



Material Handling in South East Asia

Prepared for Invest Northern Ireland

July 2018



The Material Handling Sector

Singapore | Malaysia | Indonesia | Thailand | Philippines

Prepared for INVEST NORTHERN IRELAND

July 2018

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1.0 Key Trends in the Material Handling Equipment Sector



Figure 1: Map of South East Asia

Source: Wikipedia Commons

The heavy machinery industries across the ASEAN region have experienced significant growth over the past few years, in line with the growing industrial sectors using heavy equipment, particularly the mining, construction and infrastructure industries.

The demand for heavy machinery and equipment in South East Asia is expected to remain strong, buoyed by several factors, including the growing real estate market, expansion of public & private infrastructures, demand in mining sector, and rising government spending for upgrading existing infrastructure combined with new projects across ASEAN countries. According to Research & Markets, South East Asia's heavy construction equipment and machinery market is forecast to grow at a CAGR of 2.3% between 2016 and 2022.

ASEAN Industry Structure

The South East Asian region is a major hub for trade and utilisation of the entire range of construction, mining and material handling equipment for different applications. The industry can be broadly classified under several categories, which include Earthmoving Equipment; Road Construction Equipment; Material Handling Equipment; Tunneling & Drilling Equipment; and Construction Vehicles.



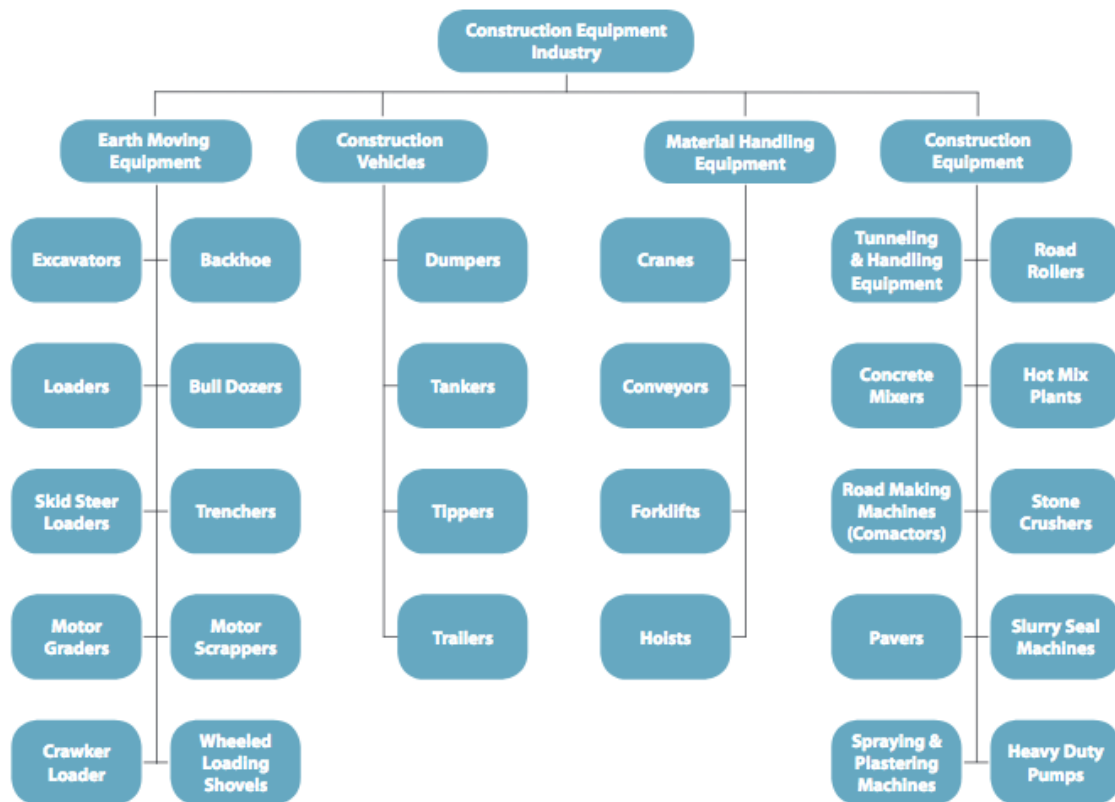


Figure 2: Construction, Mining & Material Handling Industry Structure
 Source: IBEF (India Brand Equity Foundation)

The construction, mining and material handling machinery segments in ASEAN are characterised by intense competition due in part to high fixed costs, exit barriers, and the dominance of large multinational players. The market is highly consolidated with few players accounting for major market share. The incumbents in this market are generally long-established companies, with diverse product ranges, well-known brands, large scale, and multinational reach. The market is partially import driven and partially domestically procured.

The largest manufacturers of construction, mining and material handling heavy machinery in the South East Asian region are Caterpillar, Kubota, Komatsu and Hyundai Heavy Industry, with diverse product line-ups, serving customers in several industry sectors. Due to slowdown in Chinese economy, many Chinese manufacturers have also started focusing on cost-sensitive South East Asian markets and Chinese companies, such as Taiyuan Heavy Industry, Foton Lovol and YTO Group, are becoming prevalent across the region. The presence of Chinese suppliers in South East Asia has heightened the competition between local and international players and impacted the overall prices of construction, mining and material handling equipment across the region.



Within the South East Asian market, suppliers have fairly low differentiation of raw materials and there is often little to distinguish between them, resulting in manufacturers having relatively low supplier switching costs. Substitutes as such do not exist in this market due to the specific function of various types of equipment.

Among all applications of construction, mining and material handling equipment, the majority of the revenues in South East Asian region come from the construction sector, followed by the mining and utility applications, respectively. Developments in these three market segments have a direct impact on the sales and rental of construction, mining and material handling equipment industry. In South East Asia, the earthmoving equipment holds the highest revenue share in the market, driven by the government initiatives for developing public infrastructure, particularly in Vietnam, Philippines, Malaysia and Indonesia. The major buyer groups include construction contractors/developers, mining companies, and the governments/government-associated entities.

Most construction machinery is sold either directly to customers, through OEM-owned dealerships, or by utilising distribution network. The footprint of international players in local markets is typically through tie-ups and joint ventures with local counterparts. The construction equipment value chain in South East Asia has 5 primary steps with OEMs active in 1 or several of them:

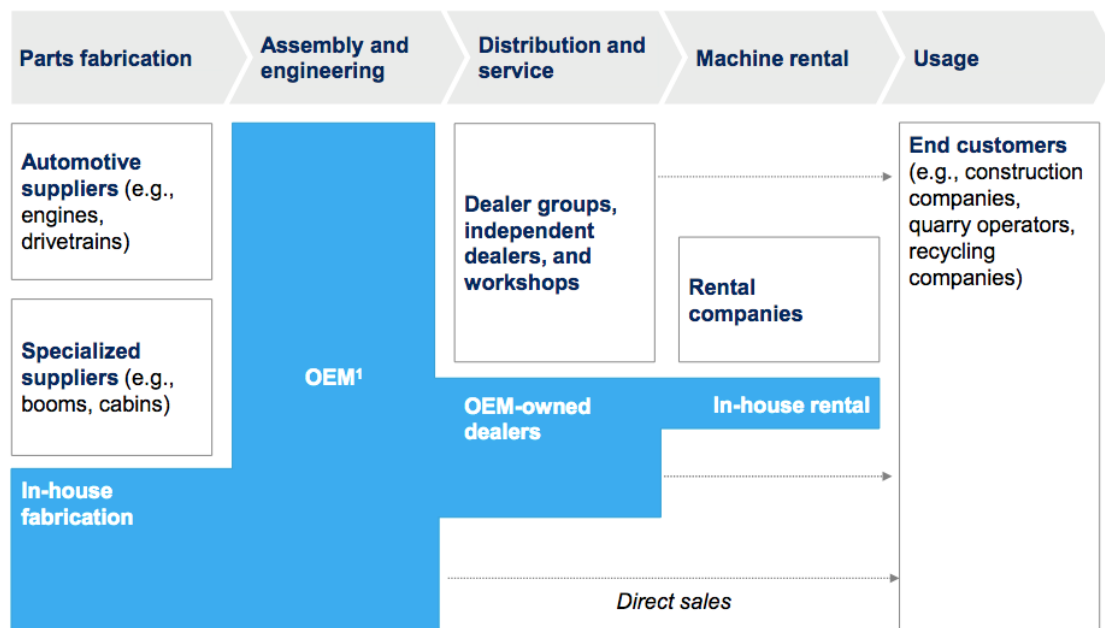


Figure 3: Construction Equipment Value Chain

Source: McKinsey



Construction, mining & material handling machinery and equipment in South East Asia is typically used for 15 to 20 years, indicating the significant potential for maintenance and service activities, apart from spare parts sales, across usage cycle. With lengthy usage period, a clear focus on service is typically necessary for companies to grow and remain competitive in the region.

Among the ASEAN countries, Indonesia held the largest share of the overall South East Asian construction equipment market in 2015, owing to increasing infrastructure development and commercial construction, followed by Vietnam and Malaysia, respectively. However, Vietnam and the Philippines are expected to exhibit the highest growth rates between 2016-2022.

Western OEMs see emerging market competition in the ASEAN region as a key threat and will, in most cases, not be able to compete with regional competitors on price. As a result, such companies are shifting towards other differentiation tactics, which are based on deep understanding of customers' business and a leading technology position. To gain deep customer insights and stay at the technology forefront, these companies are starting to:

- Collaborate closely with dealers to gain access to and deliver on customer insights;
- Raise R&D investment and make highly selective investments to keep up to speed with accelerating technological development;
- Develop refined customer-performance-related offerings;
- Modularise their portfolios to retain scale benefits while differentiating the offering.

ASEAN Trade in Construction, Mining & Material Handling Equipment

The ASEAN region is a significant trading bloc for construction, mining and material handling machinery. In 2016, it accounted for 9.4% of the world's total imports for HS 8428 products, as well as 7.5% for HS 8429, 9.6% for HS 8430, 9.8% for HS 8431, and 9.8% share of the world's total imports for HS 8474 products. In total, it accounted for a 9.1% share of the world's total imports of construction, mining and material handling heavy machinery.

HS Code	Description	Import Value in 2016 (EUR '000)	Export Value in 2016 (EUR '000)
8428	Lifting, handling, loading or unloading machinery, e.g. lifts, escalators, conveyors, teleferics (excluding pulley tackle and hoists, winches and capstans, jacks, cranes of all kinds, mobile frames and straddle carriers, works trucks with a crane, fork-lift trucks and other works trucks fitted with lifting or handling equipment);	2,322,633	595,942
8429	Self-propelled bulldozers, angledozers, graders, levelers, scrapers, mechanical shovels, excavators, shovel loaders, mechanical shovels, excavators, shovel loaders, tamping machines and roadrollers;	2,358,397	768,561
8430	Moving, grading, levelling, scraping, excavating, tamping, compacting, extracting or boring machinery, for earth, minerals or ores; pile-drivers and pile-extractors; snowploughs and snowblowers (excluding those mounted on railway wagons, motor vehicle chassis or lorries, self-propelled machinery of heading 8429, lifting, handling, loading or unloading machinery of heading	760,883	1,529,261



HS Code	Description	Import Value in 2016 (EUR '000)	Export Value in 2016 (EUR '000)
	8425 to 8428, and hand-operated tools);		
8431	Parts suitable for use solely or principally with the machinery of heading 8425 to 8430, n.e.s.;	4,487,917	4,262,095
8474	Machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading earth, stone, ores or other mineral substances, in solid, incl. powder or paste, form; machinery for agglomerating, shaping or molding solid mineral fuels, ceramic paste, unhardened cements, plastering mineral products in powder or paste form; machines for forming foundry molds of sand; parts thereof;	1,418,549	12,718,064

Table 1: ASEAN Imports & Exports of HS8428, HS8429, HS8430, HS8431, and HS8474 Product Categories, 2016

Source: ITC Trademap

Considering imports of construction, mining and material handling machinery in 2016, ASEAN's largest trading partners are, by far, China, Japan and the US. These 3 countries alone supplied machinery worth more than EUR 5.995 billion to ASEAN. In the same year, Germany and Italy have been among the top 10 trading partners for construction, mining and material handling machinery, while the UK, France and the Netherlands occupied the 12th, 13th and 14th places, respectively.

No.	Exporters (Products: HS8428, HS8429, HS8430, HS8431, HS8474)	Imported value in 2016 (EUR '000)
1	China	3,322,351
2	Japan	1,482,582
3	United States of America	1,189,791
4	Korea, Republic of	713,249
5	Germany	617,542
6	Thailand	547,278
7	Malaysia	541,285
8	Singapore	395,551
9	Indonesia	325,095
10	Italy	262,321
11	Australia	207,143
12	United Kingdom	196,958
13	France	162,849
14	Netherlands	144,320
15	India	139,830
16	Taipei, Chinese	134,681

Table 2: Top 15 Exporters of Construction, Mining and Material Handling Machinery to ASEAN, 2016

Source: ITC Trademap

Key export markets for ASEAN remain the intra-region trade, with Indonesia, Malaysia and Singapore being the key import markets across ASEAN export routes.



No.	Importers (Products: HS8428, HS8429, HS8430, HS8431, HS8474)	Export Value in 2016 (EUR '000)
1	Indonesia	1,082,181
2	Malaysia	619,014
3	Singapore	435,730
4	Australia	428,917
5	United States of America	404,560
6	Thailand	344,680
7	India	239,517
8	China	203,641
9	Japan	174,305
10	Philippines	142,656
11	Myanmar	98,585
12	United Kingdom	98,316
13	Viet Nam	91,832
14	Korea, Republic of	62,459
15	South Africa	20,946

Table 3: Top 15 Importers of Construction, Mining and Material Handling Machinery from ASEAN, 2016
Source: ITC Trademap



2.0 Singapore

2.1 Singapore Country Profile

Singapore in Numbers (2017)	
GDP (USD Billion)	305.8
GDP - Real Growth Rate	2.5%
GDP Per Capita (USD)	90,500
GDP Composition by Agriculture	0.0%
GDP Composition by Industry	26%
GDP Composition by Services	74%
Total Imports (USD Billion)	309.7
Total Exports (USD Billion)	396.4
Total Population (July 2017 est.)	5,888,926
Urban Population	100.0%
Literacy Rate	97%
Total Area (sq km)	719.2
Land Area (sq km)	709.2
Water Area (sq km)	10
Currency	Singapore Dollars (SGD)
Exchange Rate per US dollar	SGD 1.39
Official Language	English, Mandarin, Malay

Table 4: Singapore – Key Statistics

Source: Central Intelligence Agency – The World Factbook



Singapore is a small, multi-cultural and cosmopolitan city-state at the very heart of South East Asia. Singapore also has one of the highest per capita GDP in the world. The economy, valued at USD 305.8 billion, grew by 3.6% in 2017. The country is likely to clock 3% growth in 2018.

The Singapore government has pursued an **outward-looking, export-oriented economic policy** that encourages two-way flows of trade and investment. This has enabled Singapore to become a global trading hub with a trading capacity almost three times its GDP.

The country marked the highest total net inflow of FDI among the ASEAN countries with more than a 50% share to the total ASEAN FDI net inflow.

Well-organised governance has given rise to some of the world's finest infrastructure, including sophisticated telecommunications networks, extensive public transportation, well-managed healthcare and education, and modern air and seaport facilities.

