubota	28	2,800	Germany
	KX101-3	Kubota	31	3,520	Germany
	KX121-3	Kubota	40	3,980	Germany
	KX057-4	Kubota	46	5,545	Japan
	U10-3	Kubota	10	1,120	Japan
	U17-3	Kubota	16	1,650	Japan
	U20-3	Kubota	19	2,380	Japan
	U27-4	Kubota	21	2,590	Germany
	U35-3	Kubota	31	3,590	Germany
	U48-4	Kubota	40	4,775	Japan
	U55-4	Kubota	46	5,400	Japan
LiuGong	CLG904C	Yanmar	37	4,000	China
	CLG906CIII	Yanmar	49	6,000	China
Mecalac	6MCR	Deutz	75	5,700	Turkey
New Holland	E10SR	Yanmar	8	1,060	Japan
	E16B	Yanmar	15	1,645	Italy
	E18B	Yanmar	15	1,720	Italy
	E18SR	Yanmar	15	1,650	Italy
	E26B SR	Yanmar	23	2,700	Italy
	E29B SR	Yanmar	33	2,870	Italy
	E35B SR	Yanmar	30	3,500	Italy

(continued)

Table 64. Turkey: Mini Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Weight (Kg)	Product Source
		Manufacturer	HP		
New Holland (continued)	E39B SR	Yanmar	30	3,900	Italy
	E45B SR	Yanmar	43	4,540	Italy
	E50B SR	Yanmar	43	4,950	Italy
	E55B SR	Yanmar	43	5,300	Italy
Takeuchi	TB108	Yanmar	9	835	Japan
	TB215 R	Yanmar	16	1,575	Japan
	TB216	Yanmar	16	1,865	Japan
	TB219	Yanmar	16	2,070	Japan
	TB228	Yanmar	23	2,800	Japan
	TB235	Yanmar	28	3,530	Japan
	TB138 FR	Yanmar	28	3,860	Japan
	TB250	Yanmar	38	4,890	Japan
	TB153 FR	Yanmar	39	5,615	Japan
	TB260	Yanmar	43	5,660	Japan
Terex	TC10Z	Yanmar	10	1,158	Italy
	TC15Z	Yanmar	15	1,679	Italy
	TC16	Mitsubishi	18	1,725	Germany
	TC19Z	Yanmar	15	1,926	Italy
	TC20	Mitsubishi	18	2,025	Germany
	TC25	Mitsubishi	24	2,600	Germany
	TC25Z	Mitsubishi	24	2,600	Italy
	TC28Z	Mitsubishi	24	2,800	Italy
	TC29	Mitsubishi	24	2,925	Germany
	TC35	Mitsubishi	30	3,575	Germany
	TC37	Mitsubishi	30	3,650	Germany
	TC40Z	Mitsubishi	30	3,950	Italy
	TC48	Mitsubishi	40	4,760	Germany
	TC50	Yanmar	36	5,020	Germany
	TC60	Mitsubishi	44	5,650	Germany
Volvo	EC15C	Volvo	17	1,630	France
	EC17C	Volvo	17	1,650	France
	EC18C	Volvo	17	1,760	France
	EC20C	Volvo	17	1,940	France
	EC27C	Volvo	27	2,790	France
	EC35C	Volvo	36	3,565	France
	EC55C	Volvo	49	5,700	France
	ECR25D	Volvo	21	2,490	France
	ECR28	Volvo	19	2,821	France
	ECR38	Volvo	28	3,437	France
	ECR50D	Volvo	42	5,010	France
	ECR58D	Volvo	50	5,940	France
Wacker Neuson	803	Yanmar	13	1,030	Austria
	1404	Yanmar	18	1,530	Austria
	EZ17	Yanmar	18	1,725	Austria

(continued)

Table 64. Turkey: Mini Excavators Available, 2015 (continued)

Manufacturer	Model	Engine		Weight (Kg)	Product Source
		Manufacturer	HP		
Wacker Neuson (continued)	ET18	Yanmar	18	1,745	Austria
	ET20	Yanmar	18	2,025	Austria
	ET24	Yanmar	18	2,210	Austria
	EZ17	Yanmar	18	1,725	Austria
	ET18	Yanmar	18	1,745	Austria
	ET20	Yanmar	18	2,025	Austria
	ET24	Yanmar	18	2,210	Austria
	2503	Yanmar	30	2,620	Austria
	EZ28	Yanmar	21	2,735	Austria
	3503	Yanmar	32	3,600	Austria
	EZ38	Yanmar	29	3,765	Austria
	50Z3	Yanmar	38	5,280	Austria
	6003	Yanmar	58	5,905	Austria
XCMG	XE40	Yanmar	37	3,960	China
	XE60	Yanmar	44	5,960	China
Yanmar	SV05	Yanmar	7	690	Japan
	SV08	Yanmar	10	1,035	Japan
	ViO10	Yanmar	13	1,245	Japan
	SV16	Yanmar	16	1,590	France
	ViO17	Yanmar	14	1,740	France
	SV18	Yanmar	13	1,835	France
	SV22	Yanmar	18	2,120	France
	ViO20	Yanmar	20	2,290	France
	SV26	Yanmar	24	2,485	France
	ViO25	Yanmar	20	2,740	France
	ViO33	Yanmar	25	3,365	France
	ViO38	Yanmar	28	3,750	France
	ViO50	Yanmar	40	4,700	France
	ViO57	Yanmar	40	5,325	France

Source: Company Information

MOBILE COMPRESSORS

Market Size and Trends

Table 65. Turkey: Sales of Mobile Compressors, 2010-2014

(Units)

2010	2011	2012	2013	2014
300	350	250	220	190

Source: Off-Highway Research

Demand for mobile compressors is very limited. In Turkey the machine is now a niche product in general building construction, while in civil engineering the machines are kept for many years and reconditioned when necessary.

Several factors have conspired to stop the market from realising its potential, briefly hinted at by annual sales in excess of 500 units as recently as 2007, most significantly the availability of used machines which still form a major threat to the sales of new compressors. Furthermore, much digging of trenches is still done by hand, with city work showing little evidence of the familiar compressor and pick combination evident in the rest of Europe. Where machines are used, the hydraulic excavator, backhoe loader or, increasingly, mini excavator with a breaker attachment is the preferred alternative for most contractors. The market for electrically-powered tools is also growing.

Sales are further hindered by the fact that the concept of ice blasting is not at all prevalent, while sand blasting is essentially limited to shipyards. Use of mobile compressors in cable laying operations, the course of the relative boom in sales in 2010 and 2011, came to an abrupt halt in 2012 and has not resumed since. Another problem is that the concept of rental is not popular, with unpaid bills and un-returned machines a problem for all involved. The one potential saviour for the mobile compressor may, however, come in the form of geothermal energy projects and water well work. This concept has assumed increasing importance in Europe in recent years, and has become an important end-user sector for large compressors over 20 m^3/min. Although this application is not currently widespread in Turkey, suppliers believe it will become popular in the medium to long term.

The lower end of the market, such as it exists, is represented by machines of 4.0 and 5.0 m^3/min, employed by municipalities and small contractors for repairs to roads and buildings. Machines above that size tend to be bought only for large construction projects and for mining. More hydraulic drills are being used than in the past in mining, and to a small extent some sectors are simply much less promising than one might hope. The marble quarries, small and poorly organised, tend to use diamond strings to cut the marble after making an initial hole with a drill driven by a stationary electrically powered compressor. Other quarries use antiquated machinery and do not think to invest regularly.

Production

There are two producers of industrial compressors. **Komsan** of Istanbul manufactures a range of mobile compressors with air outputs of 4.0 m^3/min to 31.0 m^3/min. This company is a

manufacturer of industrial compressors, air tools, refrigerant pumps and air hammers and in the 1980s it built its own mobile compressors with Turkish Deutz engines and air compression elements imported from CompAir. Production is thought to be 20 units or fewer per year and the buyers are municipalities, inclined to support local manufacturers.

The second manufacturer is **Tamsan** of Ankara. The company was founded in 1980 and is a specialist in electric compressor installations but also builds small volumes of low grade piston compressors. Its launch of screw type models, as detailed in the machine listing below, came in 2000 but few have been made. Production in 2011 is thought to have been 30 units or fewer.

On a historical note, it is important for the current position of **Atlas Copco** that it did at one time manufacture mobile compressors in a plant in Ankara, and in the 30 years up to 1989 it made over 7,000 units. A smaller production operation was the manufacturing of around 2,500 units of the **Jenbacher** mobile compressor, by Teknikel from 1977 to 1991.

Market Shares

The table below shows the estimated sales of the leading suppliers in the market.

Table 66. Turkey: Suppliers of Mobile Compressors and Their Market Share, 2014

	2013		2014	
	Units	%	Units	%
Atlas Copco	150	68	130	68
Doosan	25	11	25	13
Kaeser	20	9	15	8
CompAir	10	5	10	5
Others	15	7	10	5
Total	**220**	**100**	**190**	**100**

Source: Off-Highway Research

Atlas Copco is the market leader and has been for many years. It manufactured more than 7,000 mobile compressors in Turkey in the 1960s to 1980s, and enjoyed a market share of about 60 per cent in that period. The company's market share has more recently expanded to nearly 70 per cent, and it dominates the market in virtually all the size categories in which it competes.

The remainder of the market is effectively shared between four suppliers each of whom sells around 10-30 units annually. Of these, **Doosan** has achieved the highest volume of sales with its dealer, Hamamcioğlu.

The full list of suppliers is shown below.

Table 67. Turkey: Distribution Networks of Suppliers of Mobile Compressors, 2015

Manufacturer	Importer	Manufacturer	Importer
Atlas Copco	Atlas Copco	**Kaeser**	Topkapı Endüstri
CompAir	Gemsa	**Komsan**	Komsan
Doosan	Hamamcioğlu	**Tamsan**	Tamsan

Source: Company Information

Population and End-Users

There is a relatively large population of mobile compressors in Turkey as a result of the habit of users of keeping the machines for 20 years and the previously higher sales volumes.

Table 68. Turkey: Population of Mobile Compressors by Type of User, 2015

	Units	%
General Contractors	4,800	60
Quarries	1,600	20
Municipalities and Public Authorities	800	10
Industry	400	5
Sand Blasting	400	5
Total	**8,000**	**100**

Source: Off-Highway Research

Traditionally the largest users by far are the contractors, such as the civil engineers who need them for drills. The town and village authorities, like the smaller building firms, typically use the 3.0 and 5.0 m^3/min machines.

Forecast to 2019

Although the mobile compressor will continue to fulfil a niche role in the market, there now seems little prospect of significant future growth despite the highly favourable outlook for the construction industry. Demand is therefore likely to stabilise at current levels for the foreseeable future at least.

Table 69. Turkey: Forecast Sales of Mobile Compressors, 2015-2019

(Units)

2015	2016	2017	2018	2019
190	200	200	225	250

Source: Off-Highway Research

Machines Available

Table 70. Turkey: Mobile Compressors Available, 2015

Manufacturer	Model	Air Delivery (ft^3/min)	Engine		Weight (Kg)	Product Source
			HP	Manufacturer		
Atlas Copco	XAS 37	20	21	Kubota	450	Belgium
	XAS 47	2.6	26-29	Kubota, Deutz	635	Belgium
	XAS 67	3.7	80	Deutz	800-850	Belgium
	XAS 77	4.3	80	Deutz	740	Belgium
	XAS87	5.0	45	Kubota	740	Belgium
	XAS 97	5.3	80	Deutz	800-850	Belgium
	XAHS107	5.6	135	Kubota	1,475	Belgium
	XAS127	7.2	96	Kubota	1,475	Belgium
	XAS 137	7.7	96	Kubota	1,475	Belgium
	XAS 186	11.1	114	Deutz	1,800	Belgium
	XAS237	14.2	175	Deutz	3,000	Belgium
	XAS287	17.1	175	Deutz	3,000	Belgium
Note: All the above have a working pressure of 7 bar. A range of high-pressure models is also available.						
CompAir	C14	1.4	17	Honda	138	Germany
	C20	2.0	17	Kubota	550	Germany
	C25	2.5	26	Kubota	555	Germany
	C20GS	2.1	31	Kubota	655	Germany
	C30	3.0	31	Kubota	605	Germany
	C35-10/G	3.5	48	Yanmar	810	Germany
	C38/G	3.8	48	Yanmar	895	Germany
	C42/G/GS	4.2	48	Yanmar	895	Germany
	C50	5.0	48	Yanmar	955	Germany
	C55/G	5.5	85	Cummins	1,160	Germany
	C60/G	6.0	85	Cummins	1,160	Germany
	C65/G	6.5	85	Cummins	1,160	Germany
	C76/G	7.6	85	Cummins	1,160	Germany
	C95-12	9.5	130	Cummins	1,940	Germany
	C110	11.0	130	Cummins	1,940	Germany
	C125	12.5	130	Cummins	1,945	Germany
	C140-9	13.3	130	Cummins	1,940	Germany
Notes: 1. All the above have a working pressure of 7 bar. A range of high-pressure models is also available. 2. Models where the name is followed by a G have a generator. Models followed by GS have a simultaneous air and electric current capability.						

(continued)

Table 70. Turkey: Mobile Compressors Available, 2015 (continued)

Manufacturer	Model	Air Delivery (ft^3/min)	Engine		Weight (Kg)	Product Source
			HP	Manufacturer		
Doosan	7/20	2.0	17.5	Kubota	430	Czech Republic
	7/26E	2.5	21.2	Yanmar	630	Czech Republic
	7/31E	3.0	26	Yanmar	650	Czech Republic
	7/41	4.0	35	Yanmar	775	Czech Republic
	7/51	5.0	50	Yanmar	937	Czech Republic
	7/72	7.2	71	Yanmar	1,132	Czech Republic
	7/120	12.0	125	John Deere	2,374	Czech Republic
	7/170	17.0	173	John Deere	2,868	Czech Republic
Note: A range of higher-pressure models at 10 to 12 bar is available in various sizes from 5.6m^3/min to 42.5m^3/min.						
Kaeser	M13	1.0	21	Honda	202	Germany
	M15	1.0	21	Honda	202	Germany
	M17	1.0	21	Honda	202	Germany
	M20	2.0	19	Kubota	457	Germany
	M26	2.6	24	Kubota	498	Germany
	M30	3.0	31	Kubota	505	Germany
	M36	3.6	49	Kubota	1,145	Germany
	M43	4.2	39	Kubota	735	Germany
	M45	4.2	48	Kubota	995	Germany
	M50	5.0	48	Kubota	740	Germany
	M52	5.2	48	Kubota	1,225	Germany
	M57	5.6	48	Kubota	1,225	Germany
	M64	6.4	56	Kubota	1,230	Germany
	M80	8.1	78	Kubota	1,480	Germany
	M100	10.2	94	Kubota	1,495	Germany
	M122	11.1	111	Deutz	1,865	Germany
	M123	11.2	118	Deutz	1,945	Germany
	M135	13.4	165	Deutz	2,500	Germany
	M170	17.0	173	Deutz	2,600	Germany
	M200	20.0	198	Caterpillar	3,235	Germany
	M270	27.0	348	Mercedes	5,025	Germany
Note: A range of higher-pressure models at pressures from 8 to 14 bar is available in various sizes from 4.15m^3/min to 25.5m^3/min.						

Source: Company Information

MOBILE CRANES

Market Size and Trends

Traditionally, the mobile crane market in Turkey consisted largely of used cranes, especially reconditioned cranes from Liebherr, Grove, Terex Demag or the independent suppliers like the Dutch exporters. This applied to both the civil engineers and to the rental companies. From 1990 onwards a supply of second-hand all terrain cranes from Germany began to fill the rental

fleets in Turkey, and the advantages of the all terrain concept were there for all in the profession to see.

Table 71. Turkey: Sales of Mobile Cranes by Type, 2010-2014

	2010		2011		2012		2013		2014	
	Units	%	Units	%	Units	%	Units	%	Units	%
All Terrain	10	17	12	16	16	33	56	38	36	42
Rough Terrain	46	77	60	80	26	53	64	43	34	40
Crawler	4	6	3	4	9	14	29	19	15	18
Total	**60**	**100**	**75**	**100**	**49**	**100**	**149**	**100**	**85**	**100**

Source: Off-Highway Research

Nevertheless, the vast majority of new cranes sold until recently have been rough terrain cranes, up to and sometimes exceeding 75 per cent of the total mobile crane market. Of these, it is estimated that a further 75 per cent were shipped to Turkish contractors working abroad, typically in the CIS countries, the Middle East and North Africa. These contractors prefer to buy new machines from known dealers in Istanbul and Ankara, and more than 50 per cent of these cranes will eventually be shipped back to Turkey for use in forthcoming energy projects.

During the last 10 years, in particular, this market sector has risen massively as a result of the huge increase in new infrastructure work, energy projects and oil refinery construction being undertaken in the regions listed above. The rough terrain crane was particularly favoured as a pick-and-carry machine on these job sites, since it is not required to travel long distances, is less expensive to fix than an all terrain crane, and its purchase price is 30 per cent less; its purchase can effectively be written off against the specific project for which it is bought.

The above applied equally to the Turkish construction sector where the majority of the work involves large, long term infrastructure projects such as dam construction or hydro-electric installations, whose predominant requirement is for rough terrain cranes below 100 tonnes; the majority of rough terrain crane sales fall in the 60 tonne category, and these are generally sold direct to the general contractors. In contrast to the all terrain market, imports of second hand rough terrain machines are few and far between.

However, the past three years has seen a distinct move towards the purchase of all terrain cranes. Last year, for the first time, sales of such machines accounted for the single-biggest portion of the total market. As previously explained, the concept and benefits of these cranes have long been understood – it has been the large number of major infrastructure projects, the strength of

overseas work and the relative weakness of the crane rental sector that has limited sales. Now, though, overseas sales have fallen, and the crane rental sector has grown both in absolute and relative terms, partly due to the development of the type of projects for which all terrain cranes and therefore crane rental are most suited. It remains to be seen if this transition is permanent – not least because the current prominence is due in part to a specific deal for Sany cranes, the long term acceptance of which is not yet proven – or if rough terrain cranes will return to prominence as and when overseas markets pick up again and further major domestic projects are started.

Those all terrain cranes bought by the crane rental companies are hired out for short term contracts and where the requirement is for machines of 200 to 350 tonnes' lift capacity. The largest all terrains of 500 or 700 tonnes are used in wind farm construction, where there is also a requirement for 100-200 tonne all terrain cranes which are used in conjunction with 600 tonne crawler cranes.

Crawler cranes sell in incremental quantities only, and typically fall within the 600 tonne lift capacity sector.

Production

There is no production of specialist mobile cranes in Turkey, although there are several local manufacturers who mount 40 and 50 tonne 'knuckle-boom' cranes onto on-highway truck chassis, but these are not true competitors to the imported mobile cranes. They were, however, used to justify a high tariff on imported truck cranes, which led in the past to a bias in the imports in favour of the rough terrain crane concept, where the machine had a 30 per cent lower tariff. After the customs union with the EU, the protection afforded is that used truck cranes up to 70 tonnes cannot be imported. Two points make this an unimportant restriction. The supply of truck cranes from Europe has more or less disappeared and, secondly, buyers in Turkey do not want that kind of product in any case. It should be noted, however, that estimates of the market for domestically-produced truck mounted cranes reach up to 50 units per year from as many as five or six local suppliers, one or two of whom have developed telescopic models as well.

Market Shares

Table 72. Turkey: Suppliers of Mobile Cranes and Their Market Shares, 2013-2014

	2013		2014	
	Units	%	Units	%
Terex	86	58	25	29
Sany	-	-	17	20
Grove	22	15	15	18
Hitachi-Sumitomo	6	4	10	12
Liebherr	22	15	10	12
XCMG	-	-	3	4
Zoomlion	4	3	3	4
Tadano	2	1	1	1
Kobelco	1	1	1	1
Sennebogen	6	4	-	-
Total	**149**	**100**	**85**	**100**

Source: Off-Highway Research

Table 73. Turkey: Suppliers of Mobile Cranes and Their Sales by Type, 2014

	All Terrain		Crawler		Rough Terrain		Total	
	Units	%	Units	%	Units	%	Units	%
Terex	-	-	1	7	24	71	**25**	**29**
Sany	17	47	-	-	-	-	**17**	**20**
Grove	5	14	-	-	10	29	**15**	**17**
Hitachi-Sumitomo	-	-	10	66	-	-	**10**	**12**
Liebherr	10	28	-	-	-	-	**10**	**12**
XCMG	-	-	3	20	-	-	**3**	**4**
Zoomlion	3	8	-	-	-	-	**3**	**4**
Tadano	1	3	-	-	-	-	**1**	**1**
Kobelco	-	-	1	7	-	-	**1**	**1**
Total	**36**	**100**	**15**	**100**	**34**	**100**	**85**	**100**

Source: Off-Highway Research

Terex Cranes has been the dominant market leader for many years, thanks in part to the overseas activities of its importer, DAS Oto. The company performs particularly well in the rough terrain sector. DAS Oto has been the general importer for a variety of Terex brands since 1996 – P&H, American, PPM, Demag and Genie. Most of the North American crane products are sold only to customers working outside Turkey but the rough terrain cranes made in Italy are CE marked and are also sold in the domestic market. DAS currently operates in over 50 countries, primarily as a service partner for Terex, but also in a selling capacity in countries such

as Azerbaijan, where it was awarded the official Terex franchise in 2009, CIS, Turkmenistan, Iraq and Kazakhstan.

Sany has secured second place in the market thanks to a significant deal for its all terrain cranes. How well the company can capitalise on this first major foothold in a market in which it has seen considerable success in other countries remains to be seen, given the low level of sales achieved to date by other Chinese suppliers, where concerns about service support as much as the products themselves have hampered sales development.

The **Grove** importer, Karun, was for a long time the market leader in cranes, of both the all terrain and rough terrain varieties, although has lost market share in the face of the Terex onslaught in recent years. Karun lives from the private sector, particularly the rental companies but also the contractors. The former buys its used cranes from Deutsche Grove's stock in Germany, while the latter buys a mixture of new and used cranes. Servicing is based at its headquarters in Ankara, although the company employs staff across Turkey, Kazakhstan and Azerbaijan. It has a particular strategy to target the all terrain crane sector and the associated technical and service support, an area in which it excels.

Liebherr has a strong business base with some crane rental companies and is known for being a favourite of those buying the larger size all terrain models. The company's products have been sold in Turkey for over 20 years by HCS, although Liebherr's own subsidiary company established in 2008 now sells the mobile crane range below 300 tonnes. **Hitachi-Sumitomo** products are distributed by Enka, and the company made good progress in the wind-farm and power plant market last year.

The list of major suppliers is shown below.

Table 74. Turkey: Distribution Networks of Suppliers of Mobile Cranes, 2015

Manufacturer	Importer	Manufacturer	Importer
Grove	Karun	**Sennebogen**	Forsen
Hitachi Sumitomo	Enka	**Tadano/Tadano Faun**	Enka
Kobelco	DAS Oto	**Terex**	DAS Oto
Liebherr	HCS/Liebherr	**XCMG**	Özmak
Manitowoc	Karun	**Zoomlion**	Gama
Sany	Ascendum		

Source: Company Information

Population and End-Users

Table 75. Turkey: Population of Mobile Cranes by Type, 2015

Type	Units	%
Rough Terrain	800	46
All Terrain	400	23
Truck-Mounted	250	14
Crawler	200	11
Industrial	100	6
Total	**1,750**	**100**

Source: Off-Highway Research

Cranes as a whole last far longer here than in Western Europe, and the population is very high in relation to what has been sold recently. The contractors, owning perhaps 40 per cent of them, are the largest group of customers at present in respect of new cranes, for they have projects against which they can write off the cost. The rental companies are becoming more important and own around 30 per cent of cranes, up from 20 per cent at the time of the last report. The state enterprises which own and operate cranes, such as TEK and Turkish Petroleum, are becoming less significant but not disappearing entirely. They have about 180 cranes between them. The rest lies with industry, which often does its own construction, for instance in the steel industry.

Forecast to 2019

In contrast to the previous report, the bulk of demand for new cranes in the short to medium term will come from work inside Turkey, rather than for contractors based in Turkey but operating in the CIS, North Africa and the Middle East. The surge in oil prices, in particular, that created a huge demand for all types of crane in the above regions has abated, and safety concerns apply in some areas as much as economic and political ones. Such work will continue, though predicting the level is nigh on impossible. Domestically, however, the falling oil price has eased pressure on the country's budget deficit, potentially allowing the country to generate a domestic market more in line with its needs, as measured by sales in countries with comparable markets for other products. A domestic annual market of at least 100 crane sales, excluding those used abroad, is widely seen as the benchmark, though it is not widely thought this will be achieved in the next five years.