The tax system is well established and investor-friendly, reflecting Singapore's overall favourable attitude towards foreign investment. The government is keen to attract foreign



investment and is unlikely to undertake tax or other measures that might dissuade such investment.

Singapore maintains one of the top positions in the annual World Bank 2018 report on Ease of Doing Business, which compares 190 countries. Singapore, which is ranked second, has amended its Companies Act to make ownership more transparent, and now requires locally-incorporated companies and foreign companies registered in Singapore to maintain beneficial ownership information and to make the data public upon request. It also made exporting and importing easier by improving infrastructure and electronic equipment at the port.

Singapore is considered to be a strategic starting point for global enterprises seeking business opportunities in Asia. The number of foreign companies that have set up a presence in Singapore is a testament of the strong business confidence that foreign investors have in country as a regional business hub.

2.2 Overview of the Infrastructure / Building & Construction Sector

Singapore is known for its world-class infrastructure, which is considerably more developed than those of other neighbouring countries. Demand in Singapore is primarily **driven by the public spending on infrastructure projects**. Public construction demand has been accounting for a rising proportion of contracts awarded over the past few years, contributing 63.3% for 2017, compared to 51.7% during 2015.

The overall construction sector valued at SGD 18.2 billion (USD 13.7 billion) accounted for 4.3% of Singapore's national GDP for 2017, compared to 4.9% during 2016 as well as 2017. The sector contracted by 8.4% during 2017, following a 1.9% growth during the previous year. It is expected to grow by around 2% during 2018 and at an average of around 3% between 2018 and 2027.

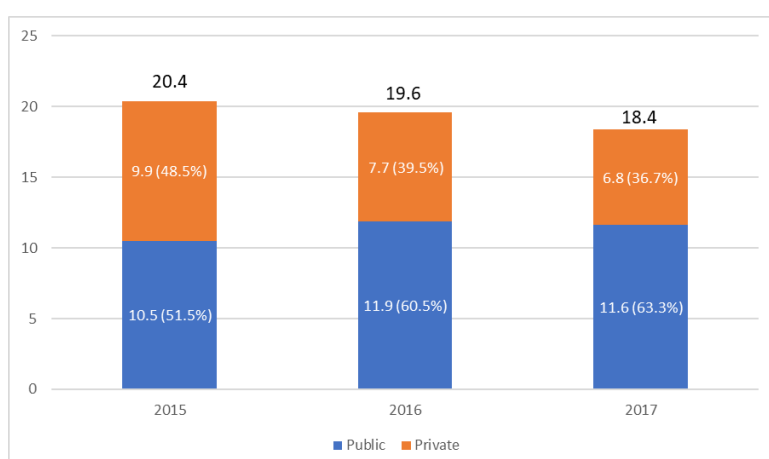


Figure 4: Construction demand in terms of value of contracts awarded

Source: Building and Construction Authority of Singapore

Unit: USD billion (SGD 1 = USD 0.75)



	Total	Public sector
2018	19.5 to 23.3	12 to 14.3
2019-2020 (per annum)	19.5 to 24.8	12 to 15.0
2021-2022 (per annum)	21.0 to 26.3	12.0 to 15.0

Table 5: Construction Demand Forecasts in Terms of Value of Contracts Awarded

Source: Building and Construction Authority of Singapore

Unit: USD billion (SGD 1 = USD 0.75)

- Major commercial projects slated for development during 2018 are likely at locations such as Central Boulevard and Harbour Drive. Industrial projects include an automotive hub at Jalan Terusan and a multi-storey and recycling facility in Northern Singapore, while civil engineering projects include major contracts for the North-South Corridor, new MRT (Mass Rapid Transit) works and Deep Tunnel Sewerage System (DTSS) phase 2 as well as rolling out of the remaining package for Runway 3 by Changi Airport Group.
- According to a report from DBS bank, the industrial market is at the tail end of a spike in supply completions starting from 2014 and peaking in 2017, resulting in limited new developments. A total of 3.8 million square metres (sqm) of new industrial space is either under construction or in planning and projected to complete over the period from 2018 to 2021. Vacancy rates are at 11% and are expected to bottom out in 2019.
- Residential housing prices in Singapore have been recovering since 2017, with increases of 0.8% and 3.1% during the fourth quarter of 2017 and the first quarter of 2018 respectively. However, oversupply from the previous construction boom is expected to constrain recovery for the current year.

Government agencies and state-owned enterprises head most major infrastructure, as well as large-scale residential and non-residential construction projects in Singapore. The city-state’s sovereign wealth fund, Temasek, holds stakes in commercial development firms like Capitaland. Industrial developers like JTC Corporation and Ascendas-Singbridge are corporatised spinoffs of government agencies. While Ascendas-Singbridge is 100% held by Temasek, JTC Corporation is a statutory board under the Ministry of Trade and Industry. Leading infrastructure development company, Surbana Jurong, is also owned by Temasek. Over 80% of Singaporeans live in public housing and the Housing and Development Board is responsible for bulk of residential construction in Singapore.

The Government released an **Industry Transformation Map (ITM) for the construction sector** in 2017 to drive the widespread adoption of leading technologies in response to digital technology developments and the challenges of labour shortage and climate change.



- Singapore construction companies have been increasingly adopting **DfMA (Design for Manufacturing and Assembly)** methods for construction where construction is designed and detailed for a substantial portion of work to be done off-site in a controlled manufacturing environment. The national target is to achieve 40% DfMA adoption by 2020. To support this, the Government has three highly automated Integrated Construction and Prefabrication Hubs (ICPHs). Two more of these facilities are under construction, and there are plans for another five more of these.
- According to the BCA, projects prescribing DfMA technologies have become more prevalent in recent years and tenders for 81 such projects are expected to be called during 2018 and 2019, with 13 of the projects exceeding SGD 300 million (USD 224 million) and 19 with values between SGD 150 million (USD 112 million) and SGD 300 million.
- Another area of focus in the ITM is Integrated Digital Delivery (IDD), leveraging cloud and digital technology to integrate stakeholders in the building life cycle management. Plans are underway to encourage adoption of shared platforms and standards to fully integrate the parties involved in building projects.

Major ongoing and planned projects in Singapore include:

Railways

- **Mass transit:** The Singapore Government has set a target of increasing the length of the city’s rail network to 360 km by 2030 from 200 km at the end of 2017.

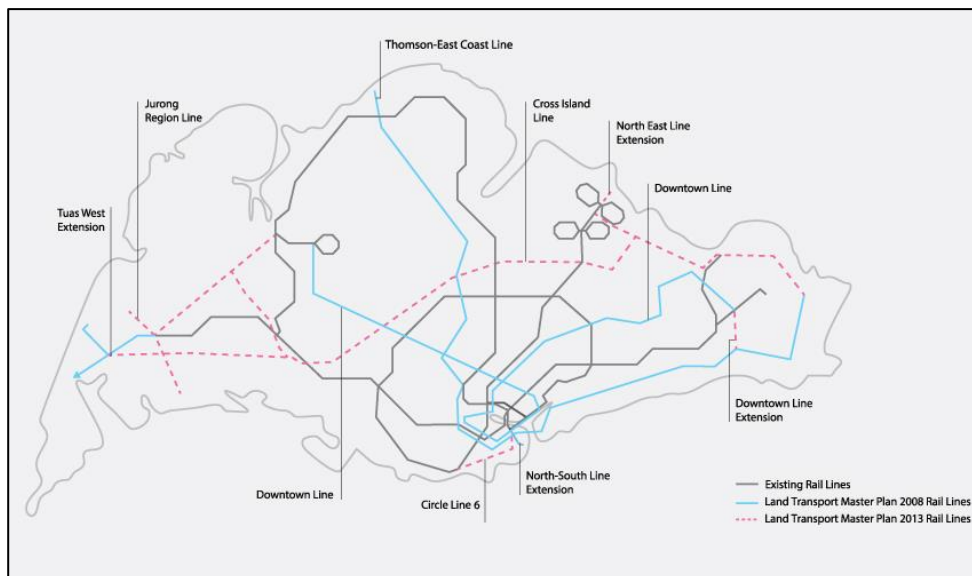


Figure 5: Singapore's 2030 Plans for Mass Transit Plans

Source: Land Transport Authority of Singapore



The 24-km **Jurong Region Line (JRL)**, featuring 24 stations, is expected to open in three phases starting from 2026. The JRL will connect to main activity nodes in the Jurong area, and will also serve the Jurong Lake District, supporting plans to transform the area into Singapore’s western business district.

The USD 19 billion 43-km **Thomson East-Coast Line (TEL)** with 31 stations is also under construction and is planned to open in stages from 2019 onwards.

The 50-km **Cross-Island Line (CRL)** is targeted to be completed around 2030. Planning for the CRL is in early stages, with the Government studying alignment options at the moment.

A joint venture - by China State Construction Engineering (Singapore branch) and Nishimatsu Construction won a SGD 313.8 million contract for the USD 2.7 billion 4-km **Circle Line Phase 6**, while local construction company, Woh Hup won a previous contract for SGD 225.4 million. The line is expected to open by 2025.

- **Kuala Lumpur-Singapore High Speed Rail:** The LTA has formed a wholly-owned subsidiary - SG HSR Pte Ltd.- to implemented the project. Contracts are currently open for some aspects of the construction. The project was expected to be completed by 2026. The new government which came to power in May 2018 is reviewing the project due to the perceived high costs and national liabilities for Malaysia at USD 250 billion, exceeding 80% of GDP. There is a strong possibility that the project might be cancelled.
- **Johor Bahru-Singapore Rapid Transit System Link:** The Johor Bahru-Singapore RTS Link will connect the Bukit Chagar Station in Johor Bahru to the RTS Link Woodlands North Station in Singapore, and will have the capacity to carry up to 10,000 passengers per hour per direction. Passenger service on the RTS Link is targeted to commence by 2024.

Ports



Figure 6: Tuas Mega Port plans
Source: Maritime Singapore Connect



- The **Tuas Mega Port**, being built in four phases till 2040, will be the world's largest container terminal in the world when completed, with a total capacity of up to 65 million twenty-foot equivalent units (TEUs). All five container terminals in Singapore - Tanjong Pagar, Keppel, Brani, Pasir Panjang Terminal 1 and Pasir Panjang Terminal 2 – will eventually be merged at Tuas.

Tuas Terminal will incorporate new features such as optimising land use by utilising both above and underground spaces for complementary purposes like storage facilities; enhancing the safety and security of the port waters via a next generation traffic management system; and increasing productivity and reducing labour costs through the use of technology like automated yard cranes and port equipment. There are also plans to develop Tuas Terminal into a maritime hub with storage facilities and commercial amenities, combining both port activities and lifestyle spaces.

Phase 1 of construction started in 2016 and the first phase reclamation works are scheduled to be completed by the early 2020s. The first phase crossed the halfway mark in September 2017. Dredging International Asia Pacific Pte Ltd, the Asian arm of the Belgian DEME Group was appointed for Phase 1 development. The first phase mobilised the world's largest grab dredger and one of the world's most powerful cutter suction dredgers, along with a wide range of other dredging and reclamation equipment. In addition, the use of soil improvement techniques is allowing the dredged materials from the deepening of basins and nearby fairway, as well as excavated earth obtained from other land construction projects, to be reused as reclamation fill materials for the project.

A SGD 1.46 billion (USD 1 billion) contract for Phase 2 was signed in May 2018 with a multinational consortium, comprising Penta Ocean, Hyundai and Boskalis, for dredging the Tuas basin, building wharf structures and reclaiming 387 hectares of land. Works under Phase II include the design and construction of 387 hectares of reclaimed land bounded by 9.1km of caisson (a watertight retaining structure used for the repair of ships) walls. The latest innovations and technologies, such as E-cranes and reclaimer barges, will be employed to maximise the use of dredged materials for filling above sea level. Phase 2 is planned for completion in the mid-2020s.

The move of all port operations to Tuas will free up land for the Greater Southern Waterfront development, three times the size of Marina Bay. The Urban Redevelopment Authority (URA) unveiled six broad ideas for the Greater Southern Waterfront for public feedback in 2013. These included creating a new reservoir, a 30km waterfront promenade that snakes around the coast for walking and cycling, and green corridors that link areas like Mount Faber to the hillock on Pulau Brani.



Airports

Changi Airport Group is proceeding with **plans for construction of Terminal 5 (T5) of the Changi Airport**. Its construction is expected to be completed around 2030, doubling Changi Airport's area to around 2000 hectares. During 2017, 62.2 million passengers passed through Changi Airport. Terminal 4 was opened in late 2017 with a capacity of 16 million passengers per annum. The project will provide Changi Airport with additional capacity of up to 50 million passenger movements per annum in its initial phase and 100 more aircraft stands.

Firms have been appointed for architectural design and engineering consultancy services. KPF (Singapore) Pte Ltd., in partnership with Heatherwick Studio and Architects 61 Private Limited, is responsible for the provision of architectural design services. Arup Singapore Private Limited, Mott MacDonald Singapore Pte Limited, and Surbana Jurong Consultants Pte Ltd., have been appointed for providing engineering services; and DP Architects Pte Ltd, for the provision of design services for commercial spaces.

These firms will provide consultancy services for the design of the Main Terminal Building, Satellite Terminal Building, Ground Transportation Centre and Primary Landside Roadway.

Master civil consultants have been appointed for the design of infrastructure at the landside and airside areas outside of the T5 buildings, including taxiways, aircraft parking stands, roadways and drainage systems, as well as the connections for utilities such as power, water, gas, fuel and telecommunications to the T5 buildings.

There are plans to dig three huge tunnels to move bags and people between the future Terminal 5 and the current airport. Work will start on this in 2019 and should take two to three years. T5 will most likely be served by the new Thomson-East Coast Line and Cross Island MRT Lines. The Cross Island line will also be linked to the planned high-speed rail link between Kuala Lumpur and Singapore.

The terminal is part of the larger Changi East development project that includes a three-runway system, as well as the development of cargo complexes and other supporting aviation and ground transport infrastructure.

2.3 Overview of the Construction & Demolition Recycling Market

Around **99%** of the 1.61 million tonnes of **construction debris** generated in Singapore during 2017 were **recycled**. Various recyclable materials such as metals, plastic, wood and hardcores etc., are recovered from the construction and demolition (C&D) waste for further processing. Recycled concrete aggregates (RCA) derived from crushed concrete are reused back for a range of structural and non-structural applications.



The high recycling rate is reflective of the organised, systematic government-supported industry-wide efforts to set standards. Singapore has an Accreditation Scheme for Recycled Aggregate Suppliers managed by the Waste Management and Recycling Association of Singapore (WMRAS). The accreditation criteria were jointly developed by the BCA-WMRAS Working Committee on Sustainable Construction comprising representatives from WMRAS, multiple government agencies, including BCA, HDB, LTA, NEA, National Parks (NParks), PUB, and associations such as the Association of Consulting Engineers Singapore (ACES), Institution of Engineers (IES) and SCAL (Singapore Contractors Association Ltd).

Four **companies** are **accredited** currently: Ley Choon Constructions and Engineering Pte Ltd, Pan-United Concrete Pte Ltd, Samgreen Pte Ltd. and Soon Yong Huat Construction Pte Ltd.



Figure 7: Typical process to reclaim RCA

Source: Building and Construction Authority of Singapore

Accredited recyclers are capable of supplying recycled aggregates for use in non-structural concrete components and for structural usages subject to the approval and guidelines stipulated by the Authorities and Consultant.

Under the BCA's **Green Mark Scheme**, which seeks to drive Singapore's construction industry towards more environment-friendly buildings, the use of recycled content earns points towards the final score.

However, the volume of C&D debris increased by a mere 0.9% during 2017 as compared to 2016. This follows two years of increase by over 10% and a dip of 25% during 2014. This is attributable to Singapore's developed infrastructure and housing market and the fact that construction & demolition is driven by government planning and large infrastructure projects.



The volume of C&D debris could witness a rise during the next 2-3 years due to a boom in en-bloc sales (collective sale of a housing development to a common buyer when there is majority consensus among the unit owners to sell). During 2017 en-bloc sales exceeded SGD 8 billion (USD 5.9 billion). The pace was maintained during the first quarter of 2018, with 17 successful residential en-bloc sales valued at SGD 5.83 billion (USD 4.3 billion) between January and last month. Certain government measures, including an average 22.8% hike in development levy for the use of some sites or to build bigger projects on them, an increase in stamp duty for home purchases of more than SGD 1 million (USD 733,000) and requirement of traffic impact studies required to ensure redevelopment will not trigger congestion, could cool the market going forward. Nevertheless, URA listed a potential supply of 13,200 units from awarded en-bloc sale sites at end of March 2018. Developers have to show proof of commencement of development, including but not limited to piling, foundation or demolition works, within 2 years from the acquisition date. Therefore, the demolition of existing properties on these en-bloc sale sites would generate large volumes C&D debris.

2.4 Overview of the Municipal Waste Sector

The Waste and Resource Management Department (WRMD) of the National Environment Agency (NEA) governs the waste management and recycling industry in Singapore. WRMD has overall responsibility for the planning, development and management of solid waste disposal facilities and operations in Singapore. It is also responsible for the licensing and regulation of solid waste collection and the enforcement of laws against illegal dumping.

In 2017, Singapore generated **7.7 million tonnes of solid waste**, a decrease of 110,000 tonnes from 7.8 million tonnes in 2016. Singapore has maintained a recycling ratio of around 60% since 2010.

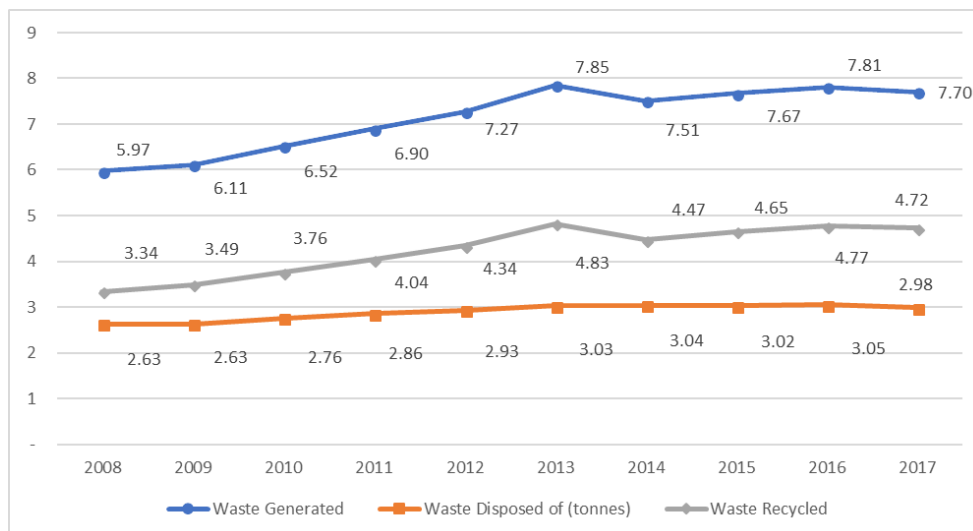


Figure 8: Solid Waste Statistics (Millions of Tonnes)

Source: National Environment Agency of Singapore



Singapore aims to achieve a 70% overall recycling rate by 2030 set out in the Singapore Sustainability Blueprint 2015. Around 60% of Singapore’s waste is recycled as of 2017, while 38% of waste is incinerated at the four waste-to-energy plants and the remaining amount which cannot be incinerated, is sent to the landfills.

NEA appoints public waste collectors (PWCs) through open tenders to serve domestic and trade premises in Singapore by geographical sectors. Currently, there are four PWCs, namely Veolia ES Singapore Pte Ltd, Colex Environmental Pte Ltd, SembWaste Pte Ltd, and 800 Super Waste Management Pte Ltd, operating in seven sectors in Singapore. The seven sectors will be further consolidated into six sectors when the new contracts for Pasir Ris-Tampines and Bedok commence in 2018. SembWaste Pte Ltd. is a part of Singapore-headquartered Sembcorp, which is 49.5% held by Temasek and is one of the largest utilities, marine and urban development groups in Asia.

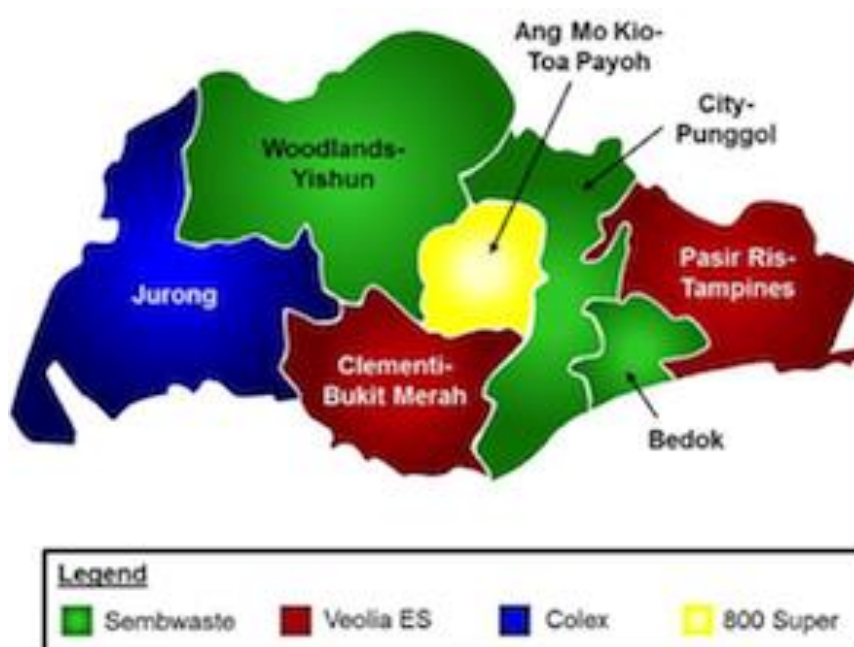


Figure 9: Waste Collection Sectors in Singapore
 Source: National Environment Agency of Singapore

Recyclables are sorted and retrieved for processing before the collection of solid waste, to prolong the lifespans of recyclable materials. The solid waste that remains is then collected and sent to the various waste-to-energy plants for incineration. Incineration reduces the volume of solid waste by about 90% and produces steam that runs turbine-generators to generate electricity.

Singapore's **solid waste disposal infrastructure** consists of four waste-to-energy (WTE) plants: Tuas, Senoko, Tuas South and Keppel Seghers Tuas Waste-To-Energy Plant (KSTP), as well as the Semakau Landfill.



Ash from the waste-to-energy plants and non-incinerable solid waste are brought to the Tuas Marine Transfer Station (TMTS), where solid waste is unloaded directly from vehicles into long barges. Specially designed tugboats then push the covered barges to Semakau Landfill located 30km away from TMTS.

NEA is planning to develop an **Integrated Waste Management Facility (IWMF) to help Singapore meet its future waste management needs** and achieve long term environmental sustainability. This flagship facility will be developed with innovative solutions that can maximise energy as well as resource recovery from solid waste. To derive synergies to benefit both NEA and PUB, the National Water Agency, the IWMF will be co-located with the Tuas Water Reclamation Plant (TWRP) at the same Tuas View Basin site.

Unlike the existing WTE plants, the IWMF will be equipped with several state-of-the-art solid waste treatment technologies that will enable it to effectively process various waste streams, including 5,800 tonnes per day of incinerable waste, 250 tonnes per day of household recyclables collected under National Recycling Programme (NRP), 400 tons per day of source-segregated food waste, and 800 tonnes per day of dewatered sludge from TWRP.

Currently, the recyclables are sorted at Materials Recovery Facilities (MRF) operated by PWCs before they are sent to the recycling plants. To optimise both process and land use efficiency, the sorting of recyclables will be consolidated and carried out at IWMF's MRF. The co-location will enable waste heat from IWMF to be channelled to the TWRP to dry the dewatered sludge, which will then be incinerated at IWMF's Sludge Incineration Facility.

The IWMF's Food Waste Treatment Facility will be able to segregate the inorganic from the organic fractions before turning the latter into bio-pulp suitable for co-digestion with used water sludge at the TWRP. The co-digestion of food waste and used water sludge will increase biogas production at the TWRP. The biogas produced will be utilised at the IWMF to enhance its overall plant thermal efficiency and power production.

IWMF will be developed in phases. Pre-qualification of EPC tenderers and calling of EPC (Engineering, Procurement, and Construction) tenders will take place during the second half of 2018. The first phase of IWMF will be completed in 2024 while the whole facility is expected to be completed in 2027. In December 2017, NEA appointed a multi-disciplinary consultancy team led by Black & Veatch and AECOM (BV-AECOM) for the development of the IWMF.

In December 2017, the **NEA released the Environmental Services Industry Transformation Map (ITM)**, one of 23 ITMs developed by the Singapore Government. This is one of the four ITMs under the Built Environment cluster, which also includes the construction, real estate and security sectors. As part of the ITM, there are plans to drive the deployment of scalable innovative technologies in waste reduction, separation, recycling and treatment and there are opportunities for technology collaboration. Alternative technology procurement models, such as leasing, are being explored with equipment suppliers and service buyers.



2.5 Overview of the Biomass Sector

Singapore possesses **strong competencies in the chemical and process engineering industries**, providing a foundation for capabilities in biomass processing. However, Singapore’s small size, high population density and land scarcity **limits the country’s potential for sustainably-grown domestic biomass**.

According to the National Environment Agency (NEA), most of the biomass sourced locally comes from combustible, non-recoverable, non-reusable or non-recyclable waste. This includes biomass from municipal waste, such as wood waste, horticultural waste, food waste and paper waste, which constituted 6%, 4.3%, 14.9% and 10.5% respectively of the total 7.7 million tonnes of waste generated in Singapore during 2017. The NEA is conducting a national campaign to reduce food wastage, with the highest priority being placed on reducing food wastage at source.

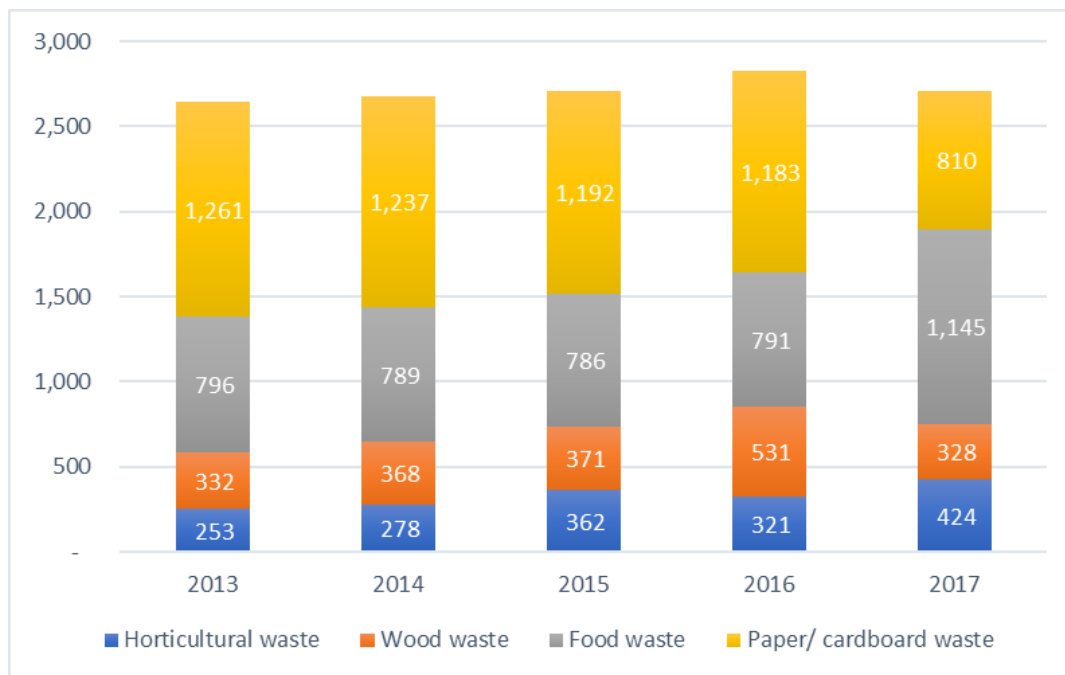


Figure 10: Biomass Generation in Singapore
 Source: National Environment Agency of Singapore
 Unit: Thousand Metric Tonnes

A report from the National Climate Change Secretariat looked at potential uses of biomass in Singapore. The report recommended several areas of focus for research & development for Singapore in the area of bio-renewables such as increasing the energy density of photosynthetic algae, developing cost-effective and sustainable bio-refineries, bio-oil upgrading technology, and biomass pre-treatment.



On the research front, the Institute of Chemical and Engineering Sciences (ICES), a research institute of the Agency for Science, Technology and Research (A*STAR), Singapore's lead public sector agency that spearheads economic oriented research, opened a Metabolic Engineering Research Laboratory (MERL) to design and engineer microbial cellular factories capable of cost-effectively producing high value chemicals from agricultural waste.

In 2018, engineers at the National University of Singapore (NUS) announced the discovery of a greener and cheaper technique for biofuel production, using a natural bacterium isolated from mushroom crop residue.

Important initiatives in the area are as below:

- Neste Oil from Finland opened the **world's largest renewable diesel plant in Singapore** in 2010, with a production capacity of 1 million tonnes per year. It uses sustainable palm oil from Asia, and waste animal fat from Australia and New Zealand.
- Sembcorp Industries opened a SGD 34 million (USD 33 million) **woodchip-fuelled biomass** steam production plant in 2012 by (Sembcorp). The plant is capable of producing 20 tonnes per hour of process steam, providing a sustainable and competitive solution to its customers. Located in Jurong Island's Sakra district, the Sembcorp Woodchip Boiler Plant provides process steam to commercial customers on Jurong Island, using waste wood collected and processed by Sembcorp's solid waste collection business.
- In 2012, the Energy Market Authority launched a **micro-grid test** bed on Pulau Ubin island, harnessing electricity from biodiesel (from used cooking oil) and solar energy. The planning and construction of the micro-grid was carried out by a local consortium comprising two companies, Daily Life Renewable Energy and OKH Holdings.
- Singaporean company Alpha Biofuels initiated a pilot project in 2017 to use **cooking oil waste** from Fairmont Singapore and Swissotel The Stamford hotels and more than 30 food and beverage outlets at Raffles City Shopping Centre to generate biodiesel at an onsite facility, costing USD 40,000. More such projects might be seen, as NEA mandated all cooking establishments to have their used cooking oil collected by licensed collectors, from June 2017 onwards.
- As the **largest bunkering hub** in the world, Singapore is working towards providing cleaner alternative sources of fuel to cater to the future energy needs of the global shipping industry and biofuels is one of the options being considered. In September 2017, the Maritime and Port Authority of Singapore, BHP and GoodFuels Marine (GoodFuels) signed a Letter of Intent (LOI) to collaborate on a biofuels pilot project in Singapore in 2018.