Table 76. Turkey: Forecast Sales of Mobile Cranes by Type, 2015-2019

	2015		2016		2017		2018		2019	
	Units	%	Units	%	Units	%	Units	%	Units	%
Rough Terrain	35	44	45	53	55	55	55	50	60	48
All Terrain	35	44	30	35	35	35	40	36	50	40
Crawler	10	12	10	12	10	10	15	14	15	12
Total	**80**	**100**	**85**	**100**	**100**	**100**	**110**	**100**	**125**	**100**

Source: Off-Highway Research

Machines Available

The table below shows the machines available through permanently represented companies. Suppliers who sell to international contractors from bases outside Turkey are excluded, as are products such as North American cranes that are not CE marked but can be sold for use outside Turkey. The engine horsepowers are quoted for the superstructure and the carrier in that order, linked by a + sign.

Table 77. Turkey: Mobile Cranes Available, 2015

Manufacturer/Type	Model	Max Lift Capacity (Tonnes)	Engine		Product Source
			HP	Manufacturer	
All Terrain					
Grove	GMK3050-1	50	354	Mercedes-Benz	Germany
	GMK3055	55	354	Mercedes-Benz	Germany
	GMK3060	60	354	Mercedes-Benz	Germany
	GMK4100-B	80	402	Mercedes-Benz	Germany
	GMK4115	100	148+422	Mercedes-Benz	Germany
	GMK5115	100	148+503	Mercedes-Benz	Germany
	GMK5135	110	173+503	Mercedes-Benz	Germany
	GMK5165	130	173+503	Mercedes-Benz	Germany
	GMK5225	170	201+543	Mercedes-Benz	Germany
	GMK5275	220	228+563	Mercedes-Benz	Germany
	GMK6300L	300	285+551	Mercedes-Benz	Germany
	GMK6400	400	285+551	Mercedes-Benz	Germany
	GMK7550	450	279+563	Mercedes-Benz	Germany
Liebherr	LTM1030-2	35	278	Liebherr	Germany
	LTM1040-2	40	278	Liebherr	Germany
	LTC1045-3	45	329	Mercedes Benz	Germany
	LTM1050-3	50	367	Liebherr	Germany
	LTC1055-3	55	476	Liebherr	Germany
	LTM1055-3	55	367	Liebherr	Germany
	LTM1060-3	60	367	Liebherr	Germany
	LTM1070-4	70	367	Liebherr	Germany

(continued)

Table 77. Turkey: Mobile Cranes Available, 2015 (continued)

Manufacturer/Type	Model	Max Lift Capacity (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Liebherr (continued)	LTM1090-4	90	476	Liebherr	Germany
	LTM1095-5	95	197+503	Liebherr	Germany
	LTM1100-4	100	175+476	Liebherr	Germany
	LTM1100-5	100	197+503	Liebherr	Germany
	LTM1130-5	130	197+503	Liebherr	Germany
	LTM1160-5	160	197+503	Liebherr	Germany
	LTM1200-5	200	197+503	Liebherr	Germany
	LTM1220-5	220	245+503	Liebherr	Germany
	LTM1250-6	250	245+612	Liebherr	Germany
	LTM1300-6	300	245+612	Liebherr	Germany
	LTM1350-6	350	245+612	Liebherr	Germany
	LTM1400-7	400	326+612	Liebherr	Germany
	LTM1500-8	500	326+680	Liebherr	Germany
	LTM11200-9	1,200	367+680	Liebherr	Germany
Tadano Faun	ATF40G-2	40	279	Mercedes-Benz	Germany
	ATF50G-3	50	326	Mercedes-Benz	Germany
	ATF70G-4	70	435	Mercedes-Benz	Germany
	ATF90G-4	90	174+428	Mercedes-Benz	Germany
	ATF110G-5	110	175+530	Mercedes-Benz	Germany
	ATF130G-5	130	175+530	Mercedes-Benz	Germany
	ATF180G-5	180	175+551	Mercedes-Benz	Germany
	ATF220G-5	220	188+530	Mercedes-Benz	Germany
	ATF400G-6	400	265+653	Mercedes-Benz	Germany
	ATF50G-3	50	326	Mercedes-Benz	Germany
	ATF70G-4	70	435	Mercedes-Benz	Germany
	ATF90G-4	90	174+428	Mercedes-Benz	Germany
	ATF110G-5	110	175+530	Mercedes-Benz	Germany
	ATF130G-5	130	175+530	Mercedes-Benz	Germany
	ATF180G-5	180	175+551	Mercedes-Benz	Germany
	ATF220G-5	220	188+530	Mercedes-Benz	Germany
	ATF400G-6	400	265+653	Mercedes-Benz	Germany
Terex	AC40/2	40	279	Mercedes-Benz	Germany
	Challenger 3160	55	326	Mercedes-Benz	France
	Challenger 3180	60	360	Mercedes-Benz	France
	AC60-3	60	354	Mercedes-Benz	France
	AC100/4	100	175+462	Mercedes-Benz	Germany
	Explorer 5500	130	500	Scania	Germany
	Explorer 5600	160	550	Scania	Germany
	Explorer 5800	220	550	Scania	Germany
	AC250-1	250	279+612	Daimler Chrysler	Germany
	AC350-6	350	279+612	Daimler Chrysler	Germany
	AC700	700	286+625	MTU	Germany
	AC1000/9	1,200	653	MTU	Germany

(continued)

Table 77. Turkey: Mobile Cranes Available, 2015 (continued)

Manufacturer/Type	Model	Max Lift Capacity (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Crawler Lattice					
Hitachi-Sumitomo	SC350	35	150	Hino	Japan
	SC400	40	150	Hino	Japan
	SC500-2	50	180	Hino	Japan
	SC650	65	180	Hino	Japan
	SC700	70	200	Isuzu	Japan
	SC800	80	250	Mitsubishi	Japan
	SCX800HD	80	288	Isuzu	Japan
	SCX900-3	90	288	Isuzu	Japan
	SC1000	100	250	Mitsubishi	Japan
	SCX1200	120	250	Mitsubishi	Japan
	SC1500-2	150	320	Hino	Japan
	SCX400	40	185	Isuzu	Japan
Kobelco	CKE600G	60	180	Hino	Japan
	CKE800G	80	180	Hino	Japan
	CKE900G	90	285	Hino	Japan
	CKE1100G	110	285	Hino	Japan
	CKE1350G	135	285	Hino	Japan
	CKE2500G	250	285	Hino	Japan
Liebherr	LR1100	105	362	Liebherr	Austria
	LR1130	137	362	Liebherr	Austria
	LR1160	160	362	Liebherr	Austria
	LR1200	200	362	Liebherr	Austria
	LR1250	250	362	Liebherr	Austria
	LR1280	280	600	Liebherr	Austria
	LR1300	300	612	Liebherr	Austria
	LR1350/1	350	367	Liebherr	Germany
	LR1400/2	400	408	Liebherr	Germany
	LR1600/2	600	503	Liebherr	Germany
	LR1750	750	544	Liebherr	Germany
	LR11000	1,000	870	Liebherr	Germany
	LR11350	1,350	870	Liebherr	Germany
	LR13000	3,000	2 x 1,360	Liebherr	Germany
Manitowoc	8000	73	285	Hino	Japan
	8500	80	285	Hino	Japan
	10000	91	285	Hino	Japan
	11000	100	285	Hino	USA
	12000	110	285	Hino	USA
	MLC165	165	320	Cummins	USA
	777	181	340	Cummins	USA
	999	250	400	Cummins	USA
	14000	200	340	Cummins	USA
	2250	272	500	Cummins	USA
	16000	400	500	Cummins	USA
	18000	600	600	Cummins	USA

(continued)

Table 77. Turkey: Mobile Cranes Available, 2015 (continued)

Manufacturer/Type	Model	Max Lift Capacity (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Manitowoc (continued)	21000	746	600	Cummins	USA
	31000	2,300	2 x 600	Cummins	USA
Sany	SCC800C	80	253	Cummins	China
	SCC1000C	100	249	Cummins	China
	SCC1500C	150	314	Cummins	China
	SCC2000	200	305	Cummins	China
	SCC2500C	250	335	Cummins	China
	SCC3200	320	405	Cummins	China
	SCC4000	400	518	Cummins	China
	SCC6300	630	544	Cummins	China
Sennebogen	2200	80	261	Caterpillar	Germany
	3300 SL	110	261	Caterpillar	Germany
	4400 SL	140	261	Caterpillar	Germany
	5500 SL	180	348	Caterpillar	Germany
	7700	300	420	Caterpillar	Germany
Terex	CC 2000-1	300	353	Mercedes-Benz	Germany
	CC 2200	350	353	Mercedes-Benz	Germany
	CC 2400-1	400	353	Mercedes-Benz	Germany
	CC 2500-1	500	420	Mercedes-Benz	Germany
	CC 2800-1	600	516	Mercedes-Benz	Germany
	CC 5800	1,000	428	Mercedes-Benz	Germany
	CC 6800	1,250	428	Mercedes-Benz	Germany
	CC 8800-1	1,600	516	Mercedes-Benz	Germany
	CC 12800	2,000	550	Mercedes-Benz	Germany
	CC 8800-1	3,200	516+571	Mercedes-Benz	Germany
XCMG	QUY55	55	212	Shanghai Diesel	China
	QUY80	80	245	Cummins	China
Zoomlion	QUY50	55	180	Weichai	China
	QUY70	70	238	Weichai	China
	QUY80	80	271	Weichai	China
Crawler Telescopic					
Liebherr	LTR1060	60	175	Liebherr	Germany
	LTR1100	100	175	Liebherr	Germany
	LTR11200	1,200	367	Liebherr	Germany
Sennebogen	613	16	124	Deutz	Germany
	643	40	174	Deutz	Germany
	673	70	228	Cummins	Germany
	683	80	253	Deutz	Germany
	6113	120	228	Cummins	Germany

(continued)

Table 77. Turkey: Mobile Cranes Available, 2015 (continued)

Manufacturer/Type	Model	Max Lift Capacity (Tonnes)	Engine		Product Source
			HP	Manufacturer	
Rough Terrain					
Grove	RT530E-2	27	156	Cummins	Italy
	RT540E	35	156	Cummins	Italy
	RT550E	45	161	Cummins	Italy
	RT600E	45	173	Cummins	Italy
	RT765E2	60	240	Cummins	Italy
	RT770E	65	240	Cummins	Italy
	RT880E	70	275	Cummins	Italy
	RT890E	80	275	Cummins	Italy
	RT9130E	120	323	Cummins	Italy
Tadano	GR-300EX	30	217	Cummins	Japan
	GR-550EX	55	272	Mitsubishi	Japan
	GR-600EX	60	272	Cummins	Japan
	GR-800EX	80	275	Cummins	Japan
Terex	RT230	27	130	Cummins	Italy
	RT35	35	139	Cummins	Italy
	RT45	45	173	Cummins	Italy
	RT555	50	185	Cummins	Italy
	A600	60	199	Cummins	Italy
	RC60	60	219	Cummins	Italy
	Quadstar 1065	65	222	Cummins	Italy
	RT670	64	220	Cummins	Italy
	RT780	73	260	Cummins	Italy
	Quadstar 1075	75	220	Cummins	Italy
	RT100	90	262	Cummins	Italy
	Quadstar 1100	100	260	Cummins	Italy
	RT130	118	300	Cummins	Italy

Source: Company Information

MOTOR GRADERS

Market Size and Trends

Despite the obvious implications of the global financial crisis when demand for all types of machinery collapsed in 2009, the market for graders has remained at a relatively stable and high level throughout the period under review. The on-going requirement for new road construction and maintenance of the existing network has resulted in an abundance of government tender purchases, which in 2011 culminated in the largest volume of sales recorded in the last 15 years.

Since then, the market has remained stable at historically high levels of nearly 250 units per year for the past three years, with a buoyant mining sector, the other important user of graders, helping to underpin this demand.

Table 78. Turkey: Sales of Motor Graders, 2010-2014

(Units)

2010	2011	2012	2013	2014
190	330	259	244	244

Source: Off-Highway Research

The motor grader is not widely used by the road contractors, although they do buy machines when they have new projects. Rather it is the various public bodies and municipalities maintaining the "stabilised" earth roads which are the main buyers. These machines then further justify the investment made in them by being used for now clearance in the winter. They purchase 12 and, mostly, 14 tonne machines, with engines of 140 to 180 horsepower. The scarifier is fitted as standard, and most contractors add a ripper at the rear.

Market Shares

The clear market leader is **Caterpillar**, which has achieved a high market penetration as a result of being able to offer the grader product as part of larger machine package deals. It also benefits from the high reputation of the product range with the private contractors and the dealer, Borusan Makina, has made particular efforts to establish itself with them.

Komatsu has recently established itself in second place in the market. This is partly because of the price benefits of the recent Japanese Yen/Turkish Lira exchange rate, and partly due to the company's renewed on the machine package deal business, where previously it has lost business to Caterpillar and Volvo due to the lack of a grader in its product range.

Its recent success is also partly due to problems faced by **Volvo**, which previously has been the closest challenger to Caterpillar, having established a large population of motor graders in Turkey through its former brand Champion, which won many public sector tenders over the years. In the past three years, however, it has suffered from the increased initial costs and concerns over fuel quality associated with the company's decision to move to only supplying machines with Tier IV engines. Now, the company faces further uncertainty following its

decision to suspend the production of Volvo-branded models and replace them with Chinese-produced, SDLG-branded machines (once they have been CE approved).

Chinese suppliers Liugong and XCMG have established a firm footing in this market in the past few years, while further competition is imminent in the shape of the **HBM-Nobas** range of machines recently taken on by Bomag dealer Karyer and, perhaps more significantly, **Hidromek**'s range of former Mitsubishi products (again, once they have received CE approval).

Table 79. Turkey: Suppliers of Motor Graders and Their Market Shares, 2013-2014

	2013		2014	
	Units	%	Units	%
Caterpillar	97	40	108	44
Komatsu	53	22	56	23
Volvo	56	23	45	18
LiuGong	23	9	20	8
XCMG	15	6	15	6
Total	**244**	**100**	**244**	**100**

Source: Off-Highway Research

The full list of suppliers is shown below.

Table 80. Turkey: Distribution Networks of Suppliers of Motor Graders, 2015

Manufacturer	Supplier	Manufacturer	Supplier
Case	TürkTraktör	**New Holland**	TürkTraktör
Caterpillar	Borusan Makina	**Terex**	Hasel
HBM Nobas	Karyer Tatmak	**Volvo**	Ascendum
Komatsu	Temsa	**XCMG**	Özmak Makina
LiuGong	Uygunlar	**Zoomlion**	Gama

Source: Company Information

Population and End-Users

There is a large population of motor graders in Turkey as a result of the major tenders of the mid-1980s. Off-Highway Research estimates the total population of machines at 4,500 units, with the majority being over 10 years old; around 2,200 have been bought in the past 10 years. The two biggest owners are the State highways authority and the rural administrations.

Table 81. Turkey: Population of Motor Graders by Type of User, 2015

	Units	%
Government Agencies	3,400	76
Municipalities	450	10
General Contractors	450	10
Mines	100	2
Others	100	2
Total	**4,500**	**100**

Source: Off-Highway Research

Forecast to 2019

The requirement for infrastructure projects and highway construction is still massive and there is huge potential for the motor grader market over the next 20 years. Indeed, this partially explains Hidromek's decision to invest in the former Mitsubishi products and manufacturing facility, and the company has made a success of correctly reading the needs of its domestic market. Major investment is planned for new transport systems in Istanbul, including underground rail and road crossings over the Bosphorus, whilst the government has already outlined its priorities for upgrading the country's rural road network. If all of these projects are initiated, the traditionally stable market for graders could expand significantly over the next 10 years.

Table 82. Turkey: Forecast Sales of Motor Graders, 2015-2019

(Units)

2015	2016	2017	2018	2019
250	230	260	285	320

Source: Off-Highway Research

Machines Available

Table 83. Turkey: Motor Graders Available, 2015

Manufacturer	Model	Engine		Weight (Tonnes)	Product Source
		HP	Manufacturer		
Case	835C	133	CNH	12.2	Germany
	856C	190	CNH	16.2	Germany
Caterpillar	120M	138	Caterpillar	14.0	USA
	140M	183	Caterpillar	15.1	USA

(continued)

Table 83. Turkey: Motor Graders Available, 2015 (continued)

Manufacturer	Model	Engine		Weight (Tonnes)	Product Source
		HP	Manufacturer		
Caterpillar (continued)	160M	213	Caterpillar	15.9	USA
	12M	158	Caterpillar	14.5	USA
	14M	259	Caterpillar	21.4	USA
	16M	297	Caterpillar	26.0	USA
	24M	533	Caterpillar	62.4	USA
HBM-Nobas	BG70	75	Cummins	7.0	Germany
	BG110-M	132	Perkins	8.6	Germany
	BG110T-4/TA-4	132	Perkins	10.9	Germany
	BG130T-4/TA-4	146	Perkins	13.9	Germany
	BG160T-4/TA-4	162	Cummins	16.0	Germany
	BG190T-4/TA-4	181	Cummins	19.0	Germany
	BG240T-4/TA-4	234	Cummins	23.0	Germany
Komatsu	GD555-5	160	Komatsu	13.1	Japan
	GD675-5	200	Komatsu	14.9	Japan
LiuGong	CLG 416	175	Cummins	14.1	China
	CLG 418	200	Cummins	15.5	China
	CLG 418 III	223	Cummins	15.5	China
	CLG 422	235	Cummins	16.5	China
	CLG 425	263	Cummins	19.5	China
New Holland	F106.6/F106.6A	133	CNH	12.2	Germany
	F156.7/F156.7A	190	CNH	16.2	Germany
Volvo	G930C	155-195	Volvo	15.5	Canada
	G940C	170-215	Volvo	16.0	Canada
	G946C	195-235	Volvo	16.6	Canada
	G960C	195-235	Volvo	16.7	Canada
XCMG	GR 135	47	Cummins	11.0	China
	GR 180	193	Cummins	15.4	China
	GR 215	220	Cummins	19.0	China
Zoomlion	PY 190B	193	Cummins	15.4	China

Source: Company Information

ROUGH TERRAIN LIFT TRUCKS

Market Size and Trends

The rough terrain lift truck market is still very undeveloped in comparison with some European markets. The lack of safety rules for materials handling on-site has combined with a generally negative attitude towards productivity-orientated machines to make the demand from the

construction industry very small. Industry has traditionally refused to pay extra for the rough terrain ability.

Table 84. Turkey: Sales of Telescopic Handlers, 2010-2014

(Units)

2010	2011	2012	2013	2014
155	326	298	413	538

Source: Off-Highway Research

In the past, these various factors have worked against the rough terrain lift truck and it now appears that there will never be any market for masted machines. The telescopic variety, however, has shown some growth during the last two years.

In part this has come from the construction sector where some customers have begun to appreciate the benefits of the machine in material handling applications. However, the majority of machines are sold to civil engineering contractors, where they are effectively used in lieu of cranes, rather than to housebuilding, as is the case in Western Europe. Here, the prominence of knuckle-boom, truck-mounted cranes militates against the widespread adoption of telehandlers. Indeed, in many quarters the product is still perceived by potential end-users as being too expensive compared to a backhoe loader and less versatile. There has also been some growth in the agricultural and landscaping markets, where basic specification machines are slowly, very slowly, beginning to make an impression in the still manual-labour dominated sector.

As a result of these market characteristics, the most popular machine size is large. Machines with lift heights of at least 12 metres and up to 17 metres are those favoured by civil engineering contractors, and these account for anything up to 50 per cent of sales. The next most popular size, accounting for around a third of sales, is 3.0 tonne lift capacity machines with lift heights of 6-7 metres, used by small building contractors, in landscaping and in agriculture. The remainder falls in between these two machines.

Production

From 1994 to 1999 Manitou of France had a joint venture with Hidromek to manufacture telescopic handlers. This superseded a contract to manufacture similar machines under licence at Çukurova, and the use of the importing company Trakmak to sell machines with the Manitou name on them. The venture was short lived, however, and ended after five years.

In 2008 **Sanko** entered the telescopic handler sector when it began the production of a new range of machines at its backhoe loader factory in Gaziantep, southern Turkey. The **MST** branded range consists of seven models with lift capacities ranging from 3-4 tonnes and lift heights of 6.35-16.3 metres. Production volumes remain small, amounting to 200 units in 2011 and 150 units in 2014, around 50 per cent of which were exported.

Market Shares

Table 85. Turkey: Suppliers of Telescopic Handlers and Their Market Shares, 2013-2014

	2013		2014	
	Units	%	Units	%
Manitou	165	40	211	39
JCB	120	29	150	28
MST	62	15	78	15
Genie	12	3	30	6
Bobcat	14	3	20	4
Merlo	9	2	15	3
Caterpillar	9	2	14	3
Dieci	17	4	13	2
Wacker Neuson	3	1	3	1
New Holland	2	-	3	1
Case	-	-	1	-
Total	**413**	**100**	**538**	**100**

Source: Off-Highway Research

There is a familiar look to the top of the market share table. The leading supplier is French specialist **Manitou**, which led the market in the late 1990s during the existence of its joint venture with Hidromek, and which has continued to do so after transferring the account to Çukurova Ithalat and, more recently, Maats.

JCB is the main challenger to Manitou in the telescopic handler sector and sells its products through its long established dealer, SIF JCB. It is optimistic its strong presence and brand recognition in the backhoe loader market and, by extension, in the agricultural sector, will stand it in good stead in what it sees as an important developing market.

The only surprising aspect to the market share table is the presence, in a strong third place, of local manufacturer **MST**. It has developed products well-received in the agricultural and small building side of the market, and also benefits from the favourable approach typically shown to domestic manufacturer.

These three suppliers currently dominate the sector, accounting for more than four in every five machines sold.

The full list of suppliers is shown below.

Table 86. Turkey: Distribution Networks of Suppliers of Rough Terrain Lift Trucks, 2015

Manufacturer	Importer	Manufacturer	Importer
Bobcat	Hamamcioğlu	**Manitou**	Maats
Case	TürkTraktör	**Merlo**	Koza
Caterpillar	Borusan Makina	**New Holland**	TürkTraktör
Dieci	Temsa	**MST**	SANKO
Genie	Borusan Makina	**Terex**	Hasel
JCB	SIF JCB	**Wacker Neuson**	Wacker Neuson
Liebherr	Liebherr Turkey		

Source: Company Information

Population and End-Users

Table 87. Turkey: Population of Telescopic Handlers by Type of User, 2015

	Units	%
Construction	1,260	60
Agriculture	525	25
Landscaping	170	8
Industry	145	7
Total	**2,100**	**100**

Source: Off-Highway Research

The population has grown steadily as demand for telescopic handlers has risen during the last three years in particular and now exceeds 2,000 units. The majority of machines are to be found in the construction sector, although there is a growing volume of machines operating within the agricultural sector. Within the industrial sector, sales have been made to specialised applications like ship building, rather than to the classic tasks of moving finished goods or feeding the beginning of a production process. Building material suppliers are also interested in telescopic handlers, and here the product is used for handling palletised materials.

Forecast to 2019

There is evidence to suggest that the general construction sector is finally beginning to appreciate the versatility of the telescopic handler, and the increase in demand over the last three years

appears to substantiate this claim. The sector was one of only five to record a growth in sales last year, while suppliers are universally optimistic about the future of compact equipment, although they are also more circumspect about the rate of expansion for the telescopic handler sector compared to that of mini excavators, for example.

No one is under any illusions that the task of promoting the product will be an easy one, or that it will be achieved quickly. It is still difficult to ask a farmer or a building contractor to change his whole method of working and to incorporate a modern telescopic handler into his ideas. Yet the potential of the agricultural sector alone is enormous – Turkish agricultural output is on a par with that of France, yet is produced by 10 times as many workers. Even a small degree of mechanisation would yield a significant growth in sales, and the desire of suppliers to try is certainly clear.

The market should continue to grow, but probably more slowly than many would wish. The most optimistic scenario would have the sector doubling over the next five years to exceed 1,000 units. A more cautious but still encouraging rate of growth seems more likely.