2.6 Market Entry Considerations

Local competitive landscape

Infrastructure projects in Singapore are driven by government agencies and state-owned enterprises but there is ample opportunity for foreign companies for participating in the projects. Foreign companies are usually allowed to bid for tenders, but if this is not the case it will be clearly stated. All government tenders can be found on GeBIZ (www.gebiz.gov.sg). According to our BMI's Key Projects Database, around 60% of project roles in Singapore's construction industry are held by foreign companies, after the exclusion of government agencies and state-owned enterprises.

The Singaporean government has been promoting the adoption of **labour-saving technologies** in the construction and waste management sectors, creating market opportunities for overseas companies with innovative technologies.

Overseas players in the material handling equipment market have established their own facilities in the country or sell their products via local distributors or do both. Local players, Such as Bonco Enterprise Pte Ltd, Land Equipment Pte Ltd, Lian Hup Brothers Pte Ltd, Sia & Yeo Heavy Equipment, Sia & Yeo Heavy Equipment and Teesin Machinery, sell and rent/lease equipment from overseas companies.

Using agents or distributors is a common and effective way to serve the Singapore market and, also other countries in South East Asia. Caterpillar (US), Terex (US), Vermeer Corporation (US), the AMUT Group (Italy) have distributors in Singapore.

Many distributors in Singapore deal with the local market as well as the broader regional market in south-east Asia, as Singapore is a key hub for re-export of heavy equipment for use in the construction sector.

Several leading players from the US, Japan, South Korea and Europe have a strong direct presence in Singapore. Companies such as Komatsu (Japan), KYC (Japan) and Metso (Finland) have established subsidiaries in Singapore. Swedish company, Sandvik, distributes its products via its sales office, Sandvik Mining and Construction Singapore.

Many companies in the sector use Singapore as the base for their south-east Asian and sometimes Asia-Pacific operations. German Wirtgen Group's South East Asian head office for marketing, sales and service is located in Singapore. Singapore has been Caterpillar's headquarters for Asia Pacific since 1994. Hitachi Construction Machinery Asia and Pacific Pte Ltd. serves as Hitachi Construction Machinery's regional headquarters.



Trade Data (import statistics)

The tables below analyse in detail the position of the United Kingdom related to exports of material handling machines and components to Singapore. The UK is ranked 1st in exporting Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances in 2017, getting a 36% share of Singapore's total imported value. The UK is also among the top 5 exporters of 3 other product categories for material handling. Other competitor countries who are regularly among the top 5 exporters to Singapore are Germany, the United States, China, Japan, and Malaysia. In terms of value, the UK had the largest export of Machines and Mechanical Appliances having Individual Functions amounting to over USD 126 million compared to its exports of other product categories in 2017.

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	16,135	12,412	9,059	10,005	-
United Kingdom	6,385	2,063	1,988	3,555	1 st
Germany	3,778	3,647	1,764	2,316	2 nd
Japan	294	513	114	824	3 rd
United States of America	2,128	970	352	823	4 th
India	1,620	640	531	752	5 th

Table 6: Imports of Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, Incl. Those in Powder or Paste Form (HS: 847410) by Singapore (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	47,525	61,604	42,971	10,095	
China	5,478	9,577	4,284	2,861	1 st
Germany	2,761	1,126	1,028	1,460	2 nd
United Kingdom	275	204	112	1,203	3 rd
Malaysia	1,062	1,031	785	1,165	4 th
Indonesia	9,117	16,841	9,056	529	5 th

Table 7: Imports of Buckets, Shovels, Grabs and Grips for Machinery of Heading 8426, 8429 and 8430 (HS: 843141) by Singapore (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	53,657	45,778	45,066	38,770	
China	18,054	20,641	15,518	16,363	1 st
Hungary	3,134	2,480	3,005	3,678	2 nd
Germany	10,656	6,445	3,381	3,013	3 rd
United Kingdom	2,234	1,114	1,438	2,730	4 th
Italy	1,679	1,284	1,046	2,303	5 th

Table 8: Imports of AC Motors, Multi-Phase, of an Output > 750 W but <= 75 kW (HS: 850152) by Singapore

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	17,870	12,942	10,275	11,965	
United States of America	1,653	337	2,338	2,666	1 st
Japan	1,874	1,908	615	2,193	2 nd
Malaysia	4,244	2,691	1,399	1,729	3 rd
United Kingdom	1,982	2,598	1,386	1,259	4 th
Sweden	25	-	113	953	5 th

Table 9: Imports of Crushing or Grinding Machines for Solid Mineral Substances (HS: 847420) by Singapore

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	126,134	92,868	56,354	31,874	-
China	18,164	14,409	10,863	8,705	1 st
Malaysia	41,471	37,374	13,557	7,429	2 nd
United States of America	10,584	6,714	4,987	3,335	3 rd
Germany	16,165	6,077	5,625	1,727	4 th
Italy	4,815	4,183	4,477	1,451	5 th
United Kingdom	9,087	8,233	2,538	1,176	6 th

Table 10: Imports of Parts of Machinery for Working Mineral Substances of Heading 8474 (HS: 847490) by Singapore (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	40,100	30,944	26,962	28,979	-
Malaysia	11,406	8,552	7,070	8,523	1 st
China	3,129	3,022	4,245	4,711	2 nd
United States of America	10,237	6,692	4,835	4,591	3 rd
Japan	5,567	4,743	2,694	2,924	4 th
India	702	899	1,389	1,264	5 th
United Kingdom	934	1,032	735	1,142	6 th

Table 11: Imports of Printed Books, Brochures and Similar Printed Matter, in Single Sheets, Whether or not Folded (HS: 490110) by Singapore (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	1,092	1,288	1,482	1,108	-
United States of America	399	478	420	390	1 st
China	260	206	501	304	2 nd
Japan	33	135	143	100	3 rd
Taiwan	48	36	38	81	4 th
Germany	31	61	72	64	5 th
United Kingdom	23	50	58	24	7 th

Table 12: Imports of Parts and Accessories for Carriages for Disabled Persons (HS: 871420) by Singapore

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	1,786,911	1,607,294	1,502,982	1,644,720	-
Malaysia	210,660	220,310	238,413	345,756	1 st
Japan	257,232	283,971	297,928	337,215	2 nd
United States of America	433,069	316,119	258,869	261,756	3 rd
Germany	174,093	157,911	140,441	145,825	4 th
China	154,819	122,390	132,040	137,400	5 th
United Kingdom	50,475	56,242	34,641	26,889	9 th

Table 13: Imports of Machines and mechanical appliances having individual functions (HS: 8479) by Singapore

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	45,509	57,498	42,293	30,304	-
United States of America	13,024	24,753	13,104	8,958	1 st
Germany	9,399	7,256	8,301	4,749	2 nd
China	5,830	8,636	8,607	2,864	3 rd
Sweden	177	445	116	1,919	4 th
Japan	1,270	1,742	1,968	1,868	5 th
United Kingdom	1,556	4,609	2,612	1,081	9 th

Table 14: Imports of Mixing, Kneading, Crushing, Grinding, Screening, Sifting, Homogenising, Emulsifying or Stirring machines, n.e.s. (excluding industrial robots) (HS: 847982) by Singapore (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	19,340	9,367	26,645	15,839	-
China	3,615	2,174	3,711	5,278	1 st
Japan	9,433	1,723	9,435	3,251	2 nd
Germany	1,440	1,250	4,595	1,747	3 rd
Taiwan	1,480	164	352	1,413	4 th
Malaysia	1,365	1,256	971	786	5 th
United Kingdom	13	26	910	466	10 th

Table 15: Imports of Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by Singapore (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	539,417	481,054	466,590	521,281	-
United States of America	157,829	89,074	71,170	105,068	1 st
Japan	42,945	89,498	92,314	103,160	2 nd
Malaysia	85,823	71,936	73,952	92,947	3 rd
Germany	47,762	58,199	60,170	39,500	4 th
China	29,886	17,143	28,493	37,439	5 th
United Kingdom	19,856	23,159	9,404	8,675	11 th

Table 16: Imports of Machines and Mechanical Appliances, n.e.s. (HS: 847989) by Singapore

Unit: USD Thousand

Source: International Trade Centre



Applicable Tariffs

The table below shows that there is no tariff applied from Singapore to UK exports of material handling products. It is to be noted that Singapore operates a trade policy of almost no tariffs which means more than 99% of all imports can enter the country tariff-free.

Description	HS Code	Average Tariffs
Wheelchair parts n.e.s.	871420	0%
AC motors, multi-phase, of an output exceeding 750 W but not exceeding 75 KW	850152	0%
Machines and mechanical appliances, n.e.s.	847989	0%
Machines and mechanical appliances having individual functions	8479	0%
Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines, n.e.s.	847982	0%
Parts of machinery for working mineral substances of heading 8474	847490	0%
Crushing or grinding machines for solid mineral substances	847420	0%
Sorting, screening, separating or washing machines for solid mineral substances, incl. those in powder or paste form	847410	0%
Buckets, shovels, grabs and grips for machinery of heading 8426, 8429 and 8430	843141	0%
Continuous-action elevators and conveyors for goods or materials, belt type (excluding those for underground use)	842833	0%
Printed books, brochures and similar printed matter, in single sheets, whether or not folded	490110	0%

Table 17: Average Tariffs Applied by Singapore to UK Exports in 2017

Source: International Trade Centre

Barriers to entry

Singapore is an open economy and more than 99% of all imports into Singapore enter the country duty-free. There are no tariffs, taxes and duties imposed on imports of construction-related equipment and the market is open to firms from all countries. The country does however have a 7% Goods and Service Tax (GST).

Singapore's business-friendly and strong regulatory and legal environment makes it an attractive destination for foreign companies. There are few restrictions on foreign ownership and participation. The primary entry barrier is the highly competitive nature of the market. Prospective exporters to Singapore should be aware that buyers expect good after-sales service.



2.7 Useful Information

Key Government Agencies

BCA – Building and Construction Authority. As an arm of the Ministry of National Development, BCA manages and regulates structural plans approvals, permits for projects, as well as registration of accredited checkers. It also conducts regular structural inspections, carries out enforcement on unauthorised construction, as well as oversees manpower and human resource development in the industry.

Contact Information

Address: 52 Jurong Gateway Road, JEM Office Tower #11-01, Singapore 608550

Tel: +65 1800 342 5222 / +65 6534 0219 (for Overseas Call)

Website: www.bca.gov.sg

HDB - Housing & Development Board. HDB is Singapore's public housing authority and a statutory board under the Ministry of National Development.

Contact Information

Address: HDB Hub, 480 Lorong 6 Toa Payoh, Singapore 310480

Tel: +65 6490 111

Website: www.hdb.gov.sg

NEA – National Environment Agency. As a statutory board under the Ministry of Environment and Natural Resources, NEA is the leading public organisation responsible for improving and sustaining a clean and green environment in Singapore. The NEA develops and spearheads environmental initiatives and programmes through its partnership with the People, Public and Private sectors.

Contact Information

Address: 40 Scotts Road, #13-00, Environment Building, Singapore 228231

Tel: +65 1800 225 5632 / +65 6225 5632 (for Overseas Call)

Website: www.nea.gov.sg

JTC Corporation. As a statutory board under the Ministry of Trade and Industry, JTC Corporation is the lead agency in Singapore to spearhead the planning, promotion and development the industrial landscape.

Contact Information

Address: JTC Corporation, The JTC Summit, 8 Jurong Town Hall Road, Singapore 609434

Tel: +65 1800 568 7000/ +65 6560 0056 (for Overseas Call)

Website: www.jtc.gov.sg



LTA – Land Transport Authority. LTA is a statutory board under the Ministry of Transport, which spearheads land transport developments in Singapore. As the agency responsible for planning, designing, building and maintaining Singapore’s land transport infrastructure and systems

Contact Information

Address: 1 Hampshire Road, Singapore 219428
Tel: +65 6490 111
Website: www.hdb.gov.sg

PUB. PUB is a statutory board under the Ministry of the Environment and Water Resources. It is the national water agency that manages Singapore’s water supply, water catchment and used water in an integrated way.

Contact Information

Address: 40 Scotts Road #22-01, Environment Building, Singapore 228231
Tel: +65 1800 2255 782/ +65 6225 5782 (for Overseas Call)
Website: www.pub.gov.sg

URA – Urban Redevelopment Authority. URA is Singapore’s land use planning and conservation authority. URA adopts a long-term and comprehensive planning approach to formulate strategic plans such as the Concept Plan and the Master Plan to guide the physical development of Singapore in a sustainable manner. Its plans and policies focus on achieving a balance between economic growth and a quality living environment.

Contact Information

Address: 45 Maxwell Road, The URA Centre, Singapore 069118
Tel: +65 6221 6666
Website: www.ura.gov.sg

Associations

The Singapore Contractors Association Ltd. As the official representative body of contractors in Singapore, the association aims to promote better business conduct, enhance industry standards, protect and balance the interests between public and contractor members, as well as promote development of the industry as a whole via means such as business networking events.

Contact Information

Address: Construction House, 1 Bukit Merah Lane 2, Singapore 159760
Tel: +65 6278 9577
Website: www.scal.com.sg



WRMAS - Waste Management and Recycling Association of Singapore. WRMAS was set up in 2001 as a registered society to represent and promote the interests of its 150-odd members who include mainly General Waste Collectors and recycling companies. It also seeks to upgrade and professionalise the industry as well as work with the government and community to promote recycling in order to create a more sustainable living environment.

Contact Information

Address: No. 62 Ubi Road 1, #08-06 Oxley Bizhub 2, Singapore 408 734
Tel: +65 6222 5328
Website: www.wmras.org.sg

Trade Exhibitions

BUILDTech ASIA 2018. BuildTech Asia 2018 is one of the leading South East Asia building and construction trade event within the built and environment sector beyond the region. The 3-day trade exhibition aims to provide exhibitors by exploring business opportunities, expanding enterprises market share and ways to penetrate into growing sectors where building, infrastructure, and other aspects of construction are needed in the Asian region.

Dates: 22-24 October 2018
Location: Singapore EXPO, Hall 3
Website: www.buildtechasia.com

BEX Asia. Build Eco Xpo Asia (BEX Asia) is an exhibition for the building industry in South East Asia market focused on Green Building including architecture and design for sustainable environment and energy efficiency building materials.

Dates: 5-7 September 2018
Location: Level 1, Marina Bay Sands, Singapore
Website: www.bex-asia.com

World Cities Summit 2018. The World Cities Summit is an exclusive platform for government leaders and industry experts to address liveable and sustainable city challenges, share integrated urban solutions and forge new partnerships. Themed “Liveable & Sustainable Cities: Embracing the Future through Innovation and Collaboration”, the 6th World Cities Summit in 2018 will explore how cities can be more liveable and resilient through better governance and planning, technology and social innovations, as well as collaborations with various stakeholders and with other cities.

Dates: 8-12 July 2018
Location: Marina Bay Sands, Singapore
Website: www.worldcitysummit.com.sg



2.8 Sources

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Recipe to turn used cooking oil into fuel, 2017, Straits Times

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Singapore's 'en-bloc' redevelopment fever may be cooling, 2018, Reuters

Singapore Infrastructure Report, 2018, BMI Research



Sustainable Construction: A Guide on the Use of Recycled Materials, Building and Construction Authority of Singapore

The Development of the Integrated Waste Management Facility, 2018, National Environment Agency of Singapore

The long road to ensuring that Singapore's waste doesn't go to waste, 2018, Channel NewsAsia

Tuas mega port will boost Singapore as a maritime hub: PM Lee Hsien Loong, 2017, Straits Times

Waste Statistics and Overall Recycling, 2018, National Environment Agency of Singapore



3.0 Malaysia

3.1 Malaysia Country Profile

Malaysia in Numbers (2017)	
GDP (USD Billion)	309.9
GDP - Real Growth Rate	5.4%
GDP Per Capita (PPP) (USD)	28,900
GDP Composition by Agriculture	8.4%
GDP Composition by Industry	36.9%
GDP Composition by Services	54.7%
Total Imports (USD Billion)	163.4
Total Exports (USD Billion)	188.2
Total Population (July 2017 est.)	31,281,992
Urban Population	76%
Literacy Rate	94.6%
Total Area (sq km)	329,847
Land Area (sq km)	328,657
Water Area (sq km)	1,190
Currency	Malaysian Ringgit (MYR)
Exchange Rate per US dollar	MYR 4.343
Official Language	Bahasa Malaysia

Table 18: Malaysia – Key Statistics

Source: Central Intelligence Agency – The World Factbook



Malaysia, home to a population of over 30 million, is one of the more developed economies in South East Asia. The economy is well diversified in terms of sources of growth and revenue. IT is expected to grow by 5.2% in 2018, driven by strengthening domestic demand, improved labor market conditions, wage growth, and improved external demand for Malaysia's manufactured products and commodity exports.

Business and consumer confidence has been boosted by the country's strong economic performance, relatively low unemployment rates and the government's commitment and initiatives to transform the economy, as it implements a 10-year investment plan that aims to mobilise USD 444 billion in investments

to 2020. The government is encouraging local players to move up the value chain, as the country aims to achieve a high-income status by 2020.

Malaysia offers a competitive business environment, backed by its open investment policies and well-developed financial market. Rule of law, political stability and a well-educated labor force are notable assets that have helped to give the country a high ranking on the World Bank's Ease of Doing Business Index 2018 – Malaysia has been ranked 24th out of 190 economies in the report. Malaysia is also ranked as the 23rd most competitive economy in the World Economic Forum's Global Competitiveness Report 2017/2018.



3.2 Overview of the Infrastructure / Building & Construction Sector

The construction sector makes up an important part of the Malaysian economy due to the amount of industry linked to it and the number of people it employs. It is considered one of the most substantial economic drivers for Malaysia. The value of the construction industry is estimated at USD 15 billion with an estimated growth of 6.6% year-on-year for 2017, driven mainly by the **civil engineering** industry.

Malaysia continues to provide a robust and attractive environment for the infrastructure sector. Stable growth, **averaging 5.8% annually**, is expected over the next five years.

- **Foreign investors and contractors** are set to play increasingly important roles in Malaysia's construction industry, especially as the country pursues technologically complex projects for which it lacks industrial capacity.
- **Chinese companies**, in particular, are making inroads in the power and rail transport segments. Chinese state-owned enterprises (SOEs) are pursuing transport and industrial projects in Malaysia as part of Beijing's Belt & Road initiative.

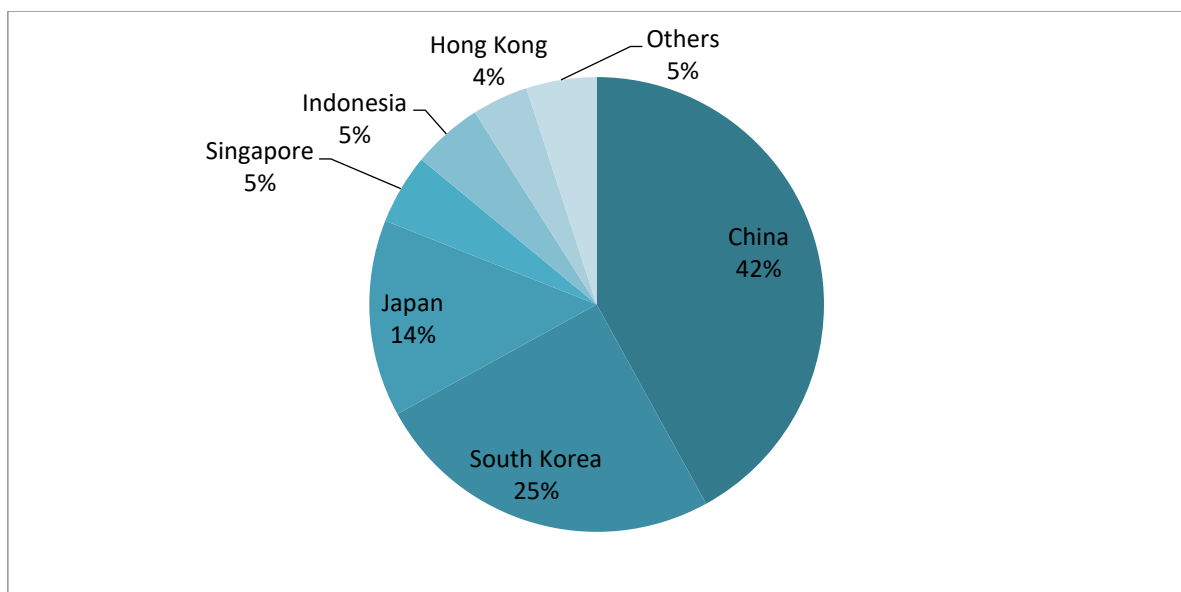


Figure 11: Value of Projects by Foreign Contractors in % (2015)

Source: DBS Group Research

- China-based contractors are particularly aggressive when bidding for private sector building jobs and are even willing to accept part payment for residential units or even market the development overseas.



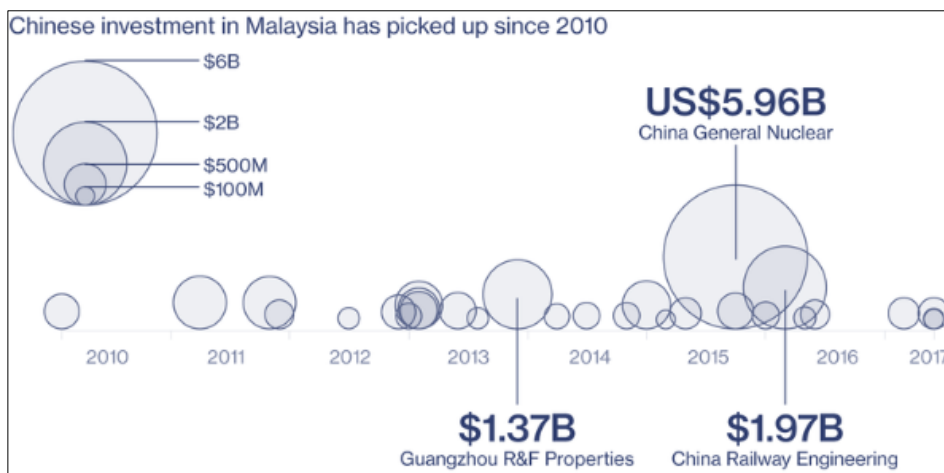


Figure 12: Chinese Investments in Malaysia

Source: Bloomberg

- Among **Malaysian states**, Selangor recorded the highest value of construction work done at 24.5%, followed by Johor at 16.5%, Kuala Lumpur at 15.8%, Sarawak at 8.6% and Penang at 6.4%. The contribution of these five states accounted for 71.8% of the total value of construction work in Malaysia.
- A growing component of the domestic construction industry is represented by **rural infrastructure development**. Even though Malaysia lists is a middle-income country, there remains a sizable developmental gap between the urban, industrialised regions of peninsular Malaysia and the less populated states of Sarawak and Sabah in Borneo. The government is placing strong focus on developing highways and utilities in Borneo, reflecting the high growth potential in these regions.
- It is estimated that the private sector is responsible for around 63% of the investment in the domestic construction industry. **The private sector** continues to steer Malaysia's domestic demand with the bulk of private investment driven by ongoing infrastructure projects. Growth in the construction sector continues to be propelled by rail infrastructure projects, urban housing and affordable housing segments.

The **11th Malaysia Plan** (2016 – 2020) has placed a large priority in public transportation and inter-modal connectivity specifically, with USD 65 billion provided for development expenditure for the five-year period. The focus areas cover enhancing knowledge content, driving productivity, fostering sustainable practices in the construction value chain and increasing internationalisation of the sector.

- The 11th Malaysia Plan has also laid out the government's intention to introduce the further usage of **ICT and innovative technology** to ensure green practices are incorporated into developments. The government aims to increase the labour productivity of the sector



by 1.6 times by 2020. To achieve this, the plan urges the sector to adopt construction methods that leverage modern technology, as well as increase the capabilities of low-skilled labour.

- The Government, through the Malaysian Investment Development Authority (MIDA), is on track to achieve an additional investment of USD 500 million for approved projects that use the **industrialised building system (IBS)** by 2020, which has been successfully adopted in Finland, Sweden, Japan, Germany and Singapore

Key projects driving the Malaysian sector include:

Railways

- The **Kuala Lumpur–Singapore high-speed rail (HSR)** project was announced by the previous Malaysian Prime Minister Najib in September 2010 to connect Kuala Lumpur and Johor Bahru with Singapore. In 2013, Singapore and Malaysia officially agreed to build a high-speed rail link between Kuala Lumpur and Singapore by 2026. However, the new government in Malaysia is reviewing the project due to the perceived high costs and national liabilities for Malaysia at USD 250 billion, exceeding 80% of GDP. There is a strong possibility that the project might be cancelled.
- China and Malaysia started in 2017 the construction on the **USD 13 billion East Coast Rail Link (ECRL)** project in Malaysia, which is being developed as a part of China's 'Belt and Road' initiative. The 688km rail line will run through the Peninsular Malaysia and is expected to connect various ports at the South China Sea towards the Thailand border in the east with the Straits of Malacca's shipping routes in the west. The project might be delayed as it is being reviewed by the new government under PM Mahathir Mohamad.

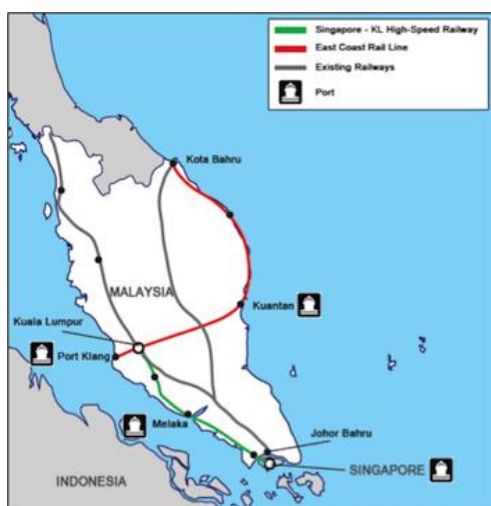


Figure 13: Existing and Planned Railways
Source: Land Public Transport Commission



Roads

- The **Pan Borneo Highway**, also known as Trans-Borneo Highway or Trans-Kalimantan Highway is a road network on Borneo Island connecting two Malaysian states, Sabah and Sarawak, with Brunei and Kalimantan region in Indonesia. It is three times longer than the country's current longest expressway – the North-South Expressway, which runs for 772km from Bukit Kayu Hitam in Kedah near the Malaysia-Thai border to Johor Bahru.



Figure 14: The Pan Borneo Highway

Source: The Star

- The **Penang Undersea Tunnel** is a tunnel where construction began in 2016 in Penang, Malaysia. The 7.2 km tunnel will connect Butterworth, Seberang Perai in the east to George Town, Penang Island in the west. When completed on 2025, it will become the first undersea tunnel in Malaysia and the second in South East Asia. The tunnel is being built by Consortium Zenith BUCG, a group consisting of Malaysia companies Zenith Construction, Sri Tinggi, and Juterias, as well as Chinese state-owned construction companies Beijing Urban Construction Group (BUCG) and China Railway Construction (CRCC).

Airports

- Malaysia is home to one of the region's largest aviation markets, its airports are relatively well developed and there are few large-scale projects on the horizon.

Ports

- It is expected that there will be substantial investment in smaller, secondary ports along the east coast and Eastern Malaysia over the next ten years.



- Two ports, one in **Kuantan** and one in **Melaka**, are being expanded in conjunction with neighbouring China-backed industrial development projects. It is expected that the port of Kuantan, on Malaysia's east coast, will become a particularly strong focal point as it would shorten shipping times between China and Malaysia via the South China Sea.

3.3 Overview of the Construction & Demolition Recycling Market

Official statistics show that waste generation from the construction industry has significantly increased. The United States Environmental Protection Agency estimates that 170 million tonnes of building-related Construction & Demolition (C&D) waste materials were generated in 2003, rising to **200 million tonnes per year in 2016**.

Malaysia's C&D waste recovery rate remains at less than 50 %, a poor level attributed to a lack of institutional supporting policy, recycling programs, and recycling facilities in major cities.

The construction industry has accounted for approximately 41% of the total solid waste generation in Malaysia. Construction waste generated in Central and Southern Malaysia, alone, accounts for 28.34%.

Malaysia's construction industry lacks awareness of waste recycling. **Dumping is seen to be easiest and most efficient way to manage waste**. The current practice on-site is to dump everything except reselling just scrap metal with values approximately about RM 500 – RM 1000 (USD 138 – 278) per ton. Waste generated on site is managed by waste sub-contractor charging an average of RM 450 (~ USD 125) per truckload for dumping. Sub-contractor will then transport waste either to illegal dump site, to landfill, or some reusable items (plywood, timber, and paper) will be resold.

The Malaysian construction industry is generally considered a **late-adopter** of relevant technologies, due to the association of new methods with new risk and additional costs.

3.4 Overview of the Aggregates, Mining & Quarrying Sector

Malaysia has historically been a major source of tin. Most of the high-grade tin **reserves in the country have been depleted**, however, or were under developed lands. Malaysia had tin-associated mineral resources, such as ilmenite, monazite, struverite, and zircon. Malaysia also had identified mineral resources of barite, bauxite, clays, coal, copper, gold, iron ore, limestone, natural gas, petroleum, silica, and silver. After many years of exploitation, however, such minerals as barite, copper, and ilmenite were depleted. During the 20th century, mineral production played an important role in Malaysia's national economy. Today the mining and quarrying activity accounts for around **7.5% of the country's GDP**. In 2015, **869 establishments** were involved in the mining and quarrying sector, as compared to 402 establishments in 2010.



Malaysia’s mineral resource industry (excluding oil and gas) experienced a **decline in 2016** due to falling demand and low prices for most metals and minerals. The single largest decline was in the production of **bauxite** which fell by 95% year-on-year both in volume and value terms due to the continuing moratorium imposed on bauxite mining throughout the year.