Table 88. Turkey: Forecast Sales of Telescopic Handlers, 2015-2019

(Units)

2015	2016	2017	2018	2019
550	500	600	700	800

Source: Off-Highway Research

Machines Available

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
Telescopic						
Bobcat	T2250	75	Kubota	2.2	5.0	France
	TL360	100	Perkins	3.0	6.0	France
	TL470	100	Perkins	3.5	7.0	France
	TL470HF	130	Perkins	2.5	7.0	France
	T35100/L/SL	100	Perkins	3.5	10.0	France
	T35120L/SL/MP	100	Perkins	3.5	11.6	France
	T40140	100	Perkins	4.0	13.6	France
	T40170	100	Perkins	4.0	17.2	France

(continued)

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015 (continued)

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
Bobcat (continued)						
– Roto	TR38160	102	Iveco	3.8	15.7	Italy
	TR45190	144	Perkins	4.5	18.4	Italy
	TR50210	144	Perkins	5.0	20.3	Italy
	TR40250	144	Perkins	4.0	21.1	Italy
Case	TX130-33	99	Iveco	3.3	13.0	Italy
	TX130-40	118	Iveco	4.0	12.45	Italy
	TX130-45	118	Iveco	4.5	12.3	Italy
	TX140-40	118	Iveco	4.0	13.6	Italy
	TX170-40	118	Iveco	4.0	16.6	Italy
Caterpillar	TH255	84	Caterpillar	2.5	5.2	Belgium
	TH336	101	Caterpillar	3.3	6.1	Belgium
	TH336C	126-142	Caterpillar	3.3	6.1	Belgium
	TH337	101	Caterpillar	3.3	7.2	Belgium
	TH337C	126-142	Caterpillar	3.3	7.2	Belgium
	TH406	101	Caterpillar	3.7	6.1	Belgium
	TH406C	126-142	Caterpillar	3.7	6.1	Belgium
	TH407	101	Caterpillar	3.7	7.2	Belgium
	TH407C	126-142	Caterpillar	3.7	7.2	Belgium
	TH414	101	Caterpillar	3.7	14.0	Belgium
	TH417	101	Caterpillar	4.0	17.3	Belgium
	TH514	101	Caterpillar	4.9	14.0	Belgium
Dieci						
– Construction	Apollo 25.6	73	Yanmar	2.5	5.8	Italy
	Dedalus 28.7	101	Kubota	2.8	6.4	Italy
	Dedalus 28.9	101	Kubota	2.8	8.7	Italy
	Dedalus 30.7	101	Kubota	3.0	6.4	Italy
	Dedalus 30.9	101	Kubota	3.0	8.7	Italy
	Dedalus 32.6	101	Kubota	3.2	6.0	Italy
	Runner 35.7	101	Iveco	3.5	7.3	Italy
	Runner 35.12	127	Iveco	3.5	12.1	Italy
	Runner 40.13	127	Iveco	4.0	12.4	Italy
	Icarus 38.14	101-127	Iveco	3.8	13.4	Italy
	Icarus 40.14	101-127	Iveco	4.0	13.4	Italy
	Icarus 40.17	101-127	Iveco	4.0	16.9	Italy
	Samson 45.8	101	Iveco	4.5	7.9	Italy
	Samson 60.9	127	Iveco	6.0	8.6	Italy
	Samson 65.8	127	Iveco	6.5	7.7	Italy
	Samson 70.10	127	Iveco	7.0	9.7	Italy
	Zeus 33.11	101	Iveco	3.3	10.6	Italy
	Zeus 35.10	101	Iveco	3.5	9.75	Italy
	Zeus 37.7	101	Iveco	3.7	7.4	Italy
	Zeus 37.8	101	Iveco	3.7	7.9	Italy
	Zeus 38.10	101	Iveco	3.8	9.75	Italy

(continued)

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015 (continued)

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
Dieci (continued)						
– Heavy Duty	Hercules 100.10	175	FPT	10.0	9.5	Italy
	Hercules 120.10	144	Perkins	12.0	9.4	Italy
	Hercules 160.10	196	Perkins	16.0	10.2	Italy
	Hercules 210.10	196	Perkins	21.0	10.2	Italy
– Agriculture	Mini Agri 25.6	73-85	Yanmar	2.5	5.8	Italy
	Agrifarmer 28.7	101	Kubota	2.8	6.4	Italy
	Agrifarmer 28.9	101	Kubota	2.8	8.7	Italy
	Agrifarmer 30.7	101	Kubota	3.0	6.4	Italy
	Agrifarmer 30.9	101	Kubota	3.0	8.7	Italy
	Agrifarmer 32.6	101	Kubota	3.2	6.0	Italy
	AgriMax 45.8	101	Iveco	4.5	7.9	Italy
	AgriMax 70.10	127	Iveco	7.0	9.7	Italy
	AgriMax 60.9	127	Iveco	6.0	8.6	Italy
	AgriMax 65.8	127	Iveco	6.5	7.7	Italy
	AgriStar 35.10	101	Iveco	3.5	9.8	Italy
	AgriStar 37.7	101	Iveco	3.7	7.4	Italy
	AgriStar 37.8	101	Iveco	3.7	7.9	Italy
	AgriStar 38.10	101	Iveco	3.8	9.8	Italy
	AgriPlus 38.9	120	FPT	3.8	9.0	Italy
	AgriPlus 40.7	120	FPT	4.0	7.0	Italy
	AgriTech 35.7 (PTO/3pt hitch)	127	Iveco	3.5	7.0	Italy
	AgriTech 32.9 (PTO/3pt hitch)	127	Iveco	3.2	9.0	Italy
– Roto	Pegasus 35.16	101	Iveco	3.5	15.7	Italy
	Pegasus 38.16	144	Perkins	3.8	15.5	Italy
	Pegasus 40.17	144	Perkins	4.0	16.8	Italy
	Pegasus 40.25	144	Perkins	4.0	24.5	Italy
	Pegasus 45.19	144	Perkins	4.5	18.7	Italy
	Pegasus 45.21	144	Perkins	4.5	20.5	Italy
	Pegasus 50.21	144	Perkins	5.0	20.5	Italy
	Pegasus 60.16	144	Perkins	6.0	15.7	Italy
	Pegasus 70.11	144	Perkins	7.0	11.0	Italy
Genie	GTH-2506	68	Deutz	2.5	5.8	Italy
	GTH-3007	91	Deutz	3.0	6.9	Italy
	GTH-4013 EX/SX	99	Perkins	4.0	10.0	Italy
	GTH-4014	99	Perkins	4.0	14.0	Italy
	GTH-4017 EX/SX	99	Perkins	4.0	17.0	Italy
	GTH-4018	99	Perkins	4.0	17.0	Italy
	GTH-4016 R	99	Perkins	4.0	15.4	Italy
	GTH-4018 R	99	Perkins	4.0	17.5	Italy
	GTH-5021 R	156	Perkins	4.0	21.0	Italy
	GTH-5022 R	156	Perkins	5.0	21.8	Italy
	GTH-6025 ER	159	Cummins	6.0	24.8	Italy

(continued)

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015 (continued)

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
JCB						
– Industrial	515-40	51	Kohler	1.5	4.0	UK
	520-40	49	Perkins	2.0	4.0	UK
	520-50	76	JCB	2.0	5.0	UK
	524-50	78	JCB	2.4	5.0	UK
	527-58	110	JCB	2.7	5.8	UK
	531-70	75-110	JCB	3.1	7.0	UK
	541-70	75-110	JCB	4.1	7.0	UK
	536-60	100-125	JCB	3.6	6.2	UK
	535-95	75-110	JCB	3.5	9.5	UK
	533-105	75-110	JCB	3.3	10.5	UK
	535-125	75-110	JCB	3.5	12.5	UK
	535-140	75-110	JCB	3.5	14.0	UK
	540-140	75-110	JCB	4.0	14.0	UK
	540-170	110-125	JCB	4.0	17.0	UK
	550-80	125	JCB	5.0	8.1	UK
	TM180	62	JCB	1.8	4.5	UK
	TM220	75	JCB	2.2	4.6	UK
	TM320	125	JCB	3.2	5.2	UK
– Agricultural	515-40	60	Perkins	1.5	4.0	UK
	520-40	51	Perkins	2.0	4.0	UK
	520-50	83	Perkins	2.4	5.3	UK
	527-55	82-100	JCB	2.7	5.5	UK
	526-56	85-100	JCB	2.6	5.0	UK
	527-58	100	JCB	2.7	6.8	UK
	536-60/Plus/Super	100-130	JCB	3.6	6.2	UK
	531-70/Plus/Super/Xtra	100-130	JCB	3.1	7.0	UK
	536-70/Plus/Super/Xtra	100-130	JCB	3.6	7.0	UK
	541-70/Super/Xtra	100-130	JCB	4.1	7.0	UK
	535-95/Plus/Super	110-125-145	JCB	3.5	9.5	UK
	550-80/Plus/Pack145	125-145	JCB	5.0	8.1	UK
	TM180	62	Deutz	1.8	4.5	UK
	TM220	75	Deutz	2.2	4.6	UK
	TM320/ SMax	130-145	JCB	3.0	5.0	UK
JLG	2505H	74	Deutz	2.5	5.6	Belgium
	2906H	100	Deutz	2.9	5.8	Belgium
	3507H	100	Deutz	3.5	6.9	Belgium
	3706PS	100	Deutz	3.7	6.1	Belgium
	3707PS	100	Deutz	3.7	7.3	Belgium
	3614RS	100	Deutz	3.6	10.0	Belgium
	4017RS	100	Deutz	4.0	13.0	Belgium
	4014PS	100	Deutz	4.0	9.23	Belgium
	4017PS	100	Deutz	4.0	12.7	Belgium

(continued)

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015 (continued)

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
Liebherr	TL 441-10	101	Deere	4.1	9.6	Germany
	TL441-13	101	Deere	4.1	13.0	Germany
	TL451-10	101	Deere	5.0	9.6	Germany
	TL451-13	101	Deere	5.0	13.0	Germany
Manitou						
– Agriculture	MLT 625-75H	51	Kubota	2.5	5.9	Italy
	MLT 627	101	Perkins	2.7	5.5	Italy
	MLT634-120/PS	121	Perkins	3.4	6.1	Italy
	MLT735-120/PS	121	Perkins	3.5	6.9	Italy
	MLT840-115/PS	115	Deere	4.0	7.6	Italy
	MLT84—137/PS	137	Deere	4.0	7.6	Italy
	MLT845-120/H	121	Perkins	4.5	7.6	Italy
	MLT1035	101	Perkins	3.5	9.6	Italy
Manitou						
– Construction	MT625	75	Kubota	2.5	5.9	France
	MT732	95	Perkins	3.2	6.9	France
	MT932	95	Perkins	3.2	9.0	France
	MT1030 ST	100	Perkins	3.0	10.0	France
	MT1235 ST	100	Perkins	3.5	12.0	France
	MT1435 HSL	100	Perkins	3.5	13.	France
	MT1435 SLT	100	Perkins	3.5	13.6	France
	MT1440/H/A/HA	100	Perkins	4.0	13.5	France
	MT1840/H/A/HA	100	Perkins	4.0	17.5	France
– Industry	MHT780	144	Perkins	8.0	6.8	Italy
	MHT860	144	Perkins	6.0	8.1	Italy
	MHT10120	175	Mercedes-Benz	12.0	9.6	Italy
	MHT7140	175	Mercedes-Benz	14.0	7.0	Italy
	MHT10180	175	Mercedes-Benz	18.0	9.7	Italy
	MHT10225	175	Mercedes-Benz	22.5	9.7	Italy
– Roto	MRT-X1440	101	Perkins	4.0	13.8	Italy
	MRT-X1640	101	Perkins	4.0	15.8	Italy
	MRT-X1840	101	Perkins	4.0	17.9	Italy
	MRT-X2150	150	Mercedes-Benz	5.0	20.6	Italy
	MRT-X2540	150	Mercedes-Benz	4.0	24.6	Italy
	MRT-X3050	216	Mercedes-Benz	5.0	29.6	Italy
Merlo						
– Compact	P25.6	75	Kubota	2.5	5.9	Italy
	P28.8L/Plus/Top	101	Perkins	2.8	8.2	Italy
	P32.6L/Plus/Top	101	Perkins	3.2	6.4	Italy
– Panoramic	P34.7/Plus/Top	102	Deutz	3.4	7.0	Italy
	P34.10/Plus/Top	102	Deutz	3.4	9.7	Italy
	P36.7/Plus/Top	102	Deutz	3.6	7.0	Italy
	P36.10/Plus/Top	102	Deutz	3.6	9.7	Italy
	P37.12/Plus	101	Perkins	3.7	11.5	Italy
	P38.12/Plus	101	Perkins	3.8	11.6	Italy

(continued)

Table 89. Turkey: Rough Terrain Lift Trucks Available, 2015 (continued)

Type/ Manufacturer	Model	Engine		Operating Capacity (Tonnes)	Maximum Lift (Metres)	Product Source
		HP	Manufacturer			
Merlo (continued)						
– Panoramic (continued)	P38.13/Plus	101	Perkins	3.8	12.6	Italy
	P38.14/Plus	101	Perkins	3.8	13.6	Italy
	P39.10/Plus	102	Deutz	3.9	10.3	Italy
	P40.9/Plus	101	Perkins	4.0	9.1	Italy
	P40.16	102	Perkins	4.0	15.6	Italy
	P40.17	102	Perkins	4.0	16.7	Italy
	P45.18HM	145	Iveco	4.5	17.8	Italy
	P55.9CS	140	Deutz	5.5	8.6	Italy
	P60.9CS	140	Deutz	6.0	8.6	Italy
	P60.10	101	Perkins	6.0	9.6	Italy
	P65.14HM	145	FPT	6.5	13.9	Italy
	P72.10	101	Perkins	7.2	9.6	Italy
	P75.9CS	140	Iveco	7.5	8.6	Italy
	P80.9HM	145	Iveco	8.0	9.1	Italy
	P101.10HM	145	Iveco	10.0	9.8	Italy
	P120.10	145	Iveco	12.0	9.8	Italy
– Multifarmer	27.8	102	Deutz	2.7	8.2	Italy
	29.6	102	Deutz	2.9	6.4	Italy
	30.6Classic/Top	115	Deutz	3.0	6.0	Italy
	30.9Classic/Top	115	Deutz	3.0	8.6	Italy
– Roto	38.14	102	Perkins	3.8	13.8	Italy
	38.16	102	Perkins	3.8	15.7	Italy
	R40.26 MCSS	145	Iveco	4.0	26.0	Italy
	R40.30 MCSS	176	Iveco	4.0	29.2	Italy
MST	ST 740	100	Perkins	4.0	6.34	Turkey
	ST835	100	Perkins	3.5	7.8	Turkey
	ST935	100	Perkins	3.5	8.7	Turkey
	ST940	100	Perkins	4.0	8.7	Turkey
	ST1135	100	Perkins	3.5	11.0	Turkey
	ST1335	100	Perkins	3.5	13.0	Turkey
	ST1730	100	Perkins	3.0	16.3	Turkey
New Holland	LM5020	87	FPT	2.5	5.8	Italy
	LM5030	101	FPT	2.8	6.3	Italy
	LM5.25	74	FPT	2.5	5.8	Italy
	LM6.28	101	FPT	2.8	6.3	Italy
	LM6.32	121	FPT	3.2	6.1	Italy
	LM6.35	143	FPT	3.5	6.1	Italy
	LM7.35	121	FPT	3.5	7.0	Italy
	LM7.42	143	FPT	4.2	7.0	Italy
	LM9.35	121	FPT	3.5	9.1	Italy
Wacker Neuson	TH408	26	Yanmar	0.8	4.1	Germany
	TH412	30	Yanmar	1.2	4.5	Germany
	TH522	61	Perkins	2.2	5.5	Germany
	TH625	67	Deutz	2.5	5.7	Germany

Source: Company Information

SKID-STEER LOADERS

Market Size and Trends

Skid-steer loaders have been present in Turkey since the end of the 1980s, but have only been sold in very limited quantities until quite recently. Even then, the expansion of this market has been faltering, with only two years – 2011 and 2012 – seeing sales in excess of 300 units. The availability, until recently at least, of cheap labour in the construction industry, the lack of industrialised agriculture, and the absence of a fully developed rental sector have all conspired to limit the product's appeal in what should be its prime target markets.

Table 90. Turkey: Sales of Skid-Steer Loaders, 2010-2014

(Units)

2010	2011	2012	2013	2014
259	367	327	293	284

Source: Off-Highway Research

By the end of the 1990s a regular annual demand for around 100 units had developed, buoyed up by sales to farming, shipping and the General Directorate of Highways. The economic crisis of 2001 saw the market drop away to minimal levels, although it recovered in 2003-2004 to a slightly higher level than before. The rapid economic growth and buoyant construction sector during 2005-2007 stimulated a significant rise in interest in skid-steer loaders and the leading suppliers began to focus more closely on exploiting the product's potential. In 2007 demand reached nearly 300 machines, the hitherto highest recorded level of sales in the sector.

The ramifications of the global economic crisis and slump in demand for construction related projects saw the market for skid-steer loaders collapse to a very low level in 2008 and 2009. By 2010 business confidence had returned to the industry and the market embarked upon a period of sustained recovery, followed by further growth in 2011 when sales reached an historical high of 367 units.

In favour of the machine are its versatility, particularly when used with the wide array of available attachments, its size and the fact that it can be carried on the roads on the type of light duty trailer which can be towed by vehicles driven on a standard driver's licence. The climate and the dry ground conditions in Turkey would also suggest a positive reaction to the machine.

On the other hand, concerns about the machines manoeuvrability between jobsites (not in real terms, as explained above, but compared to the self-drive capacity of a backhoe loader), and its fuel-efficiency compared to backhoes have held back its popularity.

The profile of the market has changed since the arrival of the very large and high lift machines. The popular sizes used to be from 600 to 900 kilograms operating capacity, but now the best sellers are the 1,100 kilogram machines that give some competition to the backhoe loader, and then the more orthodox 600 kilogram lift capacity models. More recently there has been an increase in demand for the most powerful loaders rated at 1,800 kilograms operating capacity for use in fibre optic cable trenching applications, however this market came to an abrupt halt in 2012 which had an inevitable impact on sales, as it did for mobile compressors used in the same sector.

Market Shares

Table 91. Turkey: Suppliers of Skid-Steer Loaders and Their Market Shares, 2013-2014

	2013		2014	
	Units	%	Units	%
Bobcat	86	29	75	26
Caterpillar	69	24	65	23
Gehl	52	18	41	14
JCB	18	6	36	13
Hyundai	10	3	15	5
New Holland	16	5	14	5
Wacker Neuson	9	3	12	4
Case	18	6	8	3
IHIMER	-	-	7	2
LiuGong	5	2	5	2
Komatsu	2	1	3	1
Mustang	8	3	3	1
Total	**293**	**100**	**284**	**100**

Source: Off-Highway Research

Bobcat, sold by Hamamcioğlu, one of the longest-established dealers in Turkey, is the perennial market leader. Despite having the highest prices in the sector the company's strong brand image, high quality products and firm residual values have enabled it to attract a loyal customer base and a high level of repeat business. **Caterpillar** and **Gehl** are effectively the only other suppliers to offer a significant challenge to the market leader, though **JCB** also claimed a market share of more than 10 per cent last year, partly through a degree of penetration into the agricultural sector. Bobcat, in particular, has made inroads into more specialist applications such as ship trimming,

landscaping, and fibre optic cable trenching, in addition to the more traditional construction sector.

The full list of suppliers is shown below.

Table 92. Turkey: Distribution Networks of Suppliers of Skid-Steer Loaders, 2015

Manufacturer	Importer	Manufacturer	Importer
Bobcat	Hamamcioğlu	**JCB**	SIF JCB
Case	TürkTraktör	**Komatsu**	Temsa
Caterpillar	Borusan Makina	**LiuGong**	Uygunlar
Doosan	SANKO	**Mustang**	Gama
Gehl	Kale	**New Holland**	TürkTraktör
Hyundai	HMF	**Wacker Neuson**	Wacker Neuson
IHIMER	Inan Makina		

Source: Company Information

Population and End-Users

The population growth seen up to 2011 has stalled somewhat in the three years since then as sales have stagnated. Nevertheless, the recent relatively buoyant market conditions indicate the number of active machines is estimated to have risen to 1,500 units.

Table 93. Turkey: Population of Skid-Steer Loaders by Type of User, 2015

	Units	%
General Construction	375	25
Agriculture	345	23
Docks	300	20
Landscaping	300	20
Industry	135	9
Nurseries	45	3
Total	**1,500**	**100**

Source: Off-Highway Research

General construction and ship trimming constitute the most successful applications for skid-steer loaders. Many small ports accept cargo ships which lack cranes, and much building material is moved around by sea while grain and other agricultural produce are also important export cargoes. Other applications so far have been the installation of natural gas pipes in the cities, fibre optic cable trenching and, increasingly, agriculture where the machines are used for

cleaning livestock sheds and transporting feed stuffs. A small number of machines have also been put to use in tree nurseries.

Forecast to 2019

The market is certainly not growing at the same pace as other compact equipment product sectors, most notably mini excavators, nor even telehandlers; given sales in the past two years, it could even be questioned whether the market is growing at all. Nevertheless, the introduction of stricter legislation relating to manual labour, together with increasingly tight restrictions on the use of large equipment on inner city job sites, will continue to stimulate interest in smaller machines, and skid-steers are unlikely to be an exception, even if the rate of expansion will be relatively slow.

Table 94. Turkey: Forecast Sales of Skid-Steer Loaders, 2015-2019

(Units)

2015	2016	2017	2018	2019
275	275	300	350	400

Source: Off-Highway Research

Machines Available

Table 95. Turkey: Skid-Steer Loaders Available, 2015

Manufacturer	Model	Engine		Operating Capacity (Kg)	Product Source
		HP	Manufacturer		
Bobcat	S70	24	Kubota	450	Czech Republic
	S130	49	Kubota	650	Czech Republic
	S510	49	Kubota	825	Czech Republic
	S530	49	Kubota	925	Czech Republic
	S550	61	Kubota	875	Czech Republic
	S570	61	Kubota	975	Czech Republic
	S590	66	Kubota	1,050	Czech Republic
	S630	74	Kubota	1,090	USA
	S650	74	Kubota	1,345	USA
	S750	85	Kubota	1,600	USA
	A770	92	Kubota	1,662	USA
	S770	92	Kubota	1,675	USA
	S850	92	Kubota	1,975	USA

(continued)

Table 95. Turkey: Skid-Steer Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Operating Capacity (Kg)	Product Source
		HP	Manufacturer		
Case	SR130	49	ISM	590	USA
	SR160	60	ISM	725	USA
	SR175	67	ISM	790	USA
	SV185	60	ISM	840	USA
	SR200	74	FPT	905	USA
	SR250	90	FPT	1,135	USA
	SV300	90	FPT	1,360	USA
Caterpillar	216B	47	Caterpillar	635	USA
	226B	56	Caterpillar	680	USA
	236B	71	Caterpillar	884	USA
	242B	71	Caterpillar	975	USA
	246C	72	Caterpillar	975	USA
	256C	82	Caterpillar	1,066	USA
	252B	71	Caterpillar	1,202	USA
	262C	82	Caterpillar	1,225	USA
	272C	91	Caterpillar	1,474	USA
Doosan	430 Plus	46	Cummins	590	Korea
	440 Plus	48	Cummins	839	Korea
	450	66	Cummins	771	Korea
	460	66	Cummins	907	Korea
	470 Plus	76	Cummins	907	Korea
Gehl	1640E	24	Yanmar	425	USA
	3640E	35	Yanmar	525	USA
	4240E	46	Yanmar	675	USA
	4640E	68	Yanmar	825	USA
	5240E	68	Yanmar	950	USA
	5640E	71	Yanmar	1,100	USA
	6640E	71	Yanmar	1,300	USA
	V270	71	Yanmar	1,350	USA
	V330	71	Yanmar	1,650	USA
	V400	99	Yanmar	2,000	USA
Hyundai	HSL650-7	43	Kubota	750	Korea
	HSL850-7	66	Kubota	925	Korea
IHIMER	AS12	21	Yanmar	330	Italy
	AS30	69	Yanmar	850	Italy
	AS34	84	Yanmar	1020	Italy
JCB	135	48	Perkins	675	USA
	155	60	Perkins	775	USA
	175	60	Perkins	875	USA
	190	60	Perkins	950	USA
	205	60	Perkins	1,025	USA
	225	74	JCB	1,125	USA

(continued)

Table 95. Turkey: Skid-Steer Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Operating Capacity (Kg)	Product Source
		HP	Manufacturer		
JCB (continued)	260	74	JCB	1,300	USA
	280	74	JCB	1,400	USA
	300	92	JCB	1,500	USA
	330	92	JCB	1,650	USA
Komatsu	SK510-5	31	Komatsu	455	Italy
	SK714-5	46	Komatsu	650	Italy
	SK815-5	46	Komatsu	700	Italy
	SK818-5	46	Komatsu	870	Italy
	SK820-5	52	Komatsu	900	Italy
LiuGong	CLG365A	68	Yanmar	795	China
	CLG375A	76	Yanmar	900	China
	CLG385A	85	Yanmar	1,100	China
Mustang	2012	21	Yanmar	476	USA
	2026	35	Yanmar	567	USA
	2041	46	Yanmar	566	USA
	2044	49	Yanmar	725	USA
	2054	49	Yanmar	825	USA
	2056	68	Yanmar	930	USA
	2076	84	Yanmar	1,100	USA
	2086	84	Yanmar	1,300	USA
	1350R	46	Yanmar	750	USA
	1500R	46	Yanmar	825	USA
	1650R	70	Yanmar	900	USA
	1900R	69	Yanmar	1,055	USA
	2200R	72	Yanmar	1,185	USA
	2600R	72	Yanmar	1,390	USA
New Holland	L213	49	ISM	590	USA
	L216	60	ISM	725	USA
	L218	60	ISM	818	USA
	L220	67	ISM	905	USA
	L223	74	FPT	1,020	USA
	L230	90	FPT	1,360	USA
Wacker Neuson	501S	36	Yanmar	510	Austria
	701S	46	Yanmar	680	Austria
	701SP	52	Yanmar	680	Austria
	901	68	Yanmar	907	Austria
	901SP	68	Yanmar	1,140	Austria

Source: Company Information

WHEELED LOADERS

Market Size and Trends

Table 96. Turkey: Sales of Wheeled Loaders, 2010-2014

(Units)

2010	2011	2012	2013	2014
1,176	1,545	1,255	1,364	1,134

Source: Off-Highway Research

Following the 2001 financial crisis sales of wheeled loaders collapsed to their lowest level ever, below 200 units, although in common with other product sectors demand began to increase once more by 2004. Strong economic growth and renewed investment in the construction sector resulted in unprecedented levels of investment in wheeled loaders as contractors and quarries rushed to implement fleet renewal programmes postponed from the first half of the decade. Sales reached a new record level in 2007 of nearly 1,500 units, an increase of 44 per cent within just three years.

In 2008 the government implemented a dramatic rise in the VAT rate on leasing contracts from one per cent to 18 per cent, which precipitated a 37 per cent fall in demand for wheeled loaders. The onset of the global financial crisis towards the end of 2008 served to accentuate the problem and, in 2009, demand fell by a further 27 per cent to reach its lowest level since 2003, just 665 units.

The market began to recover strongly in 2010 in response to buoyant economic conditions and widespread investment in the construction sector. Demand for wheeled loaders in the important quarry sector also rose significantly in response to increasing exports of marble to China, and by the end of 2011 the market had reached its highest recorded level of over 1,500 units.

Since then, sales have remained at historically high levels in excess of 1,100 units annually. The peak in 2011 came earlier than for most other major product sectors (that for backhoes came in 2013), yet the resultant readjustment in 2014, as concerns over the budget deficit and exchange rates grew, was also of a lesser magnitude. This relative stability is underlined by the increasingly regular buying habits of the marble quarrying sector.

Table 97. Turkey: Sales of Wheeled Loaders by Horsepower Category, 2014

Horsepower	Units	%
Under 80	75	7
80-150	45	4
150-180	105	9
180-240	334	29
240-280	225	20
280-310	155	14
Over 310	195	17
Total	**1,134**	**100**

Source: Off-Highway Research

The distribution of sizes is strongly in favour of larger machines, with more than 80 per cent of sales being machines in excess of 180 horsepower. The single best-selling category is the 180-240 horsepower class typified by Volvo's L110 and L120 loaders. Machines of 300 horsepower and above are also popular with the larger marble quarries and, to a lesser extent, with ready-mix concrete plants.

At the other end of the market, there has historically been little interest in compact wheeled loaders under 80 horsepower. For moving smaller quantities of material the use of site dumpers, or even an agricultural tractor converted for use as a backhoe loader, are the preferred options. In line with the recent rise in popularity of compact equipment, however, there has been a discernible trend towards the use of more low powered wheeled loaders, although according to suppliers interviewed for the purposes of this study, the sector is not expected to grow at the same rate as that of mini excavators as a result of the embedded market position of the backhoe loader.

Production

Çukurova previously produced two models of wheeled loader, the 940 and 980, rated at 173 and 225 horsepower respectively, at its Çumitaş plant in Mersin. This year it has introduced a third, larger model. The 990 is rated at 300 horsepower, has an operating weight of over 24 tonnes and a bucket capacity of 4.5 m^3.

In the 1980s the company produced some Caterpillar models under licence, most notably the 950, nearly 500 of which were built. From the late 1990s until 2004 the main model built was the 160 horsepower Çukurova 840B. In 2005 the company replaced the 840B with the 940, powered by a 170 horsepower John Deere engine and aimed at the workhorse 2.5 m^3 bucket

class. Two years earlier its sister company Çimsataş had begun local assembly of the Liebherr L554, a product for the 3.5 m^3 bucket category, although this manufacturing contract was terminated in 2007.

Table 98. Turkey: Production of Wheeled Loaders by Manufacturer, 2014

Manufacturer	Units	%
Çukurova	50	100
Total	**50**	**100**

Source: Off-Highway Research

Pi Makina still produces some of the wheeled loader models which it introduced in the middle of the 1980s. It builds very small volumes, of a range from 80 to 500 horsepower, as is explained in the company profile.

The production of **Komatsu** wheeled loaders began in 1989 when Temsa started to build the model WA320, of 152 horsepower. It ran at a rate varying between 50 and 200 units annually, depending on the state of the economy, but closed in 2000.

Component Sourcing

Table 99. Çukurova: Component Sourcing for Wheeled Loaders, 2015

	Çukurova
Axles	Carraro, ZF
Buckets	In-house
Cabs	In-house
Chassis	In-house
Control Valves	Parker, Bosch Rexroth, David Brown, Doosan
Engines	John Deere
Hydraulic Pumps	Eaton, Bosch Rexroth, Kawasaki, David Brown
Loaders	In-house
Transmissions	Carraro, ZF

Source: Company Information

The Çukurova plant builds the chassis, fabricates buckets and makes the counterweights, but bases the machine on the combination of a John Deere engine and a ZF transmission.

Market Shares

Table 100. Turkey: Sales of Wheeled Loaders by Manufacturer, 2013-2014

	2013		2014	
	Units	%	Units	%
Caterpillar	297	22	242	22
Volvo	334	24	200	18
Komatsu	230	17	179	16
Kawasaki	165	12	158	14
XCMG	95	7	88	8
LiuGong	43	3	45	4
Doosan	27	2	41	4
Hyundai	57	4	39	4
Lonking	15	1	35	3
Hitachi	14	1	32	3
Liebherr	30	2	25	2
JCB	34	2	18	2
Çukurova	13	1	10	1
Wacker Neuson	10	1	10	1
Case	-	-	8	1
New Holland	-	-	4	-
Total	**1,364**	**100**	**1,134**	**100**

Source: Off-Highway Research

Four suppliers, **Caterpillar**, **Volvo**, **Komatsu** and **Kawasaki** dominate the market and between them account for up to three quarters of sales every year.

Caterpillar and **Volvo** have both established a powerful presence in the sector, and profited in the recent past from Komatsu's declining market share due to the high price of the Japanese Yen. Both companies' products are highly regarded by the quarrying and mining sectors, as well as private civil engineering contractors, and each of the dealers is able to offer a high quality after-sales service. Caterpillar has recently usurped Volvo's traditional market leading position thanks in part to Volvo's decision to restrict sales to machines with Tier IV engines. This decision may well pay dividends in the long run, but the rise in initial machine cost, coupled with concerns – even if largely unfounded – over the availability of fuel of sufficient quality, led to a six point drop in market share last year.

Komatsu's dealer Temsa focuses much of its marketing efforts towards promoting the wheeled loaders within the quarrying sector and to large civil engineering contractors, often as part of machinery package deals. In the last two years the product has recovered somewhat from

uncompetitive pricing relative to its main rivals as a result of the previous strength of the Japanese Yen.

Fourth place in the market is traditionally the preserve of Enka, with its Japanese **Kawasaki** wheeled loaders. Enka tries to monopolise the marble producers of Marmara and even creates two models especially for them, with nearly 3 tonnes of extra counterweight. The Kawasaki product is particularly favoured by the quarrying sector for its robustness, ease of maintenance and reliability. Enka also markets the **Hitachi** wheeled loader range, albeit in much smaller volumes.

Of the remaining suppliers, **XCMG** from China has made the most progress during the last two years. The dealer, Özmak, is the largest XCMG dealer in Europe and has achieved notable success by targeting its increasingly well accepted products at cost-conscious private customers. In 2013 the company began SKD assembly of its biggest selling model, the ZL50G, in a new purpose-built facility in Izmit. Along with **LiuGong** and **Lonking**, Chinese suppliers accounted for 15 per cent of the market last year. This healthy foothold comes largely as a result of the machines costing up to a third less than those from international suppliers, though the almost 3-1 price ratio in favour of Chinese suppliers found elsewhere – for example the otherwise similar market in Saudi Arabia – does not exist due to the cost implications of having to comply with CE marking. Nevertheless, in spite of concerns remaining over fuel efficiency, after sales support and, in particular, second hand value, it seems clear that their continued presence in the market is assured.

The full list of suppliers is shown below.

Table 101. Turkey: Distribution Networks of Suppliers of Wheeled Loaders, 2015

Manufacturer	Importer	Manufacturer	Importer
Case	TürkTraktör	**Komatsu**	Temsa
Caterpillar	Borusan Makina	**Liebherr**	Liebherr Turkey
Çukurova	Çukurova	**LiuGong**	Uygunlar
Doosan	SANKO	**Lonking**	Gama
Hitachi	Enka	**New Holland**	TürkTraktör
Hyundai	HMF	**Volvo**	Ascendum
JCB	SIF-JCB	**Wacker Neuson**	Wacker Neuson
Kawasaki	Enka	**XCMG**	Özmak

Source: Company Information

Population and End-Users

The average working life for a wheeled loader is seven to eight years, and often they are simply kept for as long as possible. They are used mainly in production applications, or in heavy civil engineering tasks such as dam construction. The number of loaders bought for service use on the basis of few hours worked each year is negligible. Some used machines have been imported, but large wheeled loaders are often written off over the duration of a project or are used to extinction.

Off-Highway Research estimates the total population of machines at 7,500 units, balancing the machines which might be working well beyond the normal life with those which may have been taken overseas for use by large contractors.

Table 102. Turkey: Population of Wheeled Loaders by Type of User, 2015

	Units	%
Quarries and Mines	2,025	27
Municipalities	1,500	20
Civil Engineering	1,350	18
General Construction	1,200	16
Sand and Gravel	675	9
Industry	525	7
Cement	225	3
Total	**7,500**	**100**

Source: Off-Highway Research

The most significant users are the quarries and mines. When combined with sand and gravel work, these two sectors account for over a third of all machines currently working in the country. Construction in its widest sense, including civil engineering and general contracting, comes next, with another third of machines employed in this sector. The remaining third is split between municipalities, industry and the cement sector.

Forecast to 2019

Table 103. Turkey: Forecast Sales of Wheeled Loaders, 2015-2019

(Units)

2015	2016	2017	2018	2019
1,150	1,100	1,200	1,300	1,400

Source: Off-Highway Research

The wheeled loader sector is traditionally more stable than that of other products since the machines are not used in a wide variety of applications, and demand from the main end-user sector, the marble quarries, is relatively constant. The long term forecast remains optimistic, particularly given the proposed level of investment in infrastructure, housing and energy related projects, and this should translate into a buoyant level of demand during the forecast period.

Machines Available

Table 104. Turkey: Wheeled Loaders Available, 2015

Manufacturer	Model	Engine		Product Source
		HP	Manufacturer	
Case	21E	54	FPT	Italy
	121E	64	FPT	Italy
	221E	74	FPT	Italy
	321E	82	FPT	Italy
	521F	142	FPT	Italy
	621F	172	FPT	Italy
	721F	195	FPT	Italy
	821F	230	FPT	Italy
	921F	295	FPT	Italy
	1021F	320	FPT	Italy
	1121F	347	FPT	Italy
	1221E	365	Cummins	Korea
Caterpillar	906H	69	Caterpillar	UK
	907H	69	Caterpillar	UK
	908H	79	Caterpillar	UK
	914G	95	Caterpillar	UK
	IT14G	95	Caterpillar	UK
	924K	146	Caterpillar	UK
	924Hz	114	Caterpillar	UK
	928Hz	125	Caterpillar	UK
	930K	159	Caterpillar	UK
	938K	173	Caterpillar	USA
	950K	211	Caterpillar	Belgium
	962K	221	Caterpillar	Belgium
	966K	270	Caterpillar	Belgium
	972K	291	Caterpillar	Belgium
	980K	369	Caterpillar	Belgium
	988H	482	Caterpillar	USA
	990 H	627	Caterpillar	USA
	992K	800	Caterpillar	USA
	993K	949	Caterpillar	USA
	994F	1,576	Caterpillar	USA
Çukurova	940	173	John Deere	Turkey
	980	225	John Deere	Turkey

(continued)

Table 104. Turkey: Wheeled Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Product Source
		HP	Manufacturer	
Doosan	DL200-3	173	Doosan	Korea
	DL250-3	173	Doosan	Korea
	DL300-3	271	Doosan	Korea
	DL350-3	271	Doosan	Korea
	DL420-3	354	Scania	Korea
	DL450-3	354	Scania	Korea
	DL550-3	385	Scania	Korea
Hitachi	ZW65	60	Kubota	Netherlands
	ZW75	60	Kubota	Netherlands
	ZW95	71	Kubota	Netherlands
	ZW140	129	Cummins	Netherlands
	ZW150	143	Cummins	Netherlands
	ZW180	171	Cummins	Netherlands
	ZW220-5	194	Cummins	Netherlands
	ZW250-5	242	Isuzu	Netherlands
	ZW310-5	285	Hino	Netherlands
	ZW330-5	285	Hino	Netherlands
	ZW370-5	388	Isuzu	Netherlands
	ZW550-5	532	Isuzu	Netherlands
Hyundai	HL730-9	126	Deutz	Korea
	HL740-9	147	Cummins	Korea
	HL757-9	175	Cummins	Korea
	HL760-9	218	Cummins	Korea
	HL770-9	284	Cummins	Korea
	HL780-9	353	Cummins	Korea
JCB	403	36	JCB	UK
	TM180	62	Deutz	UK
	TM220	75	Deutz	UK
	TM320 Wastemaster	130	JCB	UK
	406	62	JCB	UK
	407		JCB	UK
	409	75	JCB	UK
	411HT-HL	108	JCB	UK
	417HT-SHL	125	JCB	UK
	427HT-EZX	158	Cummins	UK
	437HT-SHL/EZX	173	Cummins	UK
	457HT-EZX/SHI	250	MTU	UK
Kawasaki	KS65ZIV-2	130	Isuzu	Japan
	KS70ZIV-2	160	Isuzu	Japan
	KS80ZIV-2	177	Nissan	Japan
	KS85ZIV-2	216	Nissan	Japan
	KS90ZIV-2	256	Nissan	Japan
	KS95ZIV	340	Cummins	Japan
	KS115Z	445	Cummins	Japan

(continued)

Table 104. Turkey: Wheeled Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Product Source
		HP	Manufacturer	
Komatsu	WA65-6	54	Komatsu	Germany
	WA70-7	60	Komatsu	Germany
	WA80-6	67	Komatsu	Germany
	WA90-6	79	Komatsu	Germany
	WA100M-6	89	Komatsu	Germany
	WA200PZ-6	95	Komatsu	Germany
	WA250PZ-6	126	Komatsu	Germany
	WA320-6 PZ-6	138	Komatsu	Germany
	WA320-7	170	Komatsu	Germany
	WA380-6	191	Komatsu	Germany
	WA380-7	191	Komatsu	Germany
	WA430-6	232	Komatsu	Germany
	WA470-6 LC	274	Komatsu	Germany
	WA470-7	273	Komatsu	Germany
	WA480-6 LC	300	Komatsu	Germany
	WA500-6	357	Komatsu	Germany
	WA500-7	357	Komatsu	Japan
	WA600-6	531	Komatsu	Japan
	WA800-3	853	Komatsu	Japan
	WA900-3	901	Komatsu	Japan
	WA1200-6	1,892	Komatsu	Japan
Liebherr	L 506	63	Deutz	Austria
	L 507	65	Deutz	Austria
	L 508	65	Deutz	Austria
	L 509	82	Deutz	Austria
	L 514	98	Deutz	Austria
	L 524	117	Liebherr	Austria
	L 528	117	Liebherr	Austria
	L 538	143	Liebherr	Austria
	L 542	143	Liebherr	Austria
	L 550	175	Liebherr	Austria
	L 556	191	Liebherr	Austria
	L 566	259	Liebherr	Austria
	L 576	272	Liebherr	Austria
	L 580	272	Liebherr	Austria
	L 586	340	Liebherr	Austria
LiuGong	CLG816	63	Yanmar	China
	CLG835	123	Cummins	China
	CLG842	165	Cummins	China
	CLG856	215	Cummins	China
	CLG862	240	Cummins	China
	CLG888	310	Cummins	China
Lonking	LG833B	125	Weichai Deutz	China
	LG843	175	Weichai Deutz	China
	LG850	220	Weichai	China

(continued)

Table 104. Turkey: Wheeled Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Product Source
		HP	Manufacturer	
New Holland	W50BTC	55	FPT	Italy
	W60BTC	64	FPT	Italy
	W70BTC	74	FPT	Italy
	W80BTC	82	FPT	Italy
	W110C	142	FPT	Italy
	W130C	172	FPT	Italy
	W170C	195	FPT	Italy
	W190C	227	FPT	Italy
	W230C	242	FPT	Italy
	W270C	320	FPT	Italy
	W300C	347	FPT	Italy
Volvo	L20F	56	Volvo	Germany
	L25F	59	Volvo	Germany
	L30G	75	Volvo	Germany
	L35G	99	Volvo	Germany
	L45G	118	Volvo	Germany
	L60G	163	Volvo	Sweden
	L70G	171	Volvo	Sweden
	L90G	175	Volvo	Sweden
	L110G	210	Volvo	Sweden
	L120G	224	Volvo	Sweden
	L110H	259	Volvo	Sweden
	L120H	276	Volvo	Sweden
	L150G	300	Volvo	Sweden
	L180G	333	Volvo	Sweden
	L220G	371	Volvo	Sweden
	L150H	300	Volvo	Sweden
	L180H	334	Volvo	Sweden
	L220H	373	Volvo	Sweden
	L250G	396	Volvo	Sweden
	L250H	395	Volvo	Sweden
	L350F	540	Volvo	USA
Wacker Neuson	WL25	33	Perkins	Austria
	WL30	48	Perkins	Austria
	WL34	48	Perkins	Austria
	WL36	48	Perkins	Austria
	WL37	75	Deutz	Austria
	WL44	75	Deutz	Austria
	WL48	61	Deutz	Austria
	WL50	75	Deutz	Austria
	WL54	75	Deutz	Austria
	WL55	75	Deutz	Austria
	WL57	101	Perkins	Austria

(continued)

Table 104. Turkey: Wheeled Loaders Available, 2015 (continued)

Manufacturer	Model	Engine		Product Source
		HP	Manufacturer	
XCMG	LW168G	80	Cummins	China
	ZL30G	124	Perkins	China
	ZL40G	164	Shanghai Diesel	China
	ZL50G	220	Shanghai Diesel	China
	LW640G	240	Shanghai Diesel	China
	LW800G	336	Shanghai Diesel	China

Source: Company Information

MANUFACTURER PROFILES

ÇUKUROVA

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History: The Çukurova Group is a giant holding company, with a turnover of approximately $9 billion, and a majority stake in 152 companies ranging from construction and energy, to communication, technology, media, transportation and financial services. Of these, 19 are foreign investments and 13 are joint ventures based in Turkey. A total of 36,500 people are employed in Çukurova companies in Turkey and abroad.

Çukurova Makina Imalat ve Ticaret AŞ (abbreviated to Çumitaş) was founded in 1968 as part of the Çukurova Group to manufacture agricultural tractors under a licence agreement with John Deere. Over the next 18 years it produced 26,250 units. In 1986 the company started to manufacture earthmoving and industrial machines under its own Çukurova brand name.

In 1994 Çukurova signed a technology transfer agreement with Liebherr, as well as becoming the new importer and distributor of Liebherr earthmoving equipment. The company's second plant in Mersin (Çimsataş) moved over to building Liebherr hydraulic excavators, although production was terminated in early 2008 following the end of Çukurova's distributor agreement with Liebherr.

The Çumitaş plant today employs 250 people and has reached its annual capacity to produce 2,000 units in its Tarsus-Mersin facility in the south of Turkey.

The company exports its machines to more than 40 countries across the world. What's more, through the cast and forged parts and brake systems manufactured in its Mersin factory, Çukurova has become a supplier to other companies in the construction equipment and automotive industry such as Liebherr, CNH, ZF, Volvo, Atlas Copco, Mercedes, Daimler and Renault.

Personnel: 250 people are based at the Tarsus facility.

Product Range

Table 105. Çukurova: Range of Construction Equipment Made in Turkey, 2015

Product	Model	Engine HP	Operating Weight (Tonnes)	Bucket Capacity (m^3)
Backhoe Loaders	880	97	7.9	1.0
	883	100	8.0	1.1
	885	100	8.1	1.1
	888	100	8.7	1.1
Crawler Excavators	CMI 723	156	23.0	0.85
Wheeled Loaders	940	173	13.9	2.5
	980	225	19.7	3.5
	990	300	24.2	4.5

Source: Company Information

The product line incorporates one hydraulic excavator model; four different models of rigid 2-wheel steered and 4-wheel steered backhoe loaders; three articulated wheeled loaders, the latest of which, the 990, was launched earlier this year; and five models of hydrostatic, powershift and electric forklift trucks.

Manufacturing Facilities: The Çumitaş plant is close to the city of Adana, in south central Turkey, and has a covered area of 14,444 m^2 on an 11 hectare site.

Production: Production volumes of the Çukurova-branded products declined significantly at the end of the last decade but have stabilised during recent years as the parent company has resumed its focus on construction equipment. In contrast to sales abroad, where it has made progress in

expanding the number of countries in which it is active, the company's attempts to re-invigorate its domestic distribution network were initially stymied by the impact of the global financial crisis after 2008. It now hopes that the move away from distribution of other suppliers will allow its existing dealership to exploit more effectively the opportunities clearly available in the domestic market.

Table 106. Çukurova: Production of Construction Equipment by Type, 2010-2014

(Units)

	2010	2011	2012	2013	2014
Backhoe Loaders	260	350	380	375	350
Crawler Excavators	10	20	20	20	20
Forklift Trucks	175	300	250	150	150
Wheeled Loaders	60	60	60	40	40

Source: Off-Highway Research

The backhoe loaders still have a good price advantage over equivalent machines from the imported brands and the main domestic manufacturer Hidromek, but win less than three per cent of the market. The wheeled loader volumes are still small, with resources initially moved towards the assembly of fork lift trucks, of which up to 300 units are built annually. Crawler excavator production began in 2008, but is limited to one 23 tonne model which sells in very small quantities.

Component Sourcing

Table 107. Çukurova: Component Sourcing for Construction Equipment, 2015

Axles	Carraro, ZF
Buckets	In-house
Cabs	In-house
Control Valves	Parker, Bosch Rexroth, David Brown, Doosan
Chassis	In-house
Counterweights	In-house
Engines	Perkins, John Deere
Hydraulic Motors	Bosch Rexroth
Hydraulic Pumps	Eaton, Bosch Rexroth, Kawasaki, David Brown
Loaders	In-house
Undercarriages	In-house

Source: Company Information

The company has a long standing relationship with the UK engine manufacturer Perkins, which provides the engines for all but the largest model of Çukurova's backhoe loaders. The wheeled

loaders and crawler excavators are fitted with John Deere engines. ZF of Germany supplies most of the transmissions, and Carraro in Italy supplies the drivetrain on some backhoe loader models.

Domestic Sales Network and Volumes: Prior to 2008 Çukurova products were distributed via the Çukurova Ithalat branch network. From 2008 to 2014 the company undertook its own distribution directly in Turkey via a nationwide network of sales and service depots and 'home office' based territory managers. The backhoe loaders and wheeled loaders typically achieve a disappointing three per cent market share despite competitive pricing. It is hoped the resources and focus of the Çukurova Ziraat company will see this improve in years to come.