Malaysia’s **gold production** comes from its 8 mines in Pahang, Kelantan and Terengganu. As of 2015, Pahang alone accounted for **74% of the country’s output**. Gold is primarily exported to Australia, Singapore, Switzerland, Hong Kong, the United Arab Emirates and Thailand. Malaysia lacks gold refineries, as most of the precious metal, after being smelted, is exported to be refined in other countries especially by major miners.



Figure 15: Malaysia’s Gold Belts
Source: Monument Mining

Malaysia’s **tin reserves are ranked as the world’s third largest**. Moreover, Malaysia is among the world top ten producers for refined tin, rare earths and mined tin.

The main challenges faced by the tin mining industry in Malaysia today are the lack of available land for mining, the short period of mining lease, as well as the small area of mining tenement granted by the state authorities.

Mineral	Production (Tonnes)	Value (USD Million)	No. of Mines	No. of Workers
Metallic Mineral				
Tin	4,071	70.4	32	1,406



Mineral	Production (Tonnes)	Value (USD Million)	No. of Mines	No. of Workers
Metallic Mineral				
Bauxite	342,924	10.0	2	23
Gold (kg)	2,149	89.3	8	1,357
Ilmenite	4,316	0.3	N/A	N/A
Iron Ore	1,847,370	70.3	34	776
Manganese	681,667	20.0	9	147
Associated Minerals	7,716	7.9	N/A	N/A
Non-Metallic Mineral/Industrial Mineral				
Aggregates	182,555,773	800.7	N/A	N/A
Clays	9,371,395	20.7	N/A	N/A
Feldspar	326,648	5.1	5	83
Kaolin	284,023	7.7	18	305
Limestone	27,186,547	93.6	N/A	N/A
Sand & Gravel	46,664,561	211.0	N/A	N/A
Silica sand	10,353,297	114.3	N/A	N/A
Energy Mineral				
Coal	1,332,600	40.3	5	754

Table 19: Mineral Statistics, 2016

Source: Malaysian Chamber of Mines

Metallic and non-metallic mineral-processing facilities are operated by **private companies incorporated in Malaysia**. The state-owned Petroliaam Nasional Berhad (Petronas), together with its subsidiaries, operated as an integrated oil and gas company in Malaysia and internationally. Petronas engages in the exploration, development, production (liquefaction, manufacturing, and refining), transportation, and sale (trading and marketing) of crude oil and natural gas products (liquefied natural gas and petroleum). It also owns and operated a network of retail stations

The mining and quarrying sector comes under the purview of the **Ministry of Natural Resources and Environment (NRE)**. The Government established a National Mineral Council (NMC) in 1998 to oversee the overall integrated development of the mineral industry and to assure such development would meet its policy objectives.

Some of the most important recent developments in the Malay mining industry include:

- In 2016, Malaysia decided to **halt the mining of bauxite** in Pahang, the largest producing state, for three month, in an attempt to cut sea and air pollution caused by the sector in the past two years. The ban was extended by a further three months. From January to



November 2015, Malaysia shipped some 20 million metric tons of bauxite to China, the world's biggest aluminum producer. That was nearly half China's total bauxite imports and a sharp increase from 3.25 million tons in the same period in 2014.

- Recent studies have shown how rising prices for minerals have made it viable for **companies to explore deposits**, everything from iron ore to gold, to satisfy demands from growing economies, especially China and India. Untapped gold, iron ore and tin ore deposits from Perak, Kelantan, Terengganu, Pahang to Johor are already drawing cash-rich **foreign companies from China to Australia**, that pumping in millions of ringgit to extract these minerals.

3.5 Overview of the Municipal Waste Sector

Malaysia generates more than 25,000 metric tonnes of domestic waste per day. At present, the average per capita generation of municipal waste in Malaysia is **about 0.85 kg/person/day** depending on the economic and geographical status of an area. In major cities, such as Kuala Lumpur, it is estimated that the generation of waste is about 1.5 kg/person/day.

Authorities in most major cities in Malaysia are seeking for an alternative waste management approach as the landfill approach currently adopted becomes unsustainable due to rapid development and lack of new landfill spaces. In response to that, the Malaysian government, as part of the 10th Malaysia Plan (2011-2015), adopted waste recycling as a long-term strategy for municipal waste management.

Among the more than 25,000 metric tonnes of waste generated daily as mentioned above, 45% are organic waste (food waste), 24% are plastics, 7% paper, 6% metal and 18% are glass and others as shown in the table below. Mechanism of separation at source between recyclables and non-recyclables are done voluntarily.

Type of Waste	Percentage
Organic (Food)	45%
Plastic	24%
Paper	7%
Metal	6%
Glass & Other	18%
Total	100%

Table 6: Waste Composition Generated per Day in Peninsular Malaysia

Source: MJIT

The waste generated is then disposed at **166 disposal sites** in the country, which cater for up to 95% of Malaysian waste. Of these, only 10 are sanitary landfills while the rest are open dumps. More sanitary landfills are under various stages of implementation and construction.



However, about 80% of these dumps have almost reached full capacity and are expected to be shut down over the next few years. At the moment, the country only has one waste to energy production (WTE) plant located in the central region and 4 mini incinerators under various stages of implementation in Langkawi, Tioman and Pangkor Island plus one in Cameron Highlands.

State	Landfills in operation		Landfills not in operation	Total
	Sanitary	Non - Sanitary		
Johor	1	13	23	37
Kedah	1	7	7	15
Kelantan	-	13	6	19
Melaka	1	2	5	8
N. Sembilan	-	7	11	18
Pahang	-	16	16	32
Perak	-	17	12	29
Perlis	-	1	1	2
Pulau Pinang	1	2	1	3
Sabah	-	19	2	21
Sarawak	3	46	14	63
Selangor	3	5	14	22
Terengganu	-	8	12	20
WP KL	-	0	7	7
WP Labuan	-	1	0	1
Total	10	156	131	297

Table 7: Landfills in Malaysia

Source: Solid Waste Management Lab

Due to increasing lack of space for new landfills, authorities in major cities in Malaysia are studying other waste management approaches. Among them is an approach to move away from unsanitary landfills due to emissions of greenhouse gases (GHG) such as methane and carbon dioxide.

More than 70% of generated waste is collected using both curbside and communal centres with a collection frequency varying from daily to every two days. In addition, both compactor trucks and open lorry trucks are used. Landfilling is the main disposal method practiced; about 90 - 95% of the collected wastes is still disposed in landfills, with a **recycling rate of 5 -10%** despite the fact that 70 - 80% of the waste is recyclable.

Malaysian solid waste contains a very high concentration of organic waste. The MSW (municipal solid waste) also contains high moisture content and has a bulk density above 200



kg/m³. Besides, a waste characterisation analysis has found that the **main components of Malaysian waste** were food, paper, and plastic which comprise 80% of overall weight.

As a result of increasing pressures to deal with the high amounts of solid waste, the Government of Malaysia has established a national **recycling target of 22% by 2020**. Population growth, rapid urbanisation, land availability, access to appropriate funding for improving the waste infrastructure, and a lack of technological advancements have all contributed to the Government's decision to establish a national recycling target and to move waste management to the centre of its policy mandates.

The 11th Malaysia Plan (2015-2020) puts a strong emphasis on **waste as a resource for power generation** and aims to recycle it in waste-to-energy projects. The Government of Malaysia is also increasingly seeking to incentivise local and international companies, to assist the waste management sector to develop waste-to-energy programmes in order to re-utilise waste for other uses.

3.6 Overview of the Biomass Sector

Malaysia is a country rich with natural resources and active agricultural activities. The **country's palm oil industry is the second largest in the world** in terms of production, behind Indonesia, and remains one of the most important sectors for the economy and the largest contributor to the country's biomass resources. Malaysia accounts for 29% of the world's palm oil production and 37% of the world's exports. The palm oil sector is the fourth largest contributor to the national economy. However, out of palm oil processing yield, only 10% are finished products (i.e. palm oil and palm kernel oil), while the remaining 90% are harvestable biomass waste.

The majority of the oil palm biomass has traditionally been left in the fields, or returned as a soil amendment and organic fertiliser. However, the potential to utilise the share of this biomass for a variety of end uses, including pellets, bioenergy, biofuels and bio-based chemicals is significant.

The green waste in Malaysia generally comes from forest and mill residues, wood wastes, agricultural and livestock wastes, and domestic garbage. As a result, there are six main types of biomass sources in Malaysia. These include: palm-based biomass, such as empty fruit bunches, kernel shell, mesocarp fibres and liquid effluent; manure; municipal solid waste; forest residue and wood waste; dedicated biomass crops; and other agricultural wastes, such as rice husk, straw, sugarcane and bagasse. **Oil palm plantations account for 94% of biomass feedstock.**

Within Malaysia, the states of **Sabah, Sarawak and Johor** are the main producers of crude palm oil (utilisation rates of palm oil mills were 77.8% in 2016). Unsurprisingly, these areas are also the key regions for the biomass industry.



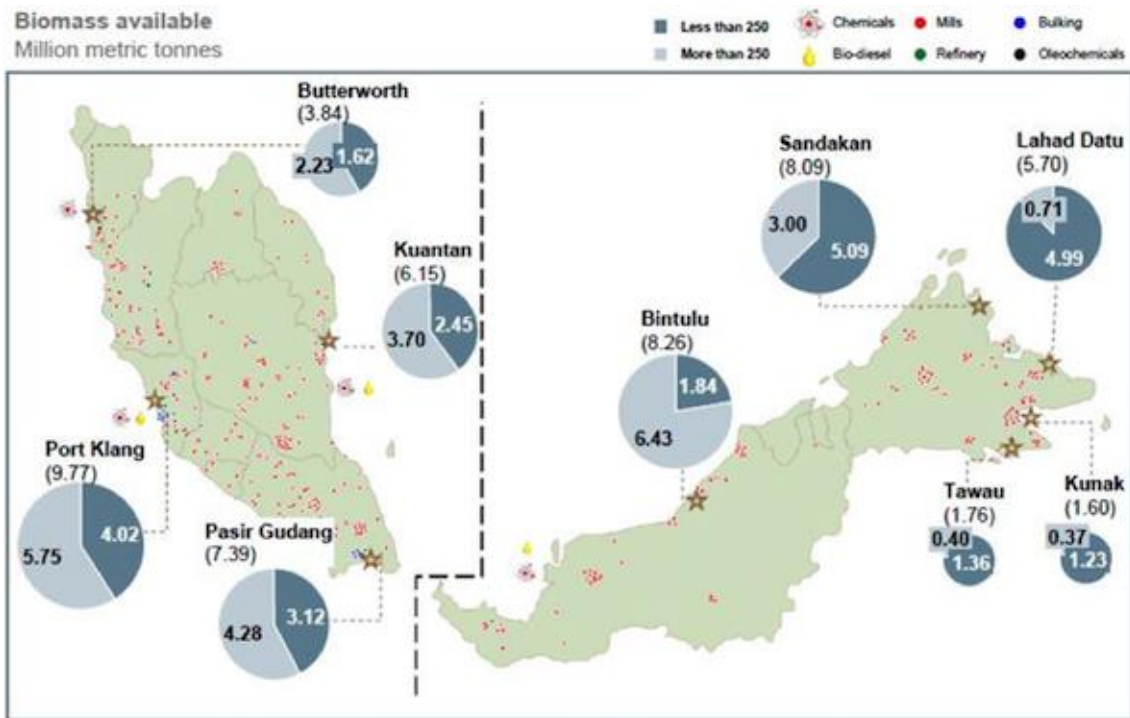


Figure 16: Biomass Availability in Malaysia
 Source: Solid Waste Management Lab

In addition to palm oil biomass, it is estimated that 1.975 million m³ of **wood residues** are generated every year in Malaysia.

Some interesting developments related to Malaysian biomass industry are listed below:

- The government of Malaysia has placed a target of reducing greenhouse gas emission by 40.0% by 2020. Consequently, it plans to increase the share of renewable energy in the country’s total energy mix from 2.0% in 2015 to 11.0% by 2020. For this, the government plans to build a **1,250 MW solar power plant and a 1,250 MW biomass plant** by 2020 under the PPP model.
- With the introduction of **Feed-in-Tariff (FiT) for biomass-to-energy projects**, Malaysia has already started utilising biomass for power generation purposes, including in remote areas of Tasik Bera in Pahang, the areas of Sabah, and Mukah in Sarawak.
- In 2016, the previous Prime Minister Datuk Seri Najib Tun Razak launched the **Sabah and Sarawak Biomass Industry Development Plan**. In 2017, POIC Trading Sdn Bhd, BELL Corporation Sdn Bhd and My Clean Energy Sdn Bhd, signed a Memorandum of Understanding (MoU) to move towards setting up a **satellite biomass collection centre** in Sabah.



3.7 Market Entry Considerations

Local competitive landscape

As Chapter 8.0 shows in detail, a wide array of companies from Japan, Europe, and the United States have established their presence in Malaysia, whose market is one of the most developed in South East Asia. Most Malaysian companies, similarly to other markets in the region, are not manufacturers but distributors of foreign brands. Malaysian distributors rely on strong relationships with domestic end-users, making the market challenging for new entrants without competitive product advantage.

Because of the historic development of the mining sector, Malaysia has long been within the target of international material handling companies, and today the growth of the biomass industry, together with the expansion of the construction sector, are strengthening this trend.

Among the leading international players that have entered the Malaysian market are: the British Weir Group, which has a direct presence in the country as well as two manufacturing facilities; the German Wirtgen Group, which relies on sales and services companies in Malaysia; Finnish Metso Corporation, Swedish Sandvik and the Danish FLSmidth which have all entered the market through local distributors and local subsidiaries. American and Japanese companies have also a significant presence in the country.

The 11th Malaysia Plan has also laid out the government's intention to introduce further usage **of ICT and innovative technology** to ensure green practices are incorporated into developments, creating market opportunities for overseas companies with innovative technologies.

Trade Data (import statistics)

The tables below analyses in detail the position of the United Kingdom related to exports of material handling machines and components to Malaysia. In 2017, the UK ranked 7th, its highest, in exporting Crushing or Grinding Machines for Solid Mineral Substances as well as in exporting Printed Books, Brochures and Similar Printed Matter to Malaysia. Japan, China, Germany, the United States, and Singapore are among the UK's competitors and are constantly in the top 5 exporters to Malaysia. Malaysia's highest import in 2017 was Machines and Mechanical Appliances Having Individual Functions with an imported valued of over USD 1 billion. However, it is worth noting that UK's exports of this product category were only USD 26 million or 1.5% of Malaysia's total import value.