Exports: In recent years the company has significantly increased its focus on export markets and is currently active in over 41 countries. It operates via independent dealers in Europe (8), Africa (5), Middle East (5), CIS countries (5), South-East Asia (4) and South America (8).

HIDROMEK

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Key Personnel: Hasan Basri Bozkurt, Owner.

History: In 1978 a Turkish mechanical engineer, Hasan Bozkurt, formed the company to convert agricultural tractors into backhoe loaders in Ankara. At the time the converted agricultural tractor was a popular way to provide a cheap maintenance tool for municipal works in Turkey. Massey Ferguson and Fiat tractors were mass produced in Turkey in the 1970s, so he could buy the base unit from the manufacturers, mostly from Uzel, the maker of Massey Ferguson tractors, and give it a new stronger front axle, a front loader and a backhoe. The product needed a frame under the body, as Massey Ferguson tractors lacked a chassis at the time, so much of the work in his Ankara plant consisted of making the machine strong enough for use as a backhoe loader. The result of his labours sold for about $6,000 each.

The buyers would request new or used tractors as the base, but this did not change the value of the work done to adapt them. In a typical year 300 of these would be sold, as compared to a

maximum of 200 imported specialist machines. The imported machines were seen as a luxury that buyers could afford only when times were good.

Towards the end of the 1980s the volume of conversions done declined. Mr Bozkurt was already aware that for every three conversions being done by him and his competitors, there were two new specialist backhoe loaders being imported from Europe. He could see that the future lay with these more productive machines, and so he went away to Europe to study his competitors.

In 1989 he began production of a machine based on the designs of the leading European machines of the time. He went to JCB's transmission subsidiary ITL to buy an engine and power train, but designed the machine independently. The Hidromek backhoe loaders now look like proper earthmoving machines and nothing like products derived from agricultural tractors. The company moved quickly in 1990 from the first 80 horsepower type, the HMK80, to a standard 100 horsepower design, with an optional four wheel steer type launched in 1991. It has now stopped doing conversions.

Production of these backhoe loaders outgrew the original premises and moved to a new plant at a new industrial estate in a different zone of Ankara in 1996. That site became crowded because of the component manufacturing undertaken before final assembly, so in 2001 the assembly line moved to Izmir, on the coast. This was especially relevant as exports had begun in 1999. That plant has assembled more than 12,000 backhoe loaders since its opening, and the company has produced more than 25,000 units in total.

At the end of the 1990s the managers decided to move into distribution, enriching the product programme for the sake of the dealers and the branches with imported products. The first move was to take on the franchise for Kobelco hydraulic excavators in 2000. This was eventually abandoned in 2004, partly because CNH was due to cease marketing the brand in the region.

In its stead, production of Hidromek's own hydraulic excavators began in 2002 and in 2005 the company built a special plant for their assembly. In 2008 it opened a component manufacturing centre in Ankara, as described below, to serve both product areas.

In 2013, the company broadened both its product range and its manufacturing footprint with the acquisition of the former Mitsubishi motor grader business operating from a plant in Thailand. It also took on the franchise for Yanmar mini excavators for distribution in the Turkish market. This led to speculation that the company would seek to develop into this product range itself, as it had previously done with hydraulic excavator. However, if this was ever part of the plan, it is

certainly no longer the case, the company pointing to the still-small sales and sluggish growth in the mini excavator market in Turkey as enough reason to avoid entering this sector.

Instead, the company decided to branch into the production of wheeled loaders, a project has now produced its first prototype machine and which will potentially see mass production start in 2016. In 2013, Hidromek also expanded closer to home following the purchase of 1,000 acres (405 hectares) of land near its current manufacturing plant and headquarters in Ankara.

Turnover: In 2013 the turnover was $378 million.

Personnel: 1,500.

Product Range: The company currently manufactures three models of backhoe loaders, three models of crawler excavator models, and two models of wheeled excavators.

Table 108. Hidromek: Product Range, 2015

Model	Engine		Operating Weight (Tonnes)	Digging Depth (m)	Bucket Capacity (m^3)
	Manufacturer	HP			
Backhoe Loaders					
62SS	Kubota	59	3.6	2.75	0.35
102B	John Deere	100	8.9	4.5 standard	1.1
	Perkins			5.8 telescopic	1.1
102S	Perkins	100	9.2	4.5 standard	1.1
				5.8 telescopic	1.1
Crawler Excavators					
HMK 140 LC	Mitsubishi	124	14.4	5.4	0.6
HMK 220 LC	Isuzu	162	22.6	6.7	1.0
HMK 300 LC	Isuzu	202	31.3	6.8	1.5
HMK 370LC	Isuzu	271	38.5	6.5	2.0
Motor Graders					
MG330	Mitsubishi	135	10.9	-	-
MG331	Mitsubishi	135	11.6	-	-
MG430	Mitsubishi	155	12.2	-	-
MG431	Mitsubishi	155	13.8	-	-
MG460	Mitsubishi	185	15.3	-	-
MG530	Mitsubishi	185	16.8	-	-
Wheeled Excavators					
HMK 140 W	Mitsubishi	124	15.8	5.0	0.6
HMK 200 W	Isuzu	162	21.8	5.8	0.9

Source: Company Information

Backhoe Loaders

The company has long manufactured two standard backhoe loaders, although in 2010 it launched a mini backhoe loader, the HMK 62SS model, based on a skid-steer drive principle.

The 102B model is the rigid chassis 4WD type, while the 102S model is the four wheel steer and 4WD machine. Both are designed on similar lines to the products of the European market leaders and have capacities to equal or better them. The latest incarnation of the product is the new Supra series launched this year, which features a 4.5 litre turbocharged John Deere engine compliant with Tier 3 and Stage 3a emissions regulations; Perkins engines are used for machines destined for markets with less strict emissions controls. The machines feature a new cab design, plastic hydraulic tanks, new lights and a Turner rather than ZF transmission.

The HMK62SS mini backhoe loader is powered by a 60 horsepower Kubota engine. This is a rigid frame, skid steer-machine weighing 3.5 tonnes which has been designed and developed in-house. The front loader bucket has a capacity of 0.35 m^3 (with a breakout force of 3,690 kgf) and the sideshift backhoe has a standard backhoe bucket capacity of 0.05 m3 and digs down to 2.7 metres.

Hydraulic Excavators

The company is aiming at having, in the medium term, a full range of hydraulic excavators from 16 tonnes upwards. In late 2005 it manufactured two models. Starting within a size that is very popular in the region, it launched a 22 tonne crawler type, with a Cummins engine and classic Japanese hydraulic system in 2002, followed by the wheeled type, on a European base but with the same hydraulic system, in 2003. In 2005 it began to offer an alternative of a Mitsubishi engine in the crawler excavator but a more significant introduction came in 2006, in the form of the 31 tonne 300LC model.

Three years later in 2009, came the launch of the 37 tonne machine, the 370LC model, at the same time as the second wheeled excavator, the 15 tonne 140W model. At the end of 2010 production of a crawler equivalent, the 140LC model, began.

The company has also confirmed that it is to extend its crawler excavator range further still with the development of a machine with an operating weight of around 50 tonnes. The new model has an Isuzu engine, with a prototype on show at the 2015 Intermat trade exhibition.

Manufacturing Facilities: Since 2008 the company has had five plants in existence.

The original plant, close to the city of Ankara, in central Turkey, dates from 1978 and began the conversion of agricultural tractors into backhoe loaders. It is currently the home of the after sales and spare parts services as well as second-hand operations – trade-ins of used machines are starting to be a factor in Turkey in the purchase of new machines.

In 1996 the production of backhoe loaders moved to a new, larger plant at a new industrial estate at Sincan, an area of outer Ankara, alongside all the manufacturing of the chassis, cylinders, buckets and booms. That site was modern but became very crowded. It extended to only 3.1 hectares, with 17,000 m^2 of covered area. Now it produces parts and steelwork for use in the company's excavator range.

In January 2001 the backhoe loader assembly plant, on a new site in the Free Trade Zone of Izmir, on the coast began production. All models of backhoe are produced here, with the exception of the compact 62SS model. The plant is ideal to receive the components bought from Europe and to export finished machines.

The plant in Sincan continued with welding of the booms and chassis and in 2002 began assembly of hydraulic excavators. Two years later Hidromek bought a further 17,000 m^2 of land adjoining the site and, during 2005, created a completely new assembly hall for hydraulic excavators. It is a large building, across a small road from the welding shops and is theoretically capable of assembling 3,000 excavators per year. Full production began in early 2006. It is partly fed by components produced across the road in the second plant.

In 2008 the company opened a completely new components plant in the expansion of the Sincan Industrial Zone of Ankara. It has 19,000 m^2 of covered area on a 4 hectare site. It has taken on the cutting centre machinery from the first plant, as well as having newly bought machine tools. This fourth plant supplies both product assembly lines but is focussed on components for backhoe loaders.

Subsequently, the company has also acquired a new production facility in Thailand following the purchase of the motor grader business from Mitsubishi. Under the agreement, Hidromek purchased all Mitsubishi Heavy Industries' (MHI) motor grader operations, including related technologies, design expertise and servicing operations, as well as ownership of MHI-Pornchai Machinery Co Ltd, a production base in Thailand that occupies a site of 14,000 m^2, of which 5,000 m^2 is covered, and employs some 150 people.

More recently, the company has embarked on a new project to build another large production facility close to its existing sites in Ankara. The intended development of wheeled loaders as a new product line, plus the realisation that the current excavators production site has become too small, prompted the development of the new location, which will evolve to include new excavator manufacturing facilities, a home for the development and eventual production of wheeled loaders, a customer and demonstration centre, a dedicated R&D facility as well as training facilities and after sales support. The total land area of the new plant will be 120,000 m^2, of which 80,000 m^2 will be covered.

Production

Table 109. Hidromek: Production of Construction Equipment, 2010-2014

(Units)

	2010	2011	2012	2013	2014
Backhoe Loaders	1,600	2,204	2,807	3,224	1,690
Hydraulic Excavators:					
– Crawler	350	475	815	943	716
– Wheeled	85	111	126	97	60

Source: Off-Highway Research

As the company first devoted itself fully to building backhoe loaders in the early 1990s, the annual production rate rose to over 300 units by 1994. After that the unfortunate recurring crises of the Turkish economy meant that volumes regularly went down after a few good years. The answer was to develop export markets, but after the opening of the new assembly plant in Izmir output was still no higher in 2002 than eight years before.

Thereafter there was a complete revolution in the scale of production, with the 2004 total being three times as high as that of 2002. By then exports accounted for 40 per cent of the machines made. Production then continued to grow strongly, boosted by the extension of the export dealer network. Growth of more than 60 per cent in 2005 was followed by more, rapid expansion in the next two years, which also saw a massive increase in the home market. In 2008 the home market slumped earlier than the international demand, and by 2009 output was 66 per cent down on that seen only two years earlier.

Overall output then grew more than seven-fold in the next five years, reaching a new record of 3,224 units in 2013. Growth has been inspired not just by the surge in domestic demand, but also by the re-focussed export strategy and the subsequent success in important backhoe loader

markets such as Russia and Algeria. Nevertheless, the slowdown in domestic sales last year and, more notably, the rapid decline in the Russian market due that country's economic problems saw production almost halve in 2014.

Hydraulic excavator production began on a serial basis in 2004. The task of persuading buyers away from the well-known names inevitably took time, and the volumes built initially reflected that enormous challenge. By 2007, however, output was more than 350 units, with a mix of 90 per cent crawler excavators, 10 per cent wheeled. After that, the world crisis affected many markets and by 2009 output was at below 50 per cent of the level of two years earlier.

Nevertheless, the next five years have seen production levels soar. From just 165 units manufactured in 2009, the company produced more than 1,000 machines for the first time in 2013, once again at the ratio of one wheeled model for every 10 crawler models (although prior to this, production of wheeled machines has accounted for up to 24 per cent of the total). Even after the decline to just under 800 units in 2014, this remains the third highest volume of excavator production in the company's history.

Component Sourcing

Table 110. Hidromek: Component Sourcing for Construction Equipment, 2015

	Backhoe Loaders	Hydraulic Excavators
Axles	ZF, Carraro	NAF, ZF
Buckets	In-house	In-house
Cabs	Hisarlar	Hisarlar
Chassis	In-house	In-house
Control Valves	Husco, Bosch Rexroth	Toshiba, Kayaba
Engines	Perkins, John Deere	Mitsubishi, Isuzu
Hydraulic Motors	-	Travel motors – Teijin Seiki, Bosch Rexroth Swing motors – Toshiba
Hydraulic Pumps	David Brown	Kawasaki
Loaders	In-house	-
Transmissions	ZF, Turner	ZF (wheeled)
Tyres	LasSA	LasSA
Undercarriages	-	In-house

Source: Company Information

For the backhoe loaders the plant in Sincan, Ankara builds the chassis, fabricates buckets and makes both the loaders and the backhoes, as well cylinders. The company buys components with the guiding principle that everything which goes into the machine should be as good as the corresponding elements of any imported machine. Thus it began with JCB transmissions and

axles, although the recently launched Supra series now incorporates John Deere engines and Turner drivetrains. The hammer is a popular option and Hidromek markets the Montabert and Lifton breakers in its own colours. For the domestic market only, it offers the Korean Demo breaker, for which it is the official importer.

The excavators are based on tried and tested Japanese components, as used by the competitors. The crawler undercarriage is made in-house and fitted with Japanese travel motors and Italian running gear. The wheeled version, however, has more of a European influence, since the gearbox is from ZF and drives NAF axles from Germany. The plant in Sincan, Ankara builds the chassis and fabricates buckets.

Distribution and Service: The sales and marketing operations are based at the head office in Sincan. Hidromek sells its own products from there and from further branches in:

- Ankara
- Antalya
- Bursa
- Denizli
- Diyarbakir
- Elazığ
- Istanbul Anatolia
- Istanbul Europe
- Izmir
- Kayseri
- Samsun
- Tarsus
- Trabzon

It has no independent stocking dealers in Turkey. The essence of the marketing strategy is that since the product is supposed to be first class, then the after sales service must be similar. This effort is organised from after sales centres in Ankara, Tarsus, Trabzon, Bursa and Elazığ. There are no fewer than 56 authorised workshops and eight mobile after sales teams. There is a training school at the original plant and a service department. Hidromek, for example, runs courses on the servicing of some bought-in components which are directed by staff from the supplier company itself.

Domestic Sales

Hidromek remains by far the most important domestic supplier of backhoe loaders, with a strong reputation in municipalities and with private contractors, to whom it has been selling machines for 30 years. In 2011 it finally outsold its nearest competitor and perennial market leader JCB to capture market leadership of the backhoe sector, a position it has retained since then. The

company's reputation in the industry is now firmly established, and the quality of its product and after sales back-up are well accepted by the local government buying departments and private contractors alike.

Table 111. Hidromek: Sales of Construction Equipment in Turkey, 2012-2014

(Units)

	2012	2013	2014
Backhoe Loaders	1,778	1,639	1,284
Hydraulic Excavators:			
– Crawler	743	798	616
– Wheeled	60	53	49

Source: Off-Highway Research

Crawler excavator sales have risen significantly in the last two years. In 2011 the company secured third position in the sector with a market share of 13 per cent; since then it has also become market leader in this sector, a remarkable achievement particularly given the reputation of the established suppliers. The wheeled excavator sector in Turkey is of relatively minor importance, although Hidromek currently commands a market share of around 21 per cent.

Export Sales

The company now has representatives in 44 countries, having begun only in 1999, and aims to eventually have 70. The names of the main importers are shown below.

The Tunisian dealer was the earliest to be appointed, in 1999. In Western Europe the largest number of dealerships is the group created to cover Spain, and this remains the case even though the market size has been reduced dramatically. The company has expanded its coverage in France since the last report to 19 dealers, and the most recent appointments were in Scandinavia, where the company now has active representation in Norway, Sweden and Finland.

The creation of an export network that can regularly take considerable volumes of products is the biggest change since 2000. Export sales of **backhoe loaders** grew quickly until 2007. After declining by about 45 per cent in 2008, a similar rate to that of the European market as a whole, export sales fell by 50 per cent in 2009. Since then they have grown steadily again in absolute terms, even if the overall proportion accounted for by export sales has not risen due to the growth of and the company's strong position in the domestic market.

In Western Europe the best market success during the initial expansion period was Spain, where the company still has 31 dealers and sold nearly 150 units in 2006 and 2007 to win a market share around four per cent. The well-known crash of the Spanish market after that time clearly affected the export volume in a disappointing way. Sales collapsed by 90 per cent in 2009 and Hidromek sales there fell to only 22 units. The situation in Spain has remained dire ever since, and sales have been in single figures for the past three years. In contrast, the company has seen sales grow nearly five times in the same period in France (admittedly to still just 19 units last year), where it now has 19 dealers.

Elsewhere there have been significant successes in Bulgaria, Algeria, Tunisia, Iran and, more recently, Russia, which accounted for more than a third of total exports until the significant decline experienced last year. Here, the recently established network of 15 dealers with 29 outlets has seen market share more than double in the past three years, from four to nine per cent, out of a total market estimated prior to the recent economic and political upheaval at 6,000 units.

Exports of **hydraulic excavators** are still at an early stage, at least compared to the success of backhoe loaders. Markets where sales have happened already include Spain, North Africa and Eastern Europe. After 2006, when the new assembly plant opened, sales in export markets exceeded 100 units per year and were growing fast. However, as a new entrant the company was no more able to withstand the pressure of the market downturn than any competitor and sales slowed markedly in 2009. Sales have recovered since then, with more than 200 units sold abroad in 2013, equating to slightly more than 20 per cent of production for crawler models and slightly less for wheeled machines

The excavators have begun to establish themselves in some unusual markets, particularly those where the backhoe loaders have already made a name for the company, such as North Africa and Bulgaria. Other countries where sales have been recorded on a regular basis include Poland, Israel, Russia – which will no doubt be an increasingly significant target in the years to come – and, more recently, Sweden.

PI MAKINA

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Key Personnel: Yaşar Yiloir, Vice General Manager.

History: Two civil engineering contractors, Mr Gegin and Mr Erbilgin, founded the Erg Group in the mid-1960s. It is now one of the leading contractors in Turkey, building, for instance, since 1998 the second highest dam in the world in North-East Turkey.

The company subsequently expanded into the area of construction equipment manufacturing to take advantage of the government's wish to protect young Turkish industries and Pi Makina was established in 1974. Its first products were crushers, batching plants and asphalt plants.

It then moved into mobile construction equipment, designing and manufacturing wheeled and crawler excavators, crawler dozers and loaders, wheeled loaders, motor graders, compaction equipment, truck-mounted concrete mixers and even tipper trucks. It also added tower cranes and concrete pumps. Pi Makina developed all its own designs, rather than using licensed technology, and had the largest range of products made in Turkey.

The Pi Makina plant also became idle in the early 1990s. The labour force went down to 130 people, and much of the work which they did was to help maintain the Erg fleet of Caterpillar, Komatsu, Case, Pi Makina and other machines. The parent company kept itself alive by going into other fields, such as textiles, shipping and tile-making machinery. After 1995, however, the building economy improved and production was revived at the Pi Makina plant.

Production of mobile construction equipment was eventually halted in 2006, and more recently the plant was heavily involved in making structural steel for the Artvin dam, an Erg project in Turkey. This is the third highest dam in the world at 250 metres, and has required an enormous amount of steel work, 12,000 tonnes per year. Production of machinery in recent years has therefore focused on concrete pumps and rock crushers.

Personnel: 650.

Manufacturing Facilities: The plant is on a large site 23 kilometres south of Ankara. It covers 18 hectares and has a covered area of 95,000 m^2. There are now three large halls and two smaller ones, which allow the company to cut and weld large pieces such as booms, chassis pieces and elements for the fixed plants for asphalt.

SANKO İS VE TARIM MAKİNALARI SANAYİ VE TİCARET

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Website: www.mst-tr.com

Key Personnel: Ertan Pasa, Board Member.

History: MST, called Mastaş prior to 1995, is Turkey's oldest backhoe loader manufacturer and was established in Izmir in 1976. It began by converting agricultural tractors into backhoe loaders and initially concentrated on marketing its products in the Izmir area, although its reputation later spread all over Turkey. A network of dealers was created to find orders for the plant, which essentially took Massey Ferguson Turkish-made tractors and added a bucket and a backhoe at the rear to make a substitute for an imported backhoe loader. The company continued to be mainly a converter of agricultural tractors until 1995, when it launched a competitor to the Hidromek type of machine. That machine, the MST, was based on the driveline supplied by ITL of the UK, a JCB subsidiary.

In November 2003, Sanko Construction Machinery Trade Company took over the MST company. Sanko Machinery Marketing and Trading Corporation is the construction equipment trading division of the Sanko Group, with its main focus being the Doosan franchise. Sanko Machinery built a new plant in Gaziantep in 2005, and production of all MST-branded backhoe loaders was transferred there. In 2008 production of telescopic handlers was also initiated at the new plant. The operation in Izmir remains an OEM manufacturer of mobile crushers and screening equipment, which are marketed in Turkey under the Mastaş brand name, and in export markets under various brand names. It also manufactures components such as frames, hydraulic cylinders and buckets for the production operation in Gaziantep. In 2012, Sanko Construction and Agricultural Machinery Company was established and MST brand was taken over by this

company, while the Sanko Construction Machinery Trade company remained mainly as a distributor of Doosan branded construction machinery.

Personnel: The Sanko Construction and Agricultural Machinery Company employs around 500 people, of whom 300 are based at the Gaziantep plant, 100 at the Ödemis plant and a further 100 work in sales and after sales departments.

Product Range: The backhoe loader product line consists of four models which are available as a rigid chassis 2WD/4WD type, or a 2WS/4WS machine. The telescopic handler range comprises seven models with lift capacities ranging from 3-4 tonnes and lift heights of 6.35-16.3 metres.

Table 112. Sanko: Product Range, 2015

Model	Engine		Operating Weight (Tonnes)	Digging Depth (m)	Bucket Capacity (m^3)
	HP	Manufacturer			
Backhoe Loaders					
MST 544	100	Perkins	9.2	5.4	1.2
MST 542	100	Perkins	8.9	5.4	1.2
MST 642	100	Perkins	8.9	5.4	1.2
MST 644	100	Perkins	9.2	5.4	1.2
Telescopic Handlers			**Lift Capacity**	**Lift Height (m)**	
ST 740	100	Perkins	4.0	6.35	-
ST 835	100	Perkins	3.5	7.8	-
ST 935	100	Perkins	3.5	8.7	-
ST 940	100	Perkins	4.0	8.7	-
ST 1135	100	Perkins	3.5	11.0	-
ST 1335	100	Perkins	3.5	13.0	-
ST 1730	100	Perkins	3.0	16.3	-

Source: Company Information

Manufacturing Facilities: The original plant was in Ödemis, 100 kilometres east of Izmir in the Boz Daglari mountains. The new plant in Gaziantep covers 500,000 m^2, of which 42,000 m^2 is covered, and produces the MST range of backhoe loaders and the ST range of telescopic handlers.

Production

From 1975 to the late 1990s, the company converted about 7,000 tractors to backhoe loaders. Since then the market has moved permanently in favour of a more sophisticated concept,

although the managers originally backed the wrong idea in the form of an articulated backhoe loader, which did not sell well. This MST product, good as it was, could not save the company from losing its independence in the aftermath of the 2001 crisis.

Table 113. SANKO: Production of Construction Equipment, 2014

	Units
Backhoe Loaders	1,183
Telehandlers	150

Source: Company Information

Since 2004, Sanko has been an effective dealer for the company and its market share increased to around 10 per cent in 2011, as the market accelerated quickly. Further proof of the successful adaptation to current market requirements is provided by a current market share of 13 per cent.

Perhaps even more impressive has been the company's success in the rapidly developing telehandler market. Although volumes remain low as the machine concept has yet to be fully adopted by the construction sector, while the agricultural sector remains largely un-mechanised to the requisite level of sophistication for these machines to be widely used, the company claims third place in terms of sales. Last year it had a market share of 15 per cent, behind only internationally-renowned suppliers Manitou and JCB. The significance of this presence is likely to stand the company in good stead as the market continues to grow, with expansion of more than 10 per cent per year anticipated.

Component Sourcing

Table 114. Sanko: Component Sourcing for Construction Equipment, 2015

	Backhoe Loaders	Telehandlers
Axles	Carraro	Dana
Buckets	In-house	In-house
Cabs	In-house	Escar
Chassis	In-house	In-house
Control Valves	Husco	Din oil, Bosch Rexroth
Engines	Perkins	Perkins
Hydraulic Cylinders	In-house	In-house
Hydraulic Pumps	Casappa, Bosch Rexroth	Bosch Rexroth, Casappa
Loaders	In-house	In-house
Steering Units	Danfoss	Bosch Rexroth
Transmissions	Carraro	Bosch Rexroth
Tyres	Various	Various

Source: Company Information

For its backhoe loaders Sanko builds the chassis, buckets, loader and backhoe. It has switched from ITL to Carraro transmissions and axles, and fits Perkins engines in both models of backhoe loader and to the complete telescopic handler range.

Distribution and Service: Sanko utilises a direct sales policy via its 10 regional offices.

Sales

Table 115. SANKO: Sales of Construction Equipment, 2010-2014

(Units)

	2010	2011	2012	2013	2014
Backhoe Loaders	211	314	586	496	428
Telehandlers	25	44	57	62	78

Source: Company Information

Around 50 per cent of backhoe loader production and up to 50 per cent of telescopic handler production is exported. Sanko has an extensive overseas distributor network in over 40 countries, with the main export markets being North Africa, Russia, CIS, Central Asia and the Middle East.

Other successful markets include Poland, the Balkans, Bulgaria, Portugal, Spain, South Africa and Israel.

Table 116. Turkey: Distributors of Construction Equipment and Their Franchises, 2015

	Asphalt Finishers	Backhoe Loaders	Compaction Equipment	Crawler Dozers & Loaders	Dump Trucks	Hydraulic Excavators	Mini Excavators	Mobile Compressors	Mobile Cranes	Motor Graders	Rough Terrain Lift Trucks	Skid-Steer Loaders	Wheeled Loaders
ASCENDUM	Volvo	Volvo	Volvo		Volvo	Volvo	Volvo	Chicago Pneumatic	Sany	Volvo		Volvo	Volvo, SDLG
Atlas Copco								Atlas Copco					
Borusan Makina	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar, Mecalac	Caterpillar, Mecalac			Caterpillar	Caterpillar, Genie	Caterpillar	Caterpillar, Mecalac
Cermak							Takeuchi						
Çukurova Ziraat		Çukurova				Çukurova							Çukurova
DAS Oto									Terex				
Dizel Turbo					Terex								
Enka	Atlas Copco		Atlas Copco		Bell	Hitachi	Hitachi		Tadano, Tadano Faun, Hitachi Sumitomo				Kawasaki, Hitachi
Gama									Zoomlion			Mustang	Lonking
Hamamcioğlu							Bobcat	Doosan			Bobcat	Bobcat	
Hasel		Terex				Kobelco, Terex	Kobelco, Terex			Terex		Terex	Terex
HCS									Liebherr >300 t				
Hidromek		Hidromek				Hidromek	Yanmar						
HMF			Hyundai			Hyundai	Hyundai					Hyundai	Hyundai
INAN Makina							IHIMER					IHIMER	
Kale							Kubota					Gehl	Kubota, Gehl
Karun									Grove, Manitowoc				
Karyer	Bomag		Bomag							HBM Nobas	JLG		
Liebherr Turkey				Liebherr	Liebherr	Liebherr			Liebherr <300 t		Liebherr		Liebherr
Maats											Manitou		
Özmak			XCMG			XCMG			XCMG	XCMG			XCMG
SANKO – Doosan					Doosan	Doosan	Doosan					Doosan	Doosan
SANKO - MST		MST					MST				MST		
SIF JCB		JCB			JCB	JCB	JCB				JCB	JCB	JCB
Temsa		Komatsu		Komatsu	Komatsu	Komatsu	Komatsu			Komatsu	Komatsu	Komatsu	Komatsu
TSM Global	Ammann		Ammann			Sumitomo							
TürkTraktör		Case, New Holland				Case, New Holland	Case, New Holland				Case, New Holland	Case, New Holland	Case, New Holland
Uygunlar		LiuGong	LiuGong	LiuGong, Dressta		Kato, LiuGong			LiuGong	LiuGong		LiuGong	LiuGong
Wacker Neuson			Wacker Neuson			Wacker Neuson	Wacker Neuson				Wacker Neuson		Wacker Neuson, Weidemann
Wirtgen Ankara	Vögele		Hamm										

Source: Company Information

DISTRIBUTOR PROFILES

ASCENDUM TÜRKIYE

Address: **ASCENDUM Makina Ticaret A.Ş**
Fatih Mah Katip Çelebi Cad. No.43
PK 34956
Tuzla

Tel: +90 (0) 216-581 8000
Website: www.ascturk.com

Key Personnel: Mahir Hocaoğlu, CEO.

History: Volvo has a long history of involvement in the Turkish market dating back to 1951, when it appointed an importer for Volvo farm machinery that later moved into construction equipment. In 1998 it was acquired by the Swedish parent company, and became the construction equipment division of Volvo's new operations in Turkey.

In April 2008 the wholly-owned subsidiary company, Volvo Otomotiv Türk Ltd., moved into new headquarters in the Kadiköy district, on the Asian side of Istanbul, since it had outgrown the previous location in Merter. The company was subsequently established as the main hub for sales and marketing of Volvo construction equipment in Turkey and Central Asia, with responsibility for business in: Azerbaijan; Kazakhstan; Georgia; Turkmenistan; Uzbekistan; Armenia; Kyrgyzstan and Tadjikistan.

In July 2010, this subsidiary was acquired by the Portuguese Ascendum Group, one of the largest Volvo construction equipment dealers in the world. The company began life in 1958 as the car and truck dealer for Volvo in central Portugal. It has been the national dealer for Volvo construction equipment since 1970, and has also owned the company importing Volvo construction equipment into Spain since 1999. In 2004 it took over the distribution of Volvo construction equipment in five American states, Alabama, Georgia, North Carolina, South Carolina and eastern Tennessee. ASCENDUM group also took over the responsibility for construction equipment distribution for Mexico in 2012 and eight countries in Central Europe in 2013.

Ascendum Türkiye is now responsible for the marketing of Volvo construction equipment in Turkey and Northern Cyprus.

Turnover: In 2014 the turnover of the Turkish operation was €180 million, constituting around 30 per cent of the Ascendum Group's total revenues.

Personnel: The company employs 200 people to work on construction equipment.

Franchises

Table 117. Ascendum Türkiye : Range of Franchises, 2015

Manufacturer	Machine Types
Chicago Pneumatic	Breakers
Sandvik	Mobile crushers
Sany	Crawler cranes, piling machines, port equipment
SDLG	Wheeled loaders
Volvo	All construction equipment

Source: Company Information

Distribution and Service: The company has five branches. It also employs the services of four sub-dealers to cover the country. The dealers and their approximate territories are:

- **Akça:** West Coast
- **Ceylan:** South and South-East
- **Artesa:** Northern Cyprus
- **Ekbiç:** Black sea

Sales

Table 118. Ascendum Türkiye: Sales of Construction Equipment by Type, 2014

	Units
Articulated Dump Trucks	63
Asphalt Finishers	2
Backhoe Loaders	123
Compactors	18
Crawler Excavators	287
Mini Excavators	23
Motor Graders	45
Wheeled Excavators	2
Wheeled Loaders	200
Total	**763**

Source: Off-Highway Research

Wheeled loaders and crawler excavators account for the bulk of construction equipment turnover, and the company has achieved significant success in the marble quarrying sector due to the fuel efficiency and reliability of its wheeled loaders. High value products, such as motor graders and asphalt pavers, sell in smaller volumes but have achieved good market shares; then impact of the decision to source graders and backhoe loaders under the SDLG brand from China remains to be seen. SANY mobile cranes have been in the market for almost one year now and the company considers it to have been a successful introduction.

Future Developments: Ascendum has successfully incorporated the former Volvo subsidiary operational systems into its own Group structure and will now hope to consolidate its presence in the important crawler excavator and wheeled loader sectors. Increasing focus will also be applied to the growing market for compact equipment, in particular mini excavators.

ATLAS COPCO

Address: **Atlas Copco Makinalari Imalat AŞ**
Istasyon Mah. Ibiş Ağa Cad. No: 6
34940 Tuzla-Istanbul

Tel: +90 (0) 216-581-0-581
Website: www.atlascopco.com.trus

Key Personnel: Erdem Tuzunalp, General Manager

History: Atlas Copco has been present in Turkey for many decades and the company's plant in Istanbul manufactured about 7,000 mobile compressors from the early 1960s until 1989. It now imports all its machines from Belgium. All Atlas Copco business activities in Turkey are administered by the company's wholly owned subsidiary in Tuzla.

Following Atlas Copco's acquisition of the Dynapac road building machinery business in 2007, a dedicated division was established at the Tuzla headquarters which acts as a sales administration hub for the complete formerly Dynapac-branded product line in the following markets: Turkey, Azerbaijan, Georgia, Armenia, Turkmenistan and Central Asia. In Turkey, however, 90 per cent of this business is covered by an independent dealer, Enka, although a small number of sales are handled directly by the Atlas Copco subsidiary in Tuzla.

Personnel: 150. There are nine full time employees working on mobile compressors. Around the country five service engineers, and more than 30 mobile technicians work on all Atlas Copco

products in use in Turkey, including the mobiles. The road construction equipment division comprises three people, two of whom are based in Istanbul and one in Ankara.

Distribution and Service: The company has its head office in Istanbul and five regional offices in:

- Adana
- Ankara
- Bursa
- Izmir
- Trabzon

The office in Ankara also has a parts and machinery depot.

Atlas Copco itself undertakes the servicing of machines, and the size of its service fleet ensures that it is far ahead of any competition. Atlas Copco Turkey has started a rental fleet and is very keen to expand the rental business in the long term.

Sales: Atlas Copco is the market leader and has been so for many years. When it manufactured mobile compressors in Turkey in the 1960s to 1980s, it enjoyed a market share of about 60 per cent. Given the weaknesses of its competitors and the lack of strong local competition, it now regularly achieves a market share of nearly 80 per cent. It dominates the market in the categories below 10 m^3/min and all other sizes.

BORUSAN MAKINA

Address: **Borusan Makina Servis ve Ticaret AŞ**
Meclisi Mebusan Cad. 101A
34427 Salıpazarı-Istanbul

Tel: +90 (0) 212-393-5500
Website: www.bmgs.com.tr

Key Personnel: Ercumënt Inanç, General Manager

History: Borusan is a steel pipes producer and has become a holding company with diversified interests, such as the BMW and Land Rover car franchises for Turkey. When Caterpillar terminated its agreement with Çukurova in 1993, Borusan was the successful bidder to take over the franchise. It began selling Caterpillar equipment in 1994. In practice the subsidiary company, Borusan Makina, focuses on Caterpillar construction equipment as an associated

company, Borusan Power Systems, handles Caterpillar industrial and marine engines, and generating sets.

Borusan is active in developing Caterpillar franchises in the CIS and has subsidiaries in several important territories, namely Kazakhstan, Azerbaijan, Kyrgyzstan and Georgia.

Personnel: 500 in Turkey.

Franchises

Table 119. Borusan Makina: Range of Construction Equipment Franchises, 2015

Company	Products
Caterpillar	Complete construction equipment range
Genie	Telescopic handlers, access platforms
Mecalac	Hydraulic excavators
Metso	Crushers and screens

Source: Company Information

In addition to the comprehensive range of Caterpillar construction equipment products, Borusan Makina also distributes telescopic handlers and access platforms from Genie, multi-function excavators from Mecalac and crushing and screening products from Metso.

Distribution and Service: The company still has its head office in the European part of Istanbul as well as nine regional branches. It has also created a network of around 94 Authorised Sales and Service Centres to complete its coverage of the country. The network in Turkey is the largest in the industry, and reflects the fact that Caterpillar equipment has been in use there for over 50 years.

Sales: Borusan has attracted much attention with its vigorous marketing of the Caterpillar range in recent years, and it has the advantage of not being rooted in the past when heavyweight machines ruled the business, even if the company's traditional strengths are hydraulic excavators and wheeled loaders. The position is still good in traditional products, like the motor graders and crawler dozers where it has the usual dominant position of the typical Caterpillar dealer. It has also improved significantly in compaction equipment, where it used to sell almost nothing at all and is now not far behind the market leaders. This position has been helped by the company's understanding of and enthusiasm for the growing rental sector, in which it is particularly active.

Table 120. Borusan: Sales of Construction Equipment by Type, 2014

	Units
Articulated Dump Trucks	3
Asphalt Finishers	2
Backhoe Loaders	277
Compaction Equipment	45
Crawler Dozers	83
Crawler Excavators	419
Crawler Loaders	6
Mini Excavators	47
Motor Graders	108
Rigid Dump Trucks	3
Skid-Steer Loaders	65
Telescopic Handlers	44
Wheeled Excavators	29
Wheeled Loaders	3
Total	**1,134**

Source: Off-Highway Research

CERMAK

Address: **CEREN MAKINA Ithalat Ihracat Pazarlama Ltd Sirketi**
Esenler Sanayi Sitesi 3, Blok No. 4
PK 34303
Başakşehir - Istanbul

Tel: +90 (0) 212-671 57 44
Website: www.cerenmakina.com

Key Personnel: Caner Ilkbağ, Director.
Fuat Alyar, Managing Partner.

History: Ceren Makina was established in 2010 as the exclusive importer for Takeuchi compact equipment. The company has existed since 1997 as a sub-dealer for JCB, although its two owners recognised the growing potential for mini excavators and decided to relinquish their JCB interests in favour of establishing the Takeuchi brand in Turkey. The new company is a specialised compact equipment dealer and focuses almost exclusively on the mini excavator sector.

Turnover: €10 million.

Personnel: 35.

Franchises

Table 121. Cermak: Range of Construction Equipment Franchises, 2015

Company	Products
Takeuchi	Mini excavators, compact tracked loaders

Source: Company Information

Distribution and Service: The company's headquarters is located in Ikitelli, on the European side of Istanbul. In addition, it operates a nationwide network of 34 authorised service sub-dealers, up from 18 in 2012, and has five 'home office' based salesmen throughout the country.

Sales

Table 122. Cermak: Sales of Construction Equipment by Type, 2014

	Units
Crawler Excavators	19
Mini Excavators	145
Total	**164**

Source: Off-Highway Research

Cermak began delivering Takeuchi mini excavators in mid-2011 and immediately established a significant presence in the sector. This impetus was carried forward into 2012 when the company sold nearly 80 units in the first eight months of the year, achieving market leadership in the increasingly important 0-5 tonne mini excavator sector. Since then it has fought hard for market leadership with the Kubota dealer Kale.

Future Developments: The company has successfully embraced the challenge of establishing a new brand in the mini excavator market and has the advantage of representing one of the world's leading manufacturers of compact equipment. In the medium term the company is hoping to establish a market for compact tracked loaders, a product virtually unknown in the Turkish market, and to this end began importing the Takeuchi product line in early 2013. It is also conscious of the significant role the second hand value of a machine will play in the development of the mini excavator market, and says it is now seeing the reward of having worked hard to

establish both the concept of the machine and a significant population of Takeuchi-branded products. An efficient network for sales of spares and parts is also central to the company's plans.

ÇUKUROVA ZIRAAT

Address: **Çukurova Ziraat End. ve Tic. AŞ**
İçmeler Mah. D-100 Karayolu Tersaneler Kavşağı No:36 Tuzla
İstanbul

Tel: +90 216 625 15 00
Website: www.cukurovaziraat.com.tr

Key Personnel: Ediz Calapoglu, General Manager.

History: In 1963 the Çukurova group of companies founded Çukurova Ziraat Endustrisi ve Ticaret to take over the marketing of John Deere farm machinery, which the sister company Çukurova Ithalat had been selling since 1946. In the middle of the 1980s the link with John Deere ended and the company began to sell Sumitomo construction equipment. In 1996 it took over the Case construction equipment franchise, and that of Merlo telehandlers in 2002, although renounced the latter in 2008. It started representing the Swiss compaction equipment manufacturer Ammann in 2004.

These were not the first venture by the Çukurova group into the construction equipment business, however: for 50 years it was the Caterpillar dealer for Turkey, but the two partners fell out in the early 1990s and Caterpillar parted from Çukurova formally in 1993. In 1994 the company became the new importer and distributor of Liebherr earthmoving equipment. The Fermec franchise for backhoe loaders and skid-steer loaders was added in 1995 and that of Manitou in 1999. The company's Çimsataş plant, which had from 1981 to 1993 manufactured Caterpillar crawler loaders and wheeled loaders, moved over to building Liebherr hydraulic excavators. The loss of the Liebherr franchise in 2008, however, has resulted in the closure of excavator production at the Mersin plant (where it nevertheless continues to produce excavator parts, including undercarriages and blades). Subsequently, sister company Çukurova Ithalat was awarded the New Holland construction equipment franchise in Spring 2008.

All of the dealership arrangements have now also changed. In 2014, the company ended its agreements with both CNHI franchises and indeed with Ammann and Sumitomo as well (these are now distributed by TürkTraktör and TSM Global respectively – see separate profiles). Instead, the company has decided to focus on the distribution of its own-brand construction

equipment, of which it produces three ranges: backhoe loaders, wheeled loaders and one model of crawler excavator. Sister company Çukurova Ithalaat is now focussing on sales of forklift trucks (the company's own brand products plus Chinese brand C-Lift).

Turnover: $169 million (2013).

Personnel: 150.

Franchises

Table 123. Çukurova Ziraat: Range of Construction Equipment Franchises, 2015

Company	Products
Astra	Articulated dump trucks
Baldwin	Filters
BYG	Teeth
Çukurova	Backhoe loaders, crawler excavators, wheeled loaders
Isuzu	Motors

Source: Company Information

As well as its own-brand products, the company has also retained the franchise for CNHI group Astra-branded articulated dump trucks.

Distribution and Service: The company has moved its head office in Istanbul from an ancient industrial suburb in the European part to a modern centre on the road to Ankara, on the Asian side. The company also has three branches in:

- Adana
- Ankara
- Izmir

The rest of the country is in the hands of a sales network of six dealers, who also do servicing of construction equipment and selling spare parts.

Sales: Crawler excavators, backhoe loaders and wheeled loaders remain the main focus for the company, and the company now has to meet the challenge of re-establishing its own brand and commitment to the sector after a period of upheaval during which it has seen several high-profile brands come and go.

Table 124. Çukurova Ziraat: Sales of Construction Equipment by Type, 2014

	Units
Backhoe Loaders	82
Crawler Excavators	2
Wheeled Loaders	10
Total	**94**

Source: Off-Highway Research

DAS OTO

Address: **DAS Oto San Ltd Sti**
Gardenya Plaza 5 Kat: 2
Ataşehir
34758 Istanbul

Tel: +90 (0) 216 456 57 05-06
Website: www.dasoto.com.tr

Key Personnel: Kerim Başakinci, Chairman.

History: DAS Oto is the distributor for Terex Cranes in Turkey. The company is wholly owned by the Başakinci family and was originally established in 1979. In 1985 it began selling P&H rough terrain cranes, and subsequently PPM all terrain cranes. It has been the general distributor for Terex Cranes in Turkey since 1995, although only incorporated the Terex Demag franchise in 2006. DAS is a well-established group of companies with marine, energy and lifting equipment divisions.

Turnover: Not available.

Personnel: The company employs 67 people, around 30 of whom work in the service department. Three employees are stationed at the DAS subsidiary company in Baku, Azerbaijan.

Franchises: The company handles all Terex Crane products, including the Lorain range and the PPM reach stackers. In today's market the leading products are the rough terrain cranes. DAS has remained loyal to the Terex marque and has operated a specific policy of not selling any other brand of crane, new or used. Nevertheless, it has recently taken on the franchise for Kobelco crawler cranes in those model sizes where Terex machines do not have CE marking and are therefore not available in the Turkish market. The Genie access platform and telescopic handler franchise for Turkey was dropped in 2012, and transferred to the Caterpillar dealer

Borusan, although it still represents the brand in other countries; it also sells JLG telehandlers outside Turkey. The full and diverse range of its other interests can be seen in the table above.

Table 125. DAS Oto: Range of Franchises, 2015

Manufacturer	Machine Type
Bronto Skylift	Access platforms
Capacity	Terminal trucks
Cimolai	Marine lifts
Kobelco	Crawler cranes
Manitex	Truck-mounted cranes
Ormig	Pick and carry cranes
Terex	Port equipment
Terex Cranes	All terrain cranes, rough terrain cranes, truck cranes, crawler cranes, tower cranes

Source: Company Information

Distribution and Service: The company has its head office in Istanbul and a workshop in Tuzla, Istanbul. In addition to its domestic market responsibilities, DAS has a contract with Terex to undertake crane servicing duties and spare parts supply in the following countries: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, Uzbekistan and Libya. In 2009 DAS was awarded the Terex crane franchise for Azerbaijan and subsequently set up a local subsidiary company in Baku to handle the increasing volume of business in the country. In total, the company is active in a sales and/or service capacity in 63 countries worldwide, from Equatorial Guinea to Afghanistan. DAS is also actively engaged in sourcing new crane dealers for Terex throughout its field of operation and regularly undertakes service training to enable these companies to become fully operational distributors.

Sales

Table 126. DAS Oto: Sales of Mobile Cranes, 2014

	Units
Mobile Cranes:	
– Crawler	1
– Rough Terrain	24
Total	**25**

Source: Off-Highway Research

DAS is the leading crane distributor in Turkey by a considerable margin. The majority of the company's revenue is derived from the Terex rough terrain crane lines, sourced from North America and Italy. Most of the North American crane products are sold to customers

working outside Turkey (CIS, Middle East and North Africa), although the rough terrain cranes made in Italy are CE marked and are also sold for use in Turkey.

Future Developments: DAS has expanded its global presence massively during recent years, and the company has profited enormously from the boom in crane sales to Turkish contractors working in the CIS and Middle East regions. The priority for the company is to consolidate its presence in the CIS, Middle East and North Africa in order to maintain an effective sales back-up and spare parts capability. It is particularly bullish about business opportunities in gas and oil producing countries such as Azerbaijan, Kazakhstan, Northern Iraq and Turkmenistan.

ENKA

Address: **Enka Pazarlama Ihracat Ithalat AŞ**
Istasyon Mah.
Araplar Cad. No 6
34940 Tuzla-Istanbul

Tel: +90 (0) 216 446 72 19
Website: www.enka.com.tr

Key Personnel: Ali Kara, General Manager.
Nadir Akgün, Construction Machinery Director.

History: Enka was originally established as a construction company in 1957 and Enka Pazarlama (Enka Marketing) is a trading company within the Enka Trade & Manufacturing Division, one of 42 companies in the US$5 billion Enka group, which belongs to the Tara and Gulcelik families. It began in 1981 as the importer for Hitachi hydraulic excavators and Kawasaki wheeled loaders. Today it is one of the longer-lived marketers of construction equipment, and has added a number of other franchises to its original products. It is also active in the field of fork lift trucks, mobile cranes and road construction equipment.

Turnover: €222 million in 2014.

Personnel: 270, including personnel involved with the sales and service of TCM fork lift trucks.

Franchises: Enka has been selling Hitachi crawler excavators since 1981. From 1990 to March 2004 it sold the Fiat-Hitachi models instead of the Hitachi types in the sizes from 12 to 45 tonnes, then the Fiat Kobelco range. After 1998 it sold Fiat-Hitachi wheeled loaders alongside the Japanese Kawasaki wheeled loaders which it had marketed in Turkey for over 10

years. It has since achieved notable success with the Hitachi product offering, particularly crawler excavators, which it began selling in 2004.

Table 127. Enka: Range of Franchises, 2015

Manufacturer	Machine Type
Atlas Copco	Compaction equipment, asphalt pavers, mobile crushers
Bell	Articulated dump trucks
Hitachi	Complete construction equipment range
Hitachi Sumitomo	Crawler cranes
Kawasaki	Wheeled loaders
Tadano, Tadano Faun	Mobile cranes
Other Products	
Claas	Agricultural tractors, harvesting machinery
Cometto	Trailers
FFB	Trailers
Iveco	Marine diesel engines
McCormick	Agricultural tractors
Schmitz	Truck trailers
SDMO	Generators
Tailift	Fork lift trucks
TCM	Fork lift trucks

Source: Company Information

During recent years Enka has added several new franchises to its already impressive portfolio. In 2006 it acquired the Bell articulated dump truck representation, although it has renounced the Terex Fuchs material handler franchise that it gained in 2007. The latest addition to the programme is the Atlas Copco compaction equipment and asphalt paver franchises which it took on in July 2011.

The commercial vehicle side of the company has grown swiftly, with trailers becoming a valuable product area. More recently the Schmitz trailer franchise has been supplemented by products from FFB and Cometto. The industrial side has been boosted with the securing of the account for the French generators SDMO.