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	61,360	59,630	23,568	42,032	-
Japan	6,560	5,449	3,167	12,990	1 st
China	33,136	19,776	7,096	11,473	2 nd
Germany	3,977	20,408	2,401	5,890	3 rd
Sweden	2,020	730	765	3,834	4 th
South Africa	-	1,635	38	2,496	5 th
United Kingdom	2,083	518	2,296	1,050	7 th

Table 8: Imports of Crushing or Grinding Machines for Solid Mineral Substances (HS: 847420) by Malaysia

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	22,153	9,370	5,763	11,330	-
China	1,119	698	930	6,277	1 st
Singapore	1,926	3,220	906	1,853	2 nd
Japan	1,066	905	582	594	3 rd
United States of America	4,580	1,284	866	538	4 th
Hong Kong	863	516	1,144	477	5 th
United Kingdom	5,943	659	220	226	7 th

Table 9: Imports of Printed Books, Brochures and Similar Printed Matter, in Single Sheets, Whether or not Folded (HS: 490110) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	597,589	555,762	432,968	488,138	-
Japan	78,013	75,670	86,406	103,720	1 st
Germany	63,532	48,750	49,822	77,625	2 nd
China	85,411	161,211	78,423	73,072	3 rd
Singapore	89,300	51,381	47,106	45,511	4 th
United States of America	65,993	49,106	47,007	44,644	5 th
United Kingdom	10,137	15,860	6,538	12,552	9 th

Table 10: Imports of Machines and Mechanical Appliances, n.e.s. (HS: 847989) by Malaysia

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	48,584	47,322	53,635	49,838	-
China	24,178	25,505	28,565	28,328	1 st
Germany	5,541	4,978	4,622	5,632	2 nd
Thailand	666	1,496	1,934	2,255	3 rd
Japan	1,818	1,540	3,255	1,877	4 th
Singapore	2,015	1,879	6,958	1,744	5 th
United Kingdom	879	1,635	1,068	874	9 th

Table 11: Imports of AC Motors, Multi-Phase, of an Output > 750 W but <= 75 kW (HS: 850152) by Malaysia

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	1,190,749	1,139,718	989,706	1,693,975	-
China	165,344	232,621	163,309	602,353	1 st
Japan	189,777	207,905	217,613	302,160	2 nd
Germany	134,627	95,265	95,275	182,585	3 rd
Singapore	156,273	117,233	97,089	113,949	4 th
United States of America	125,651	118,224	95,173	100,221	5 th
United Kingdom	24,763	31,396	21,242	25,675	10 th

Table 12: Imports of Machines and mechanical appliances having individual functions (HS: 8479) by Malaysia

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	60,293	54,073	47,845	60,750	-
Japan	5,443	18,191	7,239	20,704	1 st
China	17,720	13,238	13,419	12,920	2 nd
Germany	7,245	2,072	6,168	5,240	3 rd
Korea, Republic of	6,230	1,669	1,356	3,970	4 th
United States of America	1,545	3,586	2,675	2,504	5 th
United Kingdom	2,183	2,238	1,408	1,640	10 th

Table 27: Imports of Mixing, Kneading, Crushing, Grinding, Screening, Sifting, Homogenising, Emulsifying or Stirring Machines, n.e.s. (excluding industrial robots) (HS: 847982) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	56,956	47,638	49,574	51,790	-
China	20,125	16,865	15,364	22,322	1 st
India	2,756	2,303	4,148	4,463	2 nd
Germany	3,007	4,436	5,139	3,984	3 rd
Thailand	2,832	1,555	2,172	3,569	4 th
Japan	5,876	4,946	3,889	3,450	5 th
United Kingdom	2,644	2,254	1,526	930	10 th

Table 28: Imports of Parts of Machinery for Working Mineral Substances of Heading 8474 (HS: 847490) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	41,211	20,766	17,892	22,831	-
China	23,524	6,728	5,713	8,366	1 st
United States of America	779	1,048	2,555	3,533	2 nd
Japan	789	3,393	1,399	2,103	3 rd
Germany	769	1,854	2,658	1,557	4 th
Taiwan	1,498	2,196	853	1,178	5 th
United Kingdom	1,257	743	1,147	258	12 th

Table 29: Imports of Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, Incl. Those in Powder or Paste Form (HS: 847410) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	17,662	21,407	29,765	26,909	-
China	9,641	8,474	22,870	10,277	1 st
Korea, Republic of	335	2,705	306	6,117	2 nd
Germany	235	157	450	4,219	3 rd
Viet Nam	-	1,833	-	1,830	4 th
Taiwan	174	143	218	924	5 th
United Kingdom	76	36	4	6	18 th

Table 13: Imports of Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	35,048	25,033	16,069	27,609	-
Japan	5,819	5,591	2,360	9,501	1 st
China	7,779	7,768	5,357	5,590	2 nd
Australia	2,019	1,868	2,180	2,433	3 rd
Singapore	1,802	1,150	641	2,198	4 th
Hong Kong	109	1,507	695	1,803	5 th
United Kingdom	224	365	263	71	19 th

Table 31: Imports Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by Malaysia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	11,625	3,851	1,772	4,000	-
Indonesia	1,260	902	717	2,985	1 st
China	8,693	560	240	433	2 nd
Korea, Republic of	44	41	234	145	3 rd
Japan	171	1,328	106	118	4 th
Taiwan	69	119	88	110	5 th
United Kingdom	5	2	3	-	36 th

Table 14: Imports of Parts and Accessories for Carriages for Disabled Persons (HS: 871420) by Malaysia

Unit: USD Thousand

Source: International Trade Centre

Applicable Tariffs

The table below reveals the average tariffs applied from Malaysia to UK exports of material handling products in 2017. Majority of British exports have a tariff-free status in Malaysia. On the other hand, some products such as AC motors have an average tariff of 15%, the highest for British material handling products. The average tariffs that Malaysia imposes on other British exports are in the range of 0% to 7.5%.

Description	HS Code	Average Tariffs
AC motors, multi-phase, of an output exceeding 750 W but not exceeding 75 KW	850152	15.00%
Buckets, shovels, grabs and grips for machinery of heading	843141	7.50%



Description	HS Code	Average Tariffs
8426, 8429 and 8430		
Continuous-action elevators and conveyors for goods or materials, belt type (excluding those for underground use)	842833	5.00%
Machines and mechanical appliances, n.e.s.	847989	1.63%
Wheelchair parts n.e.s.	871420	0%
Machines and mechanical appliances having individual functions	8479	0%
Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines, n.e.s.	847982	0%
Parts of machinery for working mineral substances of heading 8474	847490	0%
Crushing or grinding machines for solid mineral substances	847420	0%
Sorting, screening, separating or washing machines for solid mineral substances, incl. those in powder or paste form	847410	0%
Printed books, brochures and similar printed matter, in single sheets, whether or not folded	490110	0%

Table 33: Average Tariffs Applied by Malaysia to UK Exports in 2017

Source: International Trade Centre

Barriers to entry

Malaysia's ease of trading across borders remains highly ranked in international comparisons. However, is it not a totally free and open market, Malaysia's import barriers are aimed at protecting the environment and strategic sectors as well as maintaining cultural and religious norms.

Malaysia is not party to the WTO Government Procurement Agreement, and as a result foreign companies do not have the same opportunity as some local companies to compete for contracts, and in most cases are required to take on a local partner before their bids will be considered. In domestic tenders, preferences are provided to Bumiputra (Malay) suppliers over other domestic suppliers. In most procurement, foreign companies must take on a local partner before their tenders will be considered. Procurement often goes through middlemen rather than being conducted directly by the government. The procurement can also be negotiated rather than tendered. International tenders generally are invited only where domestic goods and services are not available.



3.8 Useful Information

Key Government Agencies

The Ministry of Urban Wellbeing, Housing and Local Government (KPKT). KPKT is a ministry of the Government of Malaysia that is responsible for urban wellbeing, housing, local government, town planning, country planning, fire and rescue authority, landscape, solid waste management, strata management, moneylenders, pawnbrokers.

Contact Information

Address: Kementerian Kesejahteraan Bandar Perumahan dan Kerajaan Tempatan No. 51, Persiarana Perdana Presint 4, 62100 Putrajaya Malaysia
Phone: +603 8000 8000
Website: www.kpkt.gov.my

The Ministry of Natural Resources (NRE). This is a ministry of the Government of Malaysia that is responsible for natural resources, environment, pollution, contamination, biosafety, lands, mines, minerals, geoscience, irrigation, drainage, hydrology, biodiversity, wildlife, national parks, forestry, marine park, surveying, mapping and geospatial data, climate change.

Contact Information

Address: Wisma Sumber Asli, No.25 Persiaran Perdana, Presint 4, 62574 Putrajaya, Malaysia
Phone: +603 8000 8000
Website: www.nre.gov.my

Construction Industry Development Board (CIDB). With the aim of enhancing the capacity and capabilities of local construction sector, CIDB Malaysia seeks to ensure and improve productivity and quality of construction operations by offering various services and assistance to local companies. Accreditation and training services, research and consultancy services, export promotion services, and provision of data are some of the services offered by CIDB Malaysia.

Contact Information

Address: Level 10, Menara Dato' Onn Putra World Trade Centre, No 45, Jalan Tun Ismail 50480 Kuala Lumpur, Malaysia
Phone: +60 3 4047 7000
Website: www.cidb.gov.my

Associations

The Master Builders Association Malaysia (MBAM). The association primarily seeks to protect the interests and serve as a representative body for its members. MBAM strives for the development and enhancement of Malaysia's construction industry via means such as training



programs, business networking events as well as joint-effort studies with the government in solving issues encountered in the industry.

Contact Information

Address: Persatuan Kontraktor Binaan Malaysia No. 2, Jalan 2/109E, Desa Business Park, Kuala Lumpur, Wilayah Persekutuan, Malaysia
Telephone: +60 3 7984 8636
Website: mbam.org.my

Malaysia Heavy Construction Equipment Owners' Association (PAJPBM). With nearly 500 members, PAJPBM brings together almost all heavy equipment owners in Malaysia with the aim of fostering better communication, business practices and fairer industry environment for its members. Companies registered under the associations stand a better chance at networking with fellow counterparts in the industry.

Contact Information

Address: No.32-01, Jalan 9/23A, Medan Makmur Off Jalan Usahawan, 53200 Setapak Kuala Lumpur, Malaysia
Phone: +60 3 4143 6830
Website: pajpbm.com

The Machinery and Equipment Manufacturers Association Of Malaysia (MEMA). The association seeks to promote the improvement and development of heavy equipment industry in Malaysia by advancing mutual cooperation between members, promoting sharing of technological information, facilitating communication between government and public with its members, as well as promote the interests of the members in both local and global markets.

Contact Information

Address: Lot 586, 2nd Mile, Jalan Batu Tiga Lama 41300 Klang, Selangor, Malaysia
Phone: +60 3 3349 5493
Website: www.mema.org.my

The Malaysia Biomass Industries Confederation (MBIC). The Confederation is formed by the Honouree members of the EU-Malaysia Biomass Entrepreneurs Nurturing Programme (EUM-BENP), a flagship project of the EU-Malaysia Biomass Sustainable Production Initiative (Biomass-SP), a development cooperation project between the European Union (EU) and Malaysian Government.

Contact Information

Address: 20 Jalan Diplomatik, Presint Diplomatik, 62050 Putrajaya, Malaysia
Phone: +(6) 03 8884 8922
Website: www.biomass.org.my



Trade Exhibitions

METALTECH MALAYSIA 2019. Being Malaysia's largest exhibition for the metalworking and machine tool industries, METALTECH has truly been the flagship event for over two decades, METALTECH is world renowned by the manufacturing industries as the most effective platform for suppliers to launch their new products and services to local and regional buyers, gaining new contacts and attaining new businesses.

Dates: 22 - 25 May, 2019
Location: MITEC
Website: www.metaltech.com.my

Ecobuild Southeast Asia is the leading event for sustainable design, construction, energy and the built environment. Ecobuild SEA is organised by UBM Malaysia, hosted by Construction Industry Development Board (CIDB) Malaysia and held in conjunction with **International Construction Week (ICW)** with co-located events Greenbuild Asia, Ecolight Asean, Construction Showcase, Malaysia IBS International Exhibition (MIIE) and Construction Career Fair.

Dates: 19 - 21 March, 2019
Location: MITEC
Website: www.metaltech.com.my

Palmex Malaysia 2018 is the only specialised Palm Oil Expo in Malaysia from: 24-26 July 2018 at Sibü Trade and Exhibition Centre(STEC), Sarawak. Palmex Malaysia 2018 brings together an international congregation of both upstream and downstream palm oil companies and also its supporting industries gathered in the heart of the Malaysian Palm Oil industry in Sarawak to showcase the latest development in the palm oil industry.

Dates: 25 - 26 July, 2018
Location: Sibü Trade and Exhibition Centre(STEC)
Website: asiapalmoil.com

3.9 Sources

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4.0 Indonesia

4.1 Indonesia Country Profile

Indonesia in Numbers (2017)	
GDP (USD Billion)	1,011
GDP - Real Growth Rate	5.2%
GDP Per Capita (USD)	12,400
GDP Composition by Agriculture	13.9%
GDP Composition by Industry	40.3%
GDP Composition by Services	45.9%
Total Imports (USD Billion)	142.3
Total Exports (USD Billion)	157.8
Total Population (July 2017 est.)	260,580,739
Urban Population (2017)	55.2%
Literacy Rate	95.4%
Total Area (sq km)	1,904,569
Land Area (sq km)	1,811,569
Water Area (sq km)	93,000
Currency	Indonesian Rupiah (IDR)
Exchange Rate per US dollar	IDR 13,483.00
Official Language	Bahasa Indonesia

Table 15: Indonesia – Key Statistics

Source: Central Intelligence Agency – The World Factbook



The largest economy in South East Asia, Indonesia – a diverse archipelago nation of more than 300 ethnic groups – has charted impressive economic growth since overcoming the Asian financial crisis of the late 1990s. Today, it is the world’s fourth most populous nation, the world’s 8th largest economy in terms of purchasing power parity, and a member of the G-20. Its economy, which is valued at USD 1.011 trillion, comprises nearly half of ASEAN’s economic output, and is forecasted to grow by 5.3% in 2018.

It has a young, growing and rapidly urbanising population that makes the country one of the fastest growing consumer markets in the world. Its gross National income (GNI) per capita is USD 3,440.

Indonesia recorded a trade surplus of USD 11.84 billion in 2017, a nearly 35% increase from the surplus achieved in 2016. Total FDI in 2017 was USD 32.34 billion.

As part of the government’s efforts to accelerate economic growth, stimulate investment, strengthen competitiveness and diversify economy, 16 policy packages have been released starting from September 2015, which aim to reduce over-complicated regulations. Included in



the policy packages are measures to reduce regulatory bottlenecks, secure the legal rights of investors, facilitate international trade, and promote infrastructure investment.

The policy packages have so far managed to move up Indonesia's position in the World Bank's Ease of Doing Business Ranking (2018) to 72nd place out of 190 countries assessed, up 19 places from its spot on the bank's previous list. The country also went up by 15 places from 106 to 91, in the preceding year, making Indonesia one of the 10 biggest climbers. The president's target is for the country to reach rank 40 by 2019.

Given its abundant natural resources; large, productive and young population; political stability; attractive investment climate; and strong focus on developing its infrastructure, Indonesia is poised to transform into a great economic power.

4.2 Overview of the Infrastructure / Building & Construction Sector

Indonesia's economy is stronger, entering 2018, than it has been for a number of years. After growing above 5% in every quarter of 2017, the projection of **growth for 2018 is 5.4%**.

Indonesian construction will grow rapidly. The scale of Indonesia's industry means that even a growth rate aligning with the regional average represents significant additional value creation. According to the Ministry of Public Works and People's Housing, the construction sector contributed 0.5% to national economic growth in 2016. Data from Statistics Indonesia show that construction gross domestic product averaged USD 14.6 billion. In 2017, the **construction sector contributed 10.25% of the overall GDP**. Some key points include:

- Construction activity will remain **focused on the islands of Java** – and particularly the Greater Jakarta Region around the country's capital, **and Sumatra**. Java home to the largest population and most industrialised economy of the country. In 2015, 63% of construction activity was located in Java, according to official data.
- Much of the growth in the construction sector will be driven by **infrastructure development**, with the Indonesian government targeting spend of USD 390 billion between 2015 and 2019. It is expected that approximately half of this will come from the government, one-fifth from State-Owned Enterprises (SOEs) and the remainder from private sector sources.