Distribution and Service: The company moved its head office after the 2001 crisis, from the Enka office complex in European Istanbul to a service centre in Tuzla, on the motorway to Ankara, on the Asian side. In addition there are now five main regional branches in:

- Adana
- Ankara
- Diyarbakır
- Izmir
- Trabzon

There are also two depots in the Deşbaş and Meşbaş freezone areas.

More importantly for the existing customers, there are now 32 sub-dealers, as opposed to 12 in 1999. They are appointed to work on the existing machines, using genuine spare parts and having had full factory training. Enka employs around 150 technicians and engineers, including two engineers exclusively dedicated to the Kawasaki products; it has 31 mobile service vehicles. Enka is also contracted to undertake servicing work on behalf of Hitachi and Kawasaki in the CIS and some neighbouring countries.

Sales

Table 128. Enka: Sales of Construction Equipment by Type, 2014

Manufacturer	Product	Units
Atlas Copco	Asphalt Finishers	6
	Compaction equipment	65
Bell	Articulated dump trucks	2
Hitachi	Crawler excavators	493
	Wheeled excavators	30
	Wheeled loaders	32
Kawasaki	Wheeled loaders	158
Tadano	Mobile cranes	1
Total		**787**

Source: Off-Highway Research

In the past Enka achieved considerable success with its crawler excavators which are understandably the core of its sales effort. In 2006 and 2007 Hitachi was the undisputed market leader in the sector with a share of 20 per cent, although in common with other Japanese suppliers an unfavourable exchange rate against the Yen has eroded the product's price competitiveness during the three years to 2011. This resulted in a significant decline in sales until the situation began to improve again in 2013 and it reclaimed second place in the market.

The Kawasaki wheeled loaders continue to do well, particularly in the marble quarries where their comparatively simple design, but reliable and robust characteristics, are highly valued. In 2014 they were the fourth highest selling wheeled loader on the market behind Caterpillar, Volvo and Komatsu. Tadano rough terrain cranes look set to increase in importance for Enka as the Yen exchange rate improves.

HAMAMCIOĞLU

Address: **Hamamcioğlu Müesseseleri Ticaret T.AŞ**
Orhanli Mah. Irfan Cad. No: 19
34956 Orhanli-Tuzla-Istanbul

Tel: +90 (0) 216-394-3210
Website: www.hamamcioglu.com

Key Personnel: Nuri Hamamcioğlu, Managing Director.
Emre Öztürk, General Sales Manager, Construction and Mining Machinery.

History: This is one of the oldest companies in the industry, having represented Cummins Engines since the early 1960s. It has been linked with Ingersoll-Rand since 1967. The company was founded in 1880 and is wholly owned by the Hamamcioğlu family.

Turnover: Not available.

Personnel: 52.

Franchises

Table 129. Hamamcioğlu: Range of Franchises, 2015

Manufacturer	Machine Type
Bobcat	Skid-steer loaders, mini excavators, telehandlers
Doosan	Mobile compressors
Ingersoll-Rand	Stationary compressors
Navistar	Commercial vehicles
Tower Light	Lighting towers

Source: Company Information

The long held Cummins franchise was terminated in 2007 following the engine manufacturer's decision to establish its own subsidiary company in Turkey. The joint venture agreement signed at the end of 2007 with the Chinese manufacturer, Sany, has also since been dissolved.

The Bobcat business, on the other hand, is expanding and the company is market leader in the skid-steer loader sector and well set to take advantage of the expected upturn in the compact equipment sector.

Distribution and Service: The company's headquarters is based in Tuzla on the Asian shore of Istanbul. This has extensive workshops for the testing of engines, including dynamometers and fuel analysis laboratories. The company has four regional branches in:

- Adana
- Ankara
- Antalya
- Izmir

In addition there are more than 20 sub-dealers around the country that handle the Bobcat lines. For the Ingersoll-Rand industrial compressor business there are seven service dealers, some of whom are also Bobcat dealers.

Sales

Table 130. Hamamcioğlu: Sales of Construction Equipment by Type, 2014

	Units
Mini Excavators	23
Mobile Compressors	25
Skid-Steer Loaders	75
Telescopic Handlers	20
Total	**143**

Source: Off-Highway Research

The task of promoting skid-steer loaders as a machine remains a significant challenge, although the favourable long term forecast for the compact equipment sector should help bolster sales in the future. The company has made inroads into applications such as ship trimming, industry and construction in recent times, and since 2008 has sold several machines with wheel saw attachments for use in fibre optic cable trenching applications. Sales of skid-steer loaders in the last five years have risen significantly, albeit not to the same extent as larger machines, and Hamamcioğlu has reaped the dividends of an aggressive marketing campaign with an increase in its market share.

HASEL

Address: **Hasel Istif Makinalari Sanayi ve Tic. A.S.**
Orhanli Mescid Mahallesi
Demokrasi Cad. No 21/29
34290 Tuzla - Istanbul

Tel: +90 (0) 216 634 21 00
Website: www.hasel-terex.com
www.kobelco-turkiye.com

Key Personnel: Halit Soybelli, Chairman of the Board and majority shareholder.
Ender Akbaytogan, Managing Director.

History: Hasel Istif, part of the Hasel group of companies, is the parent company for two construction machinery importation businesses: Terex (excluding dump trucks) and, more recently, Kobelco. Initially known as TTM, the Terex dealership was established in 2012 in order to differentiate between this brands and Hasel's erstwhile primary business interest, which is the Linde forklift account and with which the company remains very successful. Hasel has been the exclusive importer of the German manufacturer's fork lift trucks since 1996.

Its first involvement in construction equipment was as the distributor for Atlas Weyhausen hydraulic excavators and material handling equipment. In March 2005 it acquired the New Holland construction equipment franchise for the whole of Turkey, although this was later transferred by the OEM to the Çukurova Ithalat company. Hasel was appointed as the official importer for Terex construction equipment in 2008.

In 2014, the company secured something of a coup by becoming exclusive importer and distributor for Kobelco excavators. This resulted in the establishment of another separate business division to manage this aspect of the company's machinery sales.

Hasel sold its Başak agricultural tractor manufacturing business to the Sanko organisation in May 2012.

Personnel: The Hasel organisation employs a total of 250 people.

Turnover: Not available.

Franchises

Table 131. Hasel: Range of Franchises, 2015

Manufacturer	Machine Type
Kobelco	Crawler and mini excavators
Linde	Forklift trucks
Terex	Construction equipment

Source: Company Information

Distribution and Service: The company relocated its head office and parts store from Ümraniye to new premises in Kartal, Istanbul in October 2012. There are five branches, which serve as bases for a customer service network for the whole country:

- Adana
- Ankara
- Bursa
- Izmir
- Trakya

Sales

Table 132. Hasel: Sales of Construction Equipment by Type, 2014

	Units
Backhoe Loaders	8
Crawler Excavators	24

Source: Off-Highway Research

The main focus of interest for construction equipment has moved from the rather disappointing performance of the Terex backhoe loader product line to Kobelco crawler and mini excavators. The company's sales of Kobelco machines only started in July 2014, with a limited number of models available (20 tonnes, 26 tonnes and 35 tonnes). In this context, the early level of product acceptance has been more than pleasing, and the product line is anticipated to expand at both ends of the spectrum throughout 2015. The company also imports the Terex compact equipment line, and increasing interest in this sector should enable the company to promote the mini and midi excavators more aggressively in the future. Compact tracked loaders and Terex skid-steer loaders are already available.

HCS

Address: **HCS Makina Mümessillik ve Tiçaret AŞ**
Susuzbağ Sokak 15/1
Paşalimani
34674 Istanbul

Tel: +90 (0) 216-492-5751
Website: www.hcs-liebherr.com.tr

Key Personnel: Rafet Azak, Partner.

History: HCS has been the importer of Liebherr telescopic and crawler cranes since 1989. Following the establishment of Liebherr's own subsidiary company in Turkey in 2009, HCS is now responsible for sales of cranes above 300 tonnes only. The company is a partnership between Mr Azak and Mr and Miss Okan.

Personnel: 11.

Franchises

Table 133. HCS: Range of Franchises, 2015

Manufacturer	Machine Type
Liebherr	Mobile cranes over 300 tonnes

Source: Company Information

Distribution and Service: The company has an office in Üsküdar, on the Asian shore of the Bosphorus in Istanbul and its technicians are spread all over Turkey to offer customer support.

Sales: Sales of new cranes are inevitably limited in what is essentially a rough terrain crane market. In 2012 the company sold only one crawler crane, but in the boom year of 2013 this rose to 8 units. Last year, however, no sales were recorded as Japanese suppliers (and, to a lesser extent, Chinese suppliers) benefitted from favourable exchange rates. HCS is also part of the world-wide network for used cranes from Liebherr Ehingen, Germany. They are, however, expensive to buy, as they are usually in top quality condition and reconditioned by Liebherr itself. Most buyers wanting used Liebherr cranes will tend to look for something older and cheaper from the brokers in Turkey or in the Netherlands.

HMF

Address: **HMF Makina ve Servis San. Ve Tic. AŞ**
Esentepe Mah.
Cevizli D-100 Güney Yanyol, No 15/2
34870 Kartal-Istanbul

Tel: +90 (0) 216-488-8000
Website: www.hmf.com.tr

Key Personnel: Tamer Öztoygar, President.
Reyhan Uğurlu Yücel, Vice-President Marketing, Business Development and Industrial Sales.

History: In 2003 the owners of SIF Otomotiv, the previous incumbents of the Hyundai franchise, decided to restructure the company, putting the Hyundai franchises into a separate enterprise with a new ownership structure, in order to promote the brand more effectively. SIF's share of this new business was subsequently sold and the HMF company (standing for Hyundai Machines and Forklifts) is now owned by a group of five shareholders. HMF has been in business since January 2004 and, in 2006, moved to new, purpose-built premises of 8,500 m^2 in Kartal which houses parts, sales and service functions with a covered area of more than 4,000 m^2. It has also recently opened 5,000 m^2 facility on the European side of Istanbul.

Turnover: Not available.

Personnel: Around 140, of whom approximately 100 work in the construction equipment and forklift divisions. The remainder work in the Hyundai elevator division.

Franchises

Table 134. HMF: Range of Franchises, 2015

Manufacturer	Machine Type
Airo	Aerial work platforms
Atlet	Warehouse trucks
D&A	Hydraulic hammers
Hyundai	Construction equipment, forklift trucks, escalators
Montovanibenne	Demolition attachments
Wanco	Lighting towers

Source: Company Information

Prior to the last report the company added D&A, a Korean hydraulic breaker, to its list of franchises in order to aid the sales of hydraulic excavators. This desire to increase the attractiveness of the company's main product has also resulted in it signing an OEM agreement with Atlas in Germany for the supply of Hyundai-branded compaction equipment to allow it to better target customers seeking machinery package deals. It has also recently added the Airo aerial work platforms and Wanco lighting tower franchises, while to the industrial fork lift trucks it has added Swedish Atlet warehouse trucks.

Distribution and Service: The company has its head office in Kartal, Istanbul with an additional four district offices in Ankara, Izmir, Trabzon and Antalya. There are four independent sub-dealers located in:

- Adana
- Ankara
- Diyarbakır
- Izmir

The company has developed a full national coverage for service by appointing 43 official service dealers spread all over Turkey, up from 28 at the time of the last report. The spare parts stock is held at the new headquarters in Kartal, on the Asian shore of the Istanbul region.

Sales

Table 135. HMF: Sales of Construction Equipment by Type, 2014

	Units
Compaction Equipment	9
Crawler Excavators	343
Mini Excavators	35
Skid-Steer Loaders	15
Wheeled Excavators	56
Wheeled Loaders	39
Total	**497**

Source: Off-Highway Research

The Hyundai crawler excavators regularly achieved second position in the market until as recently as 2012. However, since then their market share has declined somewhat, in spite of still high volumes, partly due to the increased cost associated with having to buy machines in US dollars. Until this rise, the product has been competitively priced, a distinct advantage in this market, and continues to be competently supported by the dealer. HMF has been one of the

leading three Hyundai dealers in the world for many years, an impressive achievement in a relatively small market like Turkey.

INAN MAKINA

Address: **Inan Makina Sanayi ve Ticaret AŞ.**
Ikitelli OSB. Eski Turgut Özal Cd. No 24
34490 Başakşehir
Istanbul

Tel: +90 (0) 212 549 25 00
Website: www.inanmakina.com

Key Personnel: Adnan Edizcan, Business Development Manager.
Erdinç Hamamci, Sales Co-ordinator, Construction Machinery Division.

History: Inan Makina was founded in 1972 by Mr. Mehmet Tuscuoğlu as a service and repair provider and manufacturer of spare parts for hydraulic machines and their attachments. In 2002 it branched out into the manufacturer of hydraulic attachments for standard size and mini excavators. In addition to spare parts, it now produces a variety of products, including breakers, augers, compactors, grapples and pulverisers which it sells around the world. To complement the domestic sales of its own attachments, in 2013 the company decided to take on the IHIMER mini excavator and skid-steer loader franchise.

Personnel: There are around 360 employees in the company as a whole, with 280 based at the headquarters and manufacturing plant in Istanbul.

Franchises

Table 136. Inan Makina: Range of Franchises, 2015

Manufacturer	Machine Types
IHIMER	Mini excavators, skid-steer loaders
Iteco	Access platforms

Source: Company Information

In addition to its own attachments and parts, and the compact earthmoving machinery of IHIMER, Inan Makina also imports and distributes access platforms from its sister company Iteco.

Distribution and Service: The company is based at its manufacturing facility close to Ataturk airport on the European side of Istanbul. The site includes a 10,000 metres production facility and 8,000 metres of office and warehouse space. Inan Makina also has a 6,000 metres site in Ankara. In addition, it has four branches and 15 dealers for its range of attachment, although sales of mini excavators are focussed on the major cities of Istanbul, Ankara, Antalya and Izmir.

Sales

Table 137. Inan Makina: Sales of Construction Equipment by Type, 2014

	Units
Mini Excavators	45
Skid-Steer Loaders	7
Total	**52**

Source: Off-Highway Research

Future Developments: The company intends to continue to focus on compact machinery, particularly mini excavators, to complement its own attachment range; it assesses that more than one in two sales of mini excavators are purchased in conjunction with a hydraulic hammer. To this end it is hopeful the expansion of the compact machinery market will lead to improved profitability in this fiercely competitive sector. If so, it foresees a bright future for those companies who can establish a sufficient population of machines and brand recognition to become a major player.

KALE

Address: **Kale Makina Pazarlama A.S.**
Istanbul Anadolu Yakasi Organize
Sanayi Bölgesi 3 Sokak No. 11
34953 Tuzla - Istanbul

Tel: +90 (0) 216 593 93 00
Website: www.kalemakina.com.tr

Key Personnel: Özhan Keskin, General Manager.
Özbilen Keskin, Marketing Manager.

History: Kale is a family owned company originally established in 1978 by Ismail Keskin. Following the death of Mr Keskin in 2003 ownership passed to his five sons, three of whom run

the construction equipment division, Kale Makina, while the other two run the hose clamp manufacturing business, Kale Clamp, which was started in 1990.

The company began as a dealer for workshop tools, but entered the construction equipment sector in 2000 when it took on the Dynapac light compaction equipment franchise. The decision was taken to specialise in compact earthmoving machinery and in 2006 Kale was awarded the Gehl skid-steer loader franchise, followed in 2008 by that of Kubota mini excavators and Ausa, then Thwaites site dumpers.

Turnover: Not available.

Personnel: 35 people work in the construction equipment division. 100 people are employed in the hose clamp factory situated on the same site.

Franchises

Table 138. Kale: Range of Franchises, 2015

Manufacturer	Machine Types
Atlas Copco	Concrete equipment, light compaction equipment
Gehl	Skid-steer loaders, articulated wheeled loaders
Kubota	Mini excavators, articulated wheeled loaders
Thwaites	Site dumpers

Source: Company Information

The Kubota mini excavator and Gehl skid-steer loader franchises constitute the main focus for Kale, although both manufacturers' articulated wheeled loader ranges are also offered in the programme.

Distribution and Service: The construction equipment division's headquarters is situated on the same site in Tuzla, Istanbul as the hose clamp manufacturing plant. The total site area encompasses 2,000 m^2, 800 m^2 of which is covered. Sales managers working from 'home offices' operate out of Istanbul, and nine other locations (up from a total of four at the time of the last report), in addition to which there is a network of 28 authorised service workshops throughout the country.

Sales

Table 139. Kale: Sales of Construction Equipment by Type, 2014

	Units
Crawler Excavators	20
Mini Excavators	191
Skid-Steer Loaders	41
Total	**242**

Source: Off-Highway Research

Kale has devoted considerable resources to expanding the compact equipment market in Turkey and has quickly established a solid reputation for high quality after-sales service. It is market leader with the Kubota mini excavators and is the main challenger to Bobcat in the skid-steer loader sector. The company also actively exports 50-60 units of both mini excavators and skid-steer loaders to Turkish contractors working in Russia, Iraq and former CIS countries.

Future Developments: The company is confident about the future prospects for compact equipment, and its medium term strategy will concentrate on expanding the market for these products in Turkey. It is also keen to take on a telescopic handler franchise in order to develop what it sees as being good potential in the agricultural sector.

KARUN

Address: **Karun Makina AŞ**
Karun Plaza
Ivedik O.S.B., 24 Cad., No:191
Ostim
06370 Ankara

Tel: +90 (0) 312-394-4300
Website: www.karun.com.tr

Key Personnel: Ersan Öztuna, Sales Director and Partner.
Murat Molva, Partner.

History: Karun was established in 1989 as an engineering and consultancy company based in Ankara. In the 1990s it acquired a number of dealerships including becoming the dealer for Manitowoc cranes in 1995 and the combined Manitowoc-Grove franchises in 1996, one of the partners having worked during the 1980s for Liebherr Export and being well experienced in the

marketing of cranes in Turkey. The company is now the exclusive distributor for Manitowoc and Grove cranes, and other lifting-related suppliers such as Wylie and Goldhofer. Karun's other speciality is foundation work, where it is both a supplier of machinery, most notably Bauer and Klemm, and a consultant.

The Karun Group consists of three companies:

- Karun Servis A.S. is a service company and runs the foreign business. In 2003 it opened an office in Kazakhstan and one in Azerbaijan. It also undertakes servicing of Grove cranes and Bauer machines in places as far away as the Sakhalin Island in Siberia and as near to hand as Iraq.
- KA Makina Ltd. is the construction equipment sales company.
- Karun Makina Ltd. is a Free Zone Company based in Izmir.

In 2006 Karun opened a new headquarters in Ivedik, Ankara. The premises consist of 7,600 m^2, of which 1,400 m^2 is covered, and contains a workshop where up to four 300 tonne cranes can be refurbished at one time. The company invested €2 million in the construction of an additional workshop in 2009.

Turnover: Not available.

Personnel: 18, of whom a high proportion are qualified graduate engineers. The operation in Almaty, Kazakhstan employs four and a similar unit in Baku, Azerbaijan, has three staff. The company has also opened an office in Atyrau, on the North Caspian Sea coast of Kazakhstan. Karun also hires in sub-contractors on a temporary basis for crane refurbishment work.

Franchises: In the crane sector Karun has primarily focused on the Grove rough terrain products, with which it has achieved notable success in recent years. More recently, it has targeted the growing all terrain crane sector, where it believes it can apply the same philosophy as in the foundation sector (see below. It also sells a small number of Manitowoc crawler cranes to Turkish contractors working in Central Asian countries.

The number of products associated with foundation work has increased. This is a deliberate strategy, as Karun wants to be a small company that uses highly skilled staff. It does not offer the same kind of service as, say, the major hydraulic excavator suppliers, who back up their products with dozens of servicemen spread around Turkey. It sells products where the user

cannot employ them unless the supplier is highly skilled and so the buyer is purchasing man hours as well as machines.

Table 140. Karun: Range of Franchises, 2015

Manufacturer	Machine Type
Grove	Mobile cranes
Manitowoc	Crawler cranes
Raycowylie	Load monitoring systems
Other Products	
Bauer	Foundation equipment
Fambo	Hydraulic hammers
Goldhofer	Trailers
Klemm	Foundation equipment
Prakla	Drilling equipment
RTG	Diesel hammers

Source: Company Information

Distribution and Service: The company had its head office in the industrial zone of Ivedik, Ankara, with two service centres in the same city. Karun now has 12 official sub-dealers and is willing to sell via brokers and pay commissions, where justified, to sales people of any branch who bring in business. Crane refurbishment, servicing and spare parts sales are an important part of the business and the company also specialises in the sale of fully renovated cranes which it offers with a six month warranty.

Sales

Table 141. Karun: Sales of Mobile Cranes, 2014

	Units
Mobile Cranes:	
– All Terrain Cranes	5
– Rough Terrain Cranes	10
Total	**15**

Source: Off-Highway Research

The company did well last year in a falling market with its rough terrain models, but this masks a longer term trend towards success in the all-terrain market.

The company also markets used cranes in Turkey and all the Turkish speaking republics north and east of it, although 80 per cent of new crane business is to Turkish contractors working abroad.

KARYER

Address: **Karyer Ticaret Ltd Şti**
Çubuklu Mah. Boğaziçi Cad No: 9
34805 Beykoz/Istanbul

Tel: +90 (0) 216-383-6060
Website: www.karyer-tatmak.com

Key Personnel: Merve Yerdelen, Partner.
Hasan Elliatioğlu, General Manager.

History: Karyer is a family company founded in Ankara in 1953 by Zeki Yerdelen. It began originally as a contracting firm, but subsequently became involved in selling construction equipment and is currently one of the oldest established machinery dealers in Turkey.

Up until the end of 2007 Karyer was part owned by the Turkish holding company, Tatmak. Tatmak was 50 per cent owned by Putzmeister of Germany, the manufacturer of concrete pumps, and 50 per cent by Turkish interests. Tatmak was acquired by Putzmeister at the end of 2007, following the German organisation's establishment of its own subsidiary company in Turkey, and ownership of Karyer returned to Mr. Yerdelen and his daughters who now control 100 per cent of the company.

Karyer's core business is the Bomag compaction equipment franchise which it has held for 37 years, and now also includes the former Marini asphalt finisher and planer product lines. The company also has the distinction of being the largest independent Bomag dealer in the world. More recently the company returned to the concrete sector with the acquisition of the CIFA concrete equipment franchise in 2011. In 2015 it has also added to its offering of road construction machines by taking on distribution of German-manufactured graders from HBM Nobas.

Turnover: Not available.

Personnel: There are 98 employees in Karyer.

Franchises

Table 142. Karyer: Range of Franchises, 2015

Manufacturer	Machine Types
Bomag	Compaction equipment, asphalt finishers
Casagrande	Drilling rigs
CIFA	Concrete equipment
HBM Nobas	Motor graders
Heli	Forklift trucks
JLG	Telescopic handlers, access platforms
Lintec	Asphalt plants

Source: Company Information

The Bomag franchise assumed greater importance following the sale of Tatmak, more than half the business, but this has been reduced again after the return to the concrete sector through representation of CIFA and also after the decision to take on the Casagrande drilling and foundation machinery franchise. Karyer is market leader in the compaction equipment sector with an overall share of around 40 per cent. The CIFA, Casagrande and JLG franchises now account for around 40 per cent of turnover.

Distribution and Service: Karyer has recently moved to a new headquarters in Kavaçik in the Asian part of Istanbul. It also has a sales and service branch in Ankara, and a service depot and free trade zone in Gebze where it holds a large stock of Bomag rollers. The service personnel are widely distributed all over the country, and there are also 20 independent service stations located nationwide. Like many competitors the company has ceased supporting a branch network and mostly does direct sales. The two exceptions are a contact office in Adana and a sub-dealer in south-east Turkey.

Sales

Table 143. Karyer: Sales of Construction Equipment by Type, 2014

	Units
Asphalt Finishers	3
Compaction Equipment	225
Total	**228**

Source: Off-Highway Research

Karyer concentrates on the heavier types of compaction equipment. Accordingly, it has a higher share in the market for self-propelled machines for earth compaction than it does for tandem asphalt machines. In 2014 it also sold three Bomag asphalt finishers.

LIEBHERR TURKEY

Address: **Liebherr Makine Ticaret Servis Ltd. Sti.**
Yakacik Cumhuriyet Mah. E-5
Yanyol No: 39
Kartal
Istanbul

Tel: +90 (0) 216 453 1000
Website: www.liebherr.com

Key Personnel: Oytun Uluhan, Managing Director.

History: Liebherr Turkey was established in 2008 following the parent company's decision to intensify its direct sales activities and expand its after-sales service in this increasingly important market. The new company is a subsidiary of Liebherr-MCCtec GmbH of Nenzing, Austria, which is responsible for the Group's maritime cranes division.

The headquarters is located in Istanbul and is responsible for four Liebherr product divisions: earthmoving equipment, crawler cranes, mobile harbour cranes and concrete and mixing technologies. In August 2012 the company opened a second branch in Ankara.

Personnel: There are around 50 employees in Liebherr Turkey.

Franchises

Table 144. Liebherr Turkey: Range of Franchises, 2015

Manufacturer	Machine Types
Liebherr	Complete earthmoving equipment range Concrete technology Maritime cranes Mobile cranes below 300 tonnes

Source: Company Information

The new company is currently responsible for a fleet of more than 1,500 earthmoving machines, around 30 hydraulic rope excavators and crawler cranes and nearly 40 large dockside cargo handling installations.

Distribution and Service: In addition to the company-owned branches in Istanbul and Ankara, there are four independent dealers in five different regions of Turkey responsible for sales and after sales service.

Sales

Table 145. Liebherr Turkey: Sales of Construction Equipment by Type, 2014

	Units
Crawler Dozers	2
Crawler Excavators	50
Crawler Loaders	1
Mobile Cranes	10
Wheeled Excavators	10
Wheeled Loaders	25
Total	**98**

Source: Off-Highway Research

Liebherr Turkey has made significant progress since its formation in 2008. It sold a total of 37 machines in 2009, its first full year of trading, 107 units in 2011 and 2012 a total of 175 machines. More recently, progress has slowed, partly as a result of overall market contraction.

Future Developments: Liebherr has recently purchased a large property in an industrial zone of Istanbul in anticipation of the planned expansion of its activities in Turkey, and is a sign of the company's commitment to what it sees as an increasingly important market for its products.

ÖZMAK

Address: **Özmak Makina Ith.Ihr.Paz. A.S.**
Sepetlipinar Mah. 107, Cad. 17
Island Parcel 6
Izmit/Kocaeli

Tel: +90 (0) 216 444 80 34
Website: www.ozmakmakina.com.tr

Key Personnel: Cemal Turan Ozcelik, Managing Director.

History: Özmak is a family owned company founded in 1975 by Servat Ozcelik as a roadbuilding contractor. In 1987 it started a supplementary business importing second-hand JCB backhoe loaders from the UK and in 1991 became a sub-dealer for the Çukurova Group selling Sumitomo crawler excavators. In 1996 it became a sub-dealer for SIF selling JCB and Hyundai machines in the Marmara region.

In 1999 Özmak took on the franchises for Belle concrete equipment and skid-steer loaders and Venieri backhoe loaders. In 2000 it acquired the XCMG franchise, since when the company has become the Chinese manufacturer's largest dealer in Europe. Özmak has been run by the third generation of the Ozcelik family since 2010 when Cemal Ozcelik took over as managing director.

Personnel: More than 20 employees.

Franchises

Table 146. Özmak: Range of Franchises, 2015

Manufacturer	Machine Types
XCMG	Mobile cranes, wheeled loaders, hydraulic excavators, motor graders, soil compactors, piling equipment

Source: Company Information

The XCMG franchise is the main focus for the company, and Özmak has sold nearly 700 machines in Turkey since acquiring the franchise in 2000. The company has ceased representing Belle and Venieri.

Distribution and Service: The company has relocated from its previous current headquarters in the Kadiköy district of Istanbul to new premises in Izmit at the far eastern edge of the sea of Marmara. In addition, there is a network of 25 authorised service workshops throughout the country and three sub-dealers in Antalya, Diyarbakir and Samsun.

Sales: XCMG wheeled loaders, specifically the bestselling ZL50G model, have become increasingly accepted in Turkey and represent the biggest volume products for the company. Özmak targets primarily private customers to whom price plays a more important role, and does not get involved in government tender business. It has also managed to establish a foothold in the competitive crawler excavator market.

Table 147. Özmak: Sales of Construction Equipment by Type, 2014

	Units
Compaction Equipment	2
Crawler Excavators	34
Mini Excavators	12
Mobile Cranes	3
Motor Graders	15
Wheeled Loaders	88
Total	154

Source: Off-Highway Research

Graders have proved to be an important supplementary product, although only a small number of soil compactors have been sold thus far. Özmak began selling XCMG crawler cranes in May 2012, and has since sold 8 units.

Future Developments: In 2013 Özmak began the SKD assembly of XCMG ZL50G wheeled loaders at a purpose-built facility in Izmit. The machines are shipped from China in kit form and fully built up in Turkey. Particular emphasis has been placed on ensuring high quality paintwork and more reliable electrics. The machines have been sold in the domestic market and also exported to North Africa, Central Asia and Georgia.

SANKO MAKINA

Address: **SANKO Makina Pazarlama ve Tic. A.Ş.**
Yakacık
Hürriyet Mah.
E-5 Yan Yol Üzeri No 57
34876 Kartal-Istanbul

Tel: +90 (0) 216-453-0400
Website: www.sankomakina.com.tr

Key Personnel: Rizanur Meral, Chairman.
Orhan Aydoğan, General Manager.

History: The Doosan construction equipment franchise has been held by a subsidiary of the SANKO Group since July 1999. SANKO is a typical Turkish family holding company, with a turnover of $2.5 billion and 14,000 employees, involved in cotton spinning, textiles, packaging, energy, construction, cement production, beverages, health, marketing and education. The subsidiary company responsible for the sales and marketing of construction equipment is

SANKO Makina Pazarlama (Sanko Construction Machinery Trade Co.), based in Kartal on the Asian side of Istanbul.

Turnover: In 2014 the turnover of SANKO Makina Pazarlama, including income from fork lift trucks, was approximately $150 million.

Personnel: 125.

Franchises

Table 148. SANKO Makina: Range of Franchises, 2015

Manufacturer	Machine Types
Doosan	Construction equipment and fork lift trucks
Soosan	Hydraulic hammers and drills

Source: Company Information

The Doosan franchise is the main account, especially since the decision taken in 2012 to separate sales of MST-branded backhoe loaders and telehandlers, whose production company is also a part of the SANKO group. Dieci telehandlers and Atlas Weyhausen wheeled loaders and compaction equipment have recently been dropped from the portfolio.

Manufacturing Facilities: When SANKO bought Mastaş (the original name of the current MST brand) it was using a plant in Ödemis, 100 kilometres east of Izmir. In 2005 the company built a new plant in Gaziantep, on a site of 40,000 m^2, to produce MST backhoe loaders and telescopic handlers. There is a full profile of the production company, **Sanko is ve Tarim Makinalari Sanayi ve Ticaret**, in the Manufacturer Profiles section of the report; this includes distribution arrangements (through Sanko Construction and Agricultural Machinery Co.) for MST products.

Distribution and Service: The company has its head office in Istanbul, on the Asian side and seven branches in:

- Adana
- Ankara
- Antalya
- Bursa
- Gaziantep
- Izmir
- Kayseri

The sales and service network consists of two main service and spare parts facilities and 63 authorised service dealers. The facility in Istanbul has 9,000 m^2 of covered space on a 1.5 hectare site, while that in Gaziantep has 8,200 m^2 of covered space on a 1.4 hectare site.

Sales

Table 149. SANKO Makina: Sales of Construction Equipment by Type, 2014

	Units
Crawler Excavators	161
Mini Excavators	8
Wheeled Excavators	27
Wheeled Loaders	41
Total	**237**

Source: Off-Highway Research

The company's main areas of focus are the Doosan crawler excavators, with which it achieved a market share of five per cent in 2014. With smaller volumes it also achieved a market share of 12 per cent for wheeled excavators, and four per cent for wheeled loaders.

Future Developments: SANKO's future development is to some extent dependent on Doosan's marketing strategy. The traditional focus has been crawler excavators but SANKO is also keen to develop the wheeled loader business and compact equipment. The company has also stated its intention to take advantage of the expanding mining and quarrying equipment market with the emphasis on mobile crushers, demand for which is developing rapidly in Turkey and which are produced by the MST arm of the business both for domestic sales under the Mastaş brand and for exports via a range of OEM agreements with other brands.

SIF JCB

Address: **SIF Iş Makinalari Pazarlama Ltd.**
Fatih Mahalessi Katip Çelebi Cad. No 49/1
34956 Orhanli Tuzla-Istanbul

Tel: +90 (0) 216 352 00 00
Website: www.sif.com.tr

Key Personnel: Cüneyt Divriş, Managing Director.
Cihan Ünlü, Business Unit Director, Construction Equipment.

History: The company was founded in 1956 by Mr Sezai Turkes and Mr Feyzi Akkaya. They also formed the well-known large building contractor, STFA, and that company now owns half of SIF JCB. The rest is held by the holding company Işiklar, a family enterprise. The company has represented JCB since 1974 and the ties are very close.

Turnover: Not available.

Personnel: Over 100, all working on JCB business. The rapid increase in JCB activity has allowed the company to expand its workforce and to create the type of full service organisation that they wanted.

Franchises

Table 150. SIF JCB: Range of Franchises, 2015

Manufacturer	Machine Type
JCB	All construction equipment
Powerscreen	Crushers and screens
Rubblemaster	Mobile crushers

Source: Company Information

The company is entirely devoted to the marketing of JCB products. The one exception has been the Rubblemaster mobile crusher franchise, which SIF took on in 2007 to take advantage of the expanding business in the quarrying sector.

Distribution and Service: The company moved its head office to a brand new centre in Maltepe, on the Asian shore of Istanbul in October 2004. Less than 10 years later it has moved again, this time to the developing commercial hub of Orhanli, on the eastern fringes of Istanbul, beyond the Sabiha Gocen airport.

The company has eight other sales offices in:

- Adana
- Ankara
- Antalya
- Bursa
- Diyarbakır
- Istanbul
- Izmir
- Trabzon

There are 34 sub-dealers for service.

Sales

Table 151. SIF JCB: Sales of Construction Equipment by Type, 2014

	Units
Backhoe Loaders	1,003
Compaction Equipment	23
Crawler Excavators	71
Mini Excavators	13
Skid-Steer Loaders	36
Telescopic Handlers	150
Wheeled Excavators	22
Wheeled Loaders	18
Total	**1,336**

Source: Off-Highway Research

JCB ceded its traditional first place in the backhoe loader market to Hidromek in 2011, although SIF JCB still made around 80 per cent of its sales for JCB in this product. Crawler excavators and wheeled loaders are less competitive and typically win just two to three per cent of the market, although significant advances have been made with telescopic handlers, which in 2014 won a market share of nearly 30 per cent.

In order to apply increased focus on the potential market in agriculture for products such as mini excavators, skid-steer loaders and telescopic handlers, the company has recently created a dedicated agricultural business unit which now operates independently from the construction equipment division.

TEMSA İŞ MAKİNALARI

Address: **Temsa İş Makinaları İmalat Pazarlama ve Satış A.Ş.**
Kisikli Cad.
Şehit Teğmen
Ismail Moray Sok. No2/1
34662 Altunizade-Istanbul

Tel: +90 (0) 216-544-5200
Website: www.temsa.com.tr

Key Personnel: Cevdet Alemdar, General Manager.

History: Temsa İş Makinalari has acted as the distributor for Komatsu construction machinery in Turkey since 1983. Since then it has expanded into neighbouring markets including

Azerbaijan and Georgia, as well as into complementary products from other suppliers: Terex Finlay, Dieci and OMG. Most recently, it entered into a distribution agreement with Komatsu Mining Group in 2014.

Temsa İş Makinaları was originally part of Temsa Global, from which it separated on the 29th March 2013 in accordance with the growth strategy of parent company the Sabancı Group, one of the two largest industrial and financial conglomerates in Turkey. Established in 1967, Sabancı Holding controls a diversified portfolio of nearly 70 companies. Its trade mark, the letters SA in white on a blue circle, put at the end of the company name, can be seen throughout Turkey.

Following this split, in May 2014, the Sabancı and Marubeni Groups established Temsa İş Makinaları as a partnership with a respective ownership ratio of 51:49.

Personnel: Around 150 employees

Franchises

Table 152. Temsa: Range of Franchises, 2015

Manufacturer	Machine Type
Dieci	Telescopic handlers
Komatsu	All construction equipment and fork lift trucks
OMG	Electric power
Terex FINLAY	Crushers

Source: Company Information

Distribution and Service: Temsa has its head offices in Istanbul, as well as sales teams based in 13 cities throughout the country. It also runs technical Centres in Istanbul and Ankara, as well 41 authorised service centres. Moreover, the company runs successful and expanding rental and second hand sales services.

Sales

Table 153. Temsa: Sales of Construction Equipment by Type, 2014

	Units
Backhoe Loaders	18
Crawler Dozers	40
Crawler Excavators	233
Mini Excavators	8
Motor Graders	56
Rigid Dump Trucks	3
Skid-Steer Loaders	3
Telehandlers	13
Wheeled Excavators	4
Wheeled Loaders	179
Total	**557**

Source: Off-Highway Research

Future Developments: Temsa İş Makinaları entered the rental sector in 2010 and currently operates a fleet of around 130 machines covering the complete Komatsu product range. It has identified rental as a growing trend in the domestic market and hopes to capitalise on developments within the sector.

Temsa İş Makinaları also intends to leverage its existing business by exploiting the market for complementary brands for spare parts and maintenance products such as from Donaldson and SKF.

TSM GLOBAL

Address: **Turkey Makina Sanayi ve Ticaret Ltd. Şti.**
Cumhuriyet Mah. Yakacik D100
Kuzey Yanyol Cad. 21
34876 Kartal - Istanbul

Tel: +90 (0) 216-560-2020
Website: www.tsmglobal.com.tr

Key Personnel: Taner Sönmezer, Chief Executive Officer

History: TSM Global is a recently established company, founded only in 2013, though the pedigree of its current management goes back a lot further. The company grew out of the re-arrangements in the distribution networks of the CNH global brands (specifically, the decision

to award dealership form both Case- and New Holland-badged products to Turktractor) and also in the partnership between Çukurova Ziraat and Sumitomo. As a result of these changes, current CEO Taner Sönmezer founded TSM two years ago to act as distributor for Sumitomo, Ammann and Hyster forklift trucks.

Personnel: Around 50.

Franchises

Table 154. TSM Global: Range of Franchises, 2015

Manufacturer	Machine Types
Ammann	Compaction equipment and asphalt finishers
Hyster	Forklift trucks
Sumitomo	Crawler excavators

Source: Company Information

Distribution and Service: Sales administration and servicing are based at the Istanbul headquarters, and there is an established service network throughout Turkey. This includes offices in:

- Adana
- Ankara
- Bursa
- Diyarbakir
- Izmir
- Trabzon

There are also 15 other sales and service outlets throughout the country.

Sales

Table 155. TSM Global: Sales of Construction Equipment by Type, 2014

Manufacturer	Product	Units
Ammann	Compaction equipment	41
Sumitomo	Crawler excavators	158
Total		**199**

Source: Off-Highway Research

The market share of Sumitomo has halved in the last three years, from nearly 11 per cent in 2012 to just five and a half per cent in 2014. Nevertheless, some disruption is to be expected in the changes to distribution described above, and Sumitomo remains a well-established brand in the country. Sales of Ammann products have also been hit, though, again, the brand is well respected, at least in the compaction equipment sector. Sales of asphalt finishers have yet to be significant.

Future Developments: The company intends to pursue the completion of its sales and service network and also to build a reputation to match that of the brands it represents.

TÜRKTRAKTÖR

Address: **TürkTraktör**
Güvercin Yolu No: 111-112 Gazi
06560 Ankara, Turkey

Tel: +90 (0) 312 233 33 33
Website: www.turktraktor.com.tr

Key Personnel: Marco Votta, General Manager.

History: TürkTraktör is one of Turkey's longest-established industrial companies, having been founded as a manufacturer of agricultural tractors as long ago as 1954. It is now a joint venture between CNHi & Koç Holding, producing tractors for three of CNHi's brands – Case IH, New Holland and Steyr – that are sold in Turkey as well as exported to more than 130 other countries around the world.

The headquarters of the company is in Ankara, where it has its original factory which has a total area of 257,325 m^2. In 2014, it opened a new factory in Erenler, adding a further 402,162 m^2 of production space.

In 2013, the company undertook to become distributors in Turkey not just for agricultural equipment but also for both construction equipment brands of joint-venture partner CNHi – Case and New Holland.

Franchises

Table 156. TürkTraktör: Range of Franchises, 2015

Manufacturer	Machine Type
Case	Construction equipment
New Holland	Construction equipment

Source: Company Information

Distribution and Service: As a well-established company, TürkTraktör already has an extensive sales and service network in the agricultural business. The New Holland Construction brand is now mainly sold throughout this agriculture network, exploiting a widespread operation throughout Turkey. The Case brand will reach customers mainly directly from TürkTraktör's own premises and offices that are also located throughout the country. Both brands have a service and spare parts network spread across the nation.

Sales

Table 157. TürkTraktör: Sales of Construction Equipment by Type, 2014

Manufacturer	Product	Units
Case	Backhoe Loaders	19
	Crawler excavators	14
	Skid-steer Loaders	8
	Telehandlers	1
	Wheeled Loaders	8
New Holland	Backhoe Loaders	34
	Crawler Excavators	14
	Mini Excavators	1
	Skid-steer Loaders	14
	Telehandlers	3
	Wheeled Loaders	4
Total		**120**

Source: Off-Highway Research

TürkTraktör's product range of Case and New Holland machines includes:

- Backhoe Loaders
- Hydraulic Excavators
- Mini Excavators
- Skid-Steer Loaders
- Telehandlers
- Wheeled Loaders

UYGUNLAR

Address: **Uygunlar Diş Ticaret**
Boğaziçi Cad.No: 11 Kavacik
34810 Istanbul

Tel: +90 (0) 216-425 88 68
Website: www.uygunlar.com

Key Personnel: Sayhan Uyar, Chairman of the Board.

History: The company was established in 1989 and until 1997 was involved purely in spare parts business. In 1997 it began selling Kato crawler excavators in Turkey and in 2006 acquired the LiuGong construction equipment franchise for Azerbaijan where it sells 100-150 units per year. It was awarded the LiuGong franchise for Turkey in 2009.

Uygunlar is heavily involved in the Azerbaijan market and holds official representation for the following manufacturers: LiuGong, Bomag, Komatsu, Casagrande, Ford Trucks, Cummins and ZF. It is also the official LiuGong dealer for Iraq and Georgia.

The company is privately owned by two main shareholders and a small number of minor shareholders.

Turnover: Not revealed. 60 per cent of turnover is derived from business activities in Azerbaijan.

Personnel: 150. The company employs 63 people in Turkey and 78 in Azerbaijan. The remainder work in spare parts business offices in Georgia, Kazakhstan and Russia.

Franchises

Table 158. Uygunlar: Range of Franchises, 2015

Manufacturer	Machine Types
Dressta	Crawler dozers
Ford	Off-highway trucks
Kato	Crawler excavators
LiuGong	Complete construction equipment range

Source: Company Information

Distribution and Service: The company's headquarters is located in Kavaçik, on the Asian side of Istanbul. It has three branch offices in Adana, Ankara and Izmir, and a further 25 service stations throughout the country.

Sales

Table 159. Uygunlar: Sales of Construction Equipment by Type, 2014

	Units
Backhoe Loaders	2
Compaction Equipment	6
Crawler Excavators	37
Mini Excavators	13
Motor Graders	20
Skid-Steer Loaders	5
Wheeled Loaders	45
Total	**128**

Source: Off-Highway Research

Uygunlar has worked hard to promote acceptance of the LiuGong brand in Turkey and now sells actively in several product sectors. The main focus in recent times has been crawler excavators, graders and wheeled loaders, although significant progress has also been made with compact equipment, in particular mini excavators. It has also already sold four crawler dozers in 2015.

WACKER NEUSON

Address: **Wacker Neuson Makina Ltd. Şti.**
TEM Yanyol Katip Celebi Cad. 64
Sok No: 15
34956 Orhanli-Istanbul

Tel: +90 (0) 216-574-0474
Website: www.wackerneuson.com.tr

Key Personnel: Ertan Özdemir, Managing Director.

History: Wacker Neuson Makina is a wholly owned subsidiary of the Austro-German Wacker Neuson Group and was originally established as a Wacker company in 1987 to sell the German manufacturer's range of light compaction equipment. Following the merger of the Wacker and Neuson Kramer parent companies, the Turkish subsidiary began to market the

Neuson and Kramer construction and agricultural equipment for the first time in 2009. Weidemann articulated loaders were introduced to the programme in 2013.

Turnover: Not available.

Personnel: The company employs around 25 people in its Istanbul, Izmir and Ankara branches.

Franchises

Table 160. Wacker Neuson: Range of Franchises, 2015

Manufacturer	Machine Types
Wacker Neuson	Compaction equipment, mini excavators, crawler excavators, skid-steer loaders, site dumpers, compact wheeled loaders, telescopic handlers

Source: Company Information

Distribution and Service: The company's headquarters has moved from Küçükbakkalköy in the Asian part of Istanbul to Orhanli, still on the Asian shore of the city. In addition to its own branches, there are three main dealers located in Bursa, Antalya and Adana and a further 20 sub-dealers throughout Turkey. The Istanbul subsidiary also acts as the sales and marketing hub for Kazakhstan, Georgia, Azerbaijan and Northern Cyprus.

Sales

Table 161. Wacker Neuson: Sales of Construction Equipment by Type, 2014

	Units
Compaction Equipment	18
Crawler Excavators	13
Mini Excavators	104
Skid-Steer Loaders	12
Telehandlers	3
Wheeled Loaders	10
Total	**160**

Source: Off-Highway Research

Wacker is the leading supplier of concrete technology equipment in Turkey and is market leader in the rammer and large vibrating plate sectors with a market share of around 60 per cent in each product. The company typically sells around 500 vibrating plates and 200 rammers per year. In the small vibrating plate sector the company faces stiffer competition from local and Chinese

manufacturers and achieves a market share of 25 per cent. The small tandem rollers below 3 tonnes account sell in small quantities in a sector dominated by the local manufacturer, Palme.

More recently the company has had considerable success in expanding its presence in the construction equipment market, largely through its increasingly popular mini excavator range.

Future Developments: The relatively late entry into the compact equipment sector with the Neuson Kramer products initially proved challenging, particularly given the highly competitive nature of the market. The longer term outlook for the sector, however, is extremely promising, given its recent rapid sales growth, and the company should by then be well placed to take advantage of any upsurge in market conditions.

WIRTGEN ANKARA

Address: **Wirtgen Ankara Makina Sanayi ve Ticaret Ltd. Şti.**
Bahçelievler Mah.
Ankara Caddesi No.223
06830 Gölbasi - Ankara

Tel: +90 (0) 312-485-3939
Website: www.wirtgenankara.com.tr

Key Personnel: Uğur Girginkaya, General Manager.

History: Wirtgen Ankara is a wholly-owned subsidiary of the German Wirtgen Group, and was established on 1st January 2008 following the parent company's decision to terminate its supply agreement with its previous dealer, Mor Teknik. The company's headquarters is a brand new, purpose-built premises based in the Gölbasi district south of Ankara. The site covers an area of 12,000 m^2 and houses administration offices, workshop, spare parts store and training facilities.

Personnel: 45 people, including 25 service and after sales engineers, all of whom are based in the Ankara headquarters. There is also one regional sales manager based in Izmir.

Franchises

Table 162. Wirtgen Ankara: Range of Franchises, 2015

Manufacturer	Machine Types
Hamm	Compaction equipment
Kleemann	Crushing and screening technology
Vögele	Asphalt finishers
Wirtgen	Planers, concrete finishers, soil recyclers

Source: Company Information

The company concentrates purely on the Wirtgen Group's product lines.

Distribution and Service: Sales administration and servicing are based at the Ankara headquarters, and there is an established service network throughout Turkey.

Sales

Table 163. Wirtgen Ankara: Sales by Product, 2014

	Units
Asphalt Finishers	61
Compaction Equipment	113
Total	**174**

Source: Off-Highway Research

Wirtgen Ankara was only established in January 2008 and any sales prior to this time were made by the Ankara based distributor, Mor Teknik. The Vögele and Wirtgen brands are extremely well established in Turkey and are dominant market leaders within their respective product sectors. Vögele pavers have been present in Turkey since the early 1970s and the first Wirtgen milling machines were sold in 1986. The Hamm compactors have grown in importance, and now command a market share of around 20 per cent. The overall population of Wirtgen brand products operating in the country now exceeds 2,000 units.

Future Developments: Wirtgen's decision to establish its own subsidiary company in Turkey has reaped significant dividends, and the Ankara company is able to benefit from the powerful resources of the parent company. The company's workforce includes some of the industry's most experienced managers who have the ability to expand Wirtgen's already well established presence in the road building sector.