Sector/Source	State budget	Regional budget	SOEs	Private	Total
Roads	340	200	65	200	805
Railways	150	-	11	122	283
Sea transportation	498	-	238	164	900
Air transportation	85	5	50	25	165



Sector/Source	State budget	Regional budget	SOEs	Private	Total
Land transportation (River, lake, and ferry transportation)	50	-	10	-	60
Urban transportation	90	15	5	5	115
Electricity	100	-	445	435	980
Energy (oil & gas)	4	-	152	352	507
ICT	13	15	27	223	278
Water resources	276	68	7	50	401
Drinking water and waste	227	198	44	30	499
Housing	384	44	13	87	528
Total	2,216	545	1,066	1,692	5,519

Table 16: Allocation of Funding for 2015-2019 Infrastructure Development

Source: PwC

Unit: IDR trillion

- Foreign investors face challenges competing with dominant (and politically-connected) state-owned firms in the construction and infrastructure sectors.
- Despite the bullish outlook for construction, the Indonesian **cement industry** is currently operating at only **60% of capacity**, following rapid expansion in the sector that has outpaced demand.
- A significant challenge for the sector is the **high price of building materials**, particularly imported ones. The property boom of recent years has driven up demand, while inadequate transportation infrastructure adds a logistical element to the cost of materials. However, local and foreign cement makers have begun to invest heavily in Indonesia to increase their output. Much the same is true for steel makers. Moreover, regulations compelling mining companies to refine metal minerals in the country rather than exporting unprocessed ores are spurring investment in smelters.

The vast majority of Indonesia's more than **100,000 registered building** firms are small companies that cannot take on large-scale projects, with relatively few companies in the medium-size segment and a distinct lack of specialised, niche players. The market is in for a significant degree of consolidation in reaction to toughening competition.

- Indonesia's **public sector** is the most important pillar of its fast-growing construction industry, and it has benefitted significantly from President Widodo's infrastructure development agenda. The largest **state-owned construction companies** in Indonesia are Wijaya Karya (WIKA), Waskita Karya, Pembangunan Perumahan and Adhi Karya. All are listed on the Indonesia Stock Exchange and benefit from **preferential treatment** in public



sector contract awards. State-owned enterprises have displayed a strong financial performance in recent years thanks in large part to public infrastructure development.

- Leading **private-sector players** include Nusa Raya Cipta and Total Bangun Persada, which have likewise seen very impressive revenue and profit growth over recent years, while their project portfolio relies to a greater degree on commercial property. Global construction companies, many of which have their headquarters in Japan or China, have a strong foothold in Indonesia, particularly in complex infrastructure projects. Local companies are generally hard-pressed to compete with foreign companies' level of technical expertise and financial power.

The adoption of **new building technologies** is essential for Indonesia to meet its infrastructure goals. BIM or Building Information Modelling is currently the most promising of such; being implemented in the Gran Rubina Complex project in Jakarta to help managers in following another trend in the industry - sustainable and green construction standards. The use of building technologies **and green, sustainable performance products** in the construction market will become greatly popular on the back of mounting projects and building standards in Indonesia.

Key projects driving the Indonesian sector include:

Railways

- In March 2018, the Transportation Ministry announced its plan to open a tender for **Makassar – Parepare railway** infrastructure construction project in October 2018. He explained that the project will be handled under a Public-Private Partnership (PPP) scheme, or to be more precise, an availability payment (AP) scheme with a value estimated at USD 21 million billion per year and a concession period of 20 years.
- On May 2018 the government of Indonesia declared it is seeking ways to accelerate a USD 5 billion high-speed rail project - being built by a consortium of local and Chinese state firms. The **Jakarta-Bandung high-speed rail line**, the first for the country, is a flagship project of President Joko Widodo and was awarded to China in 2015 after a contentious race with Japan. The planned high-speed railway will connect Jakarta and Surabaya, Indonesia's two largest cities.



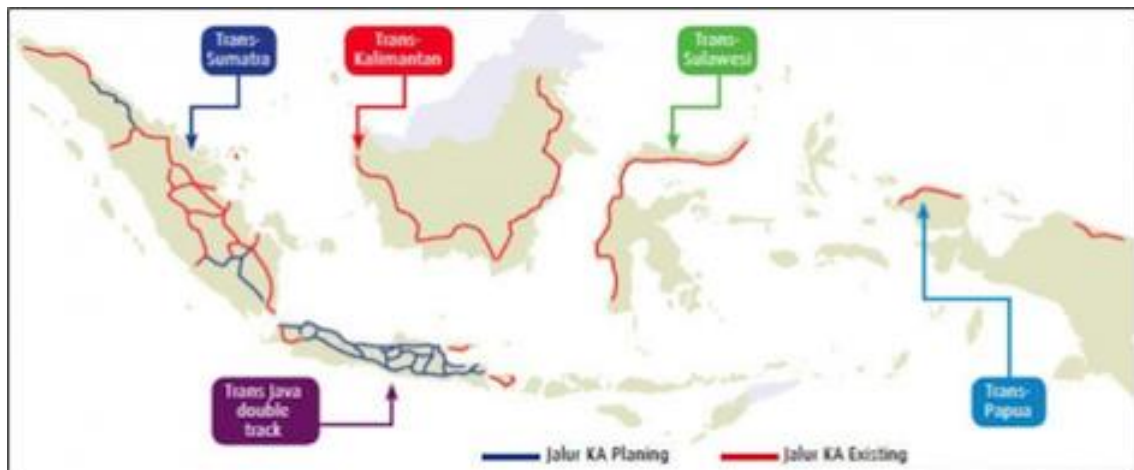


Figure 17: Railway Developments in Indonesia

Source: The Jakarta Post

Roads

- The Indonesian government has targeted the building of a longer than **645 km expressway** called the ‘**Trans Sumatra**’ by the end of 2019. Approximately 73.7 kilometres of the toll ways were planned to be constructed during 2017, 438.3 kilometres in 2018 and the rest will be finished in 2019. Pelabuhan-Bakauheni and Lematang-Kota Baru toll ways construction was completed in March 2017. The other two toll ways, namely Medan-Binjai and Kualanamu-Tebing Tinggi toll ways were officially opened in October 2017.

Airports

- Efforts to expand **Soekarno-Hatta International Airport (SHIA)**, the country’s main aviation facility, are ongoing. In February 2018 it was reported that progress was made with land acquisition required for a third runway. Authorities expect the runway to be completed in 18 months, bringing the airport’s handling capacity from 81 to 114 plane movements per hour.
- Airport operator **Angkasa Pura II**’s broader expansion plans for the next five years are expected to cost a total of USD 6.9 billion, with most of this to be channelled into SHIA and airports in Sumatra. The airport operator also has plans in the pipeline to build a fourth terminal at SHIA, which it expects to be ready by 2022, and to revamp terminals one and two by 2020.

Ports

- The government of Indonesia launched its “**maritime highway**” program, meant to revive existing ports and build new ones across the far-flung Indonesian archipelago. To achieve



this, the government will require USD 55.4 billion to develop 24 commercial seaports and more than 1,000 domestic ports, and procure vessels for its marine-highway program.

- In August 2016, the first of five new terminals opened at **Tanjung Priok port**, the country's main shipping gateway. The New Priok Container Terminal 1, part of a USD 2.5 billion expansion plan, will help alleviate bottlenecks at Tanjung Priok which has been operating beyond its capacity since 2011.

4.3 Overview of the Construction & Demolition Recycling Market

Indonesia **does not have a proper legislation for recycling of construction waste**. The current practice sees dismantling contractors sorting through building waste, disposing everything that is deemed not valuable. In practice, only certain materials and house fixtures are being resold such as doors/windows frames, doors, glass, metal, roofing materials, sanitary fittings, and natural stone tiles. The dismantling contractor only takes those materials that are intact. Everything else, including materials that could be recycled if processed, is disposed.

There are many different kinds of building materials that are resold in Indonesia, but **wood is considered the most valuable**. In Indonesia timber is still largely used as construction material for roof structures, doors and windows frames and for many other applications, and government restriction on timber harvesting have made certain types of wood difficult to obtain. Dismantling contractors capitalise on this, offering an alternative source for wood, especially for some rare wood varieties that are often no longer available in the market.

The use of recycled concrete is slowly gained popularity in Indonesia, and is sometimes used for road construction and for other projects such as the building of airport runways. Some Indonesian-based cement producing companies include processed gypsum as one component of their products, although the quantity used only amounts to a small percentage of the overall ingredients.

While many architects and homeowners in Indonesia appreciate the importance of building sustainably, there is still a long way to go before it becomes rooted in the general practice. Lack of adequate policies, technical know-how and resources are the main reasons. In the country, the use of recycled materials in buildings is a novelty for a select few with green consciousness. Paradoxically, recycled materials are often more expensive than the un-recycled ones due to the special treatment needed for certain materials. Parties involved in the processing of recycled materials often find it difficult to offer attractive rates, also due to the lack of economy of scale, as demand is still scarce.

4.4 Overview of the Aggregates, Mining & Quarrying Sector

Considered a powerhouse in the realm of mineral production, Indonesia's mining sector has long served as a key pillar of economic expansion, acting as a significant **contributor to GDP**



(4.2% in 2016) by attracting much-needed export dollars, while also creating employment opportunities across the nation's diverse landscape. However, soft commodity prices, declining demand from China and regulatory changes intended to promote the down-stream industry have seen the sector's contribution decline in recent years.

Despite this trend, the country's substantial reserves remain attractive assets, with significant production of **coal, copper, gold, tin and nickel**. Indonesia also continues to be one of the world's largest exporters of **thermal coal**. Indonesia ranks 4th among the world's top 10 coal and mining producers, and the country's mining ministry targets investment in the coal and minerals sector in **2018 at USD 6.2 billion**, slightly above the previous year's USD 6.1 billion.

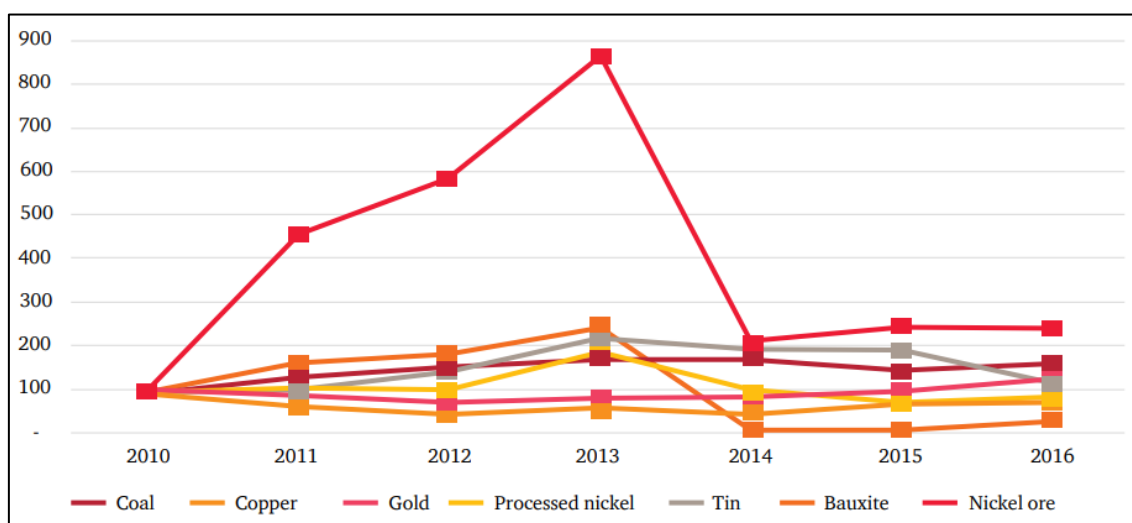


Figure 18: Historical Indonesian Coal and Minerals Production Trends

Base Year 2010 = 100 Tons

Source: PwC

A number of **state-owned mining enterprises hold significant mining concessions**, including PT Timah (Persero), PT Aneka Tambang (Persero) and PT Tambang Batubara Bukit Asam (Persero).

There are no material restrictions or limitations imposed on the **importation of machinery and equipment** to be used for mining activities. Machinery and equipment imported under import duty and import tax facilities must not be transferred or sold to other parties without the import duty or tax being paid. There are no specific requirements and conditions for a particular form of equipment service contract between the mining company and service provider.

The Government continues to work on stimulating the development of **in-country processing facilities** by providing much lower export levies for mining companies which are willing to commit to developing processing/refining facilities.



Exploration spending, particularly in greenfield areas, has been virtually stagnant in Indonesia for a number of years. **Indonesia is yet to capture a fair proportion of the global exploration spending** despite its acknowledged geological potential.

A key concern is the **inadequate supporting infrastructure** to support downstream processing facilities in many areas of the country – meaning that for a miner to develop processing facilities it may also need to develop (or fund) much of the supporting infrastructure, which may not be economically feasible in some cases.

Considering **Indonesia’s regions**, Kalimantan and Sumatra are the most active regions for coal mining; Sulawesi and Maluku for nickel mining; Papua, Nusa Tenggara, Sumatra and Sulawesi for gold and copper mining; Bangka Island for tin mining; Bintan Island and West Kalimantan for bauxite mining; and North Sumatra for lead-zinc mining.



Figure 19: Indonesian Regions

Mining can only be conducted in **areas designated by the Central Government** as open for mining. As such, the Central Government is required to designate the mining areas (referred to in Bahasa Indonesia as Wilayah Pertambangan – “WP”). WPs are categorised as follows:

- Commercial mining business areas (Wilayah Usaha Pertambangan – “WUP”) representing mining areas for larger scale mining;
- State reserve areas (Wilayah Pencadangan Negara – “WPN”) representing areas reserved for the national strategic interest; and
- People’s mining areas (Wilayah Pertambangan Rakyat – WPR”) representing mining areas for small-scale local mining.

Contracts of Work (CoW) are comprehensive contracts between the Government and an Indonesian company. The company could be 100% foreign-owned. However, if the company



was 100% foreign-owned, it may have been subject to divestment requirements. As a practical matter, most CoWs have some level of Indonesian ownership. **The CoW company is the sole contractor** for all mining in the CoW area, other than for oil and gas, coal and uranium. The CoW company has control, management and responsibility for all its activities, which include all aspects of mining such as exploration, development, production, refining, processing, storage, transport and sale. The CoW outlines a series of stages with defined terms:

Stage	Term (years)	Available extension
General survey	1	6 months - 1 year
Exploration	3	1 - 2 years
Feasibility study	1	1 year
Construction	3	-
Production	30	20 years or more if approved by the Government

Table 36: Terms for CoWs for Mining Operations

Some of the most important recent developments related to the Indonesian industry include:

- On January 12 2017 the government of Indonesia decided to **moderate the mineral ore export ban** that was established in 2014, thus putting an end to the prohibition of exporting lower grade nickel ore and bauxite. Temporary export permits which earlier provided for copper concentrates were also extended with immediate effect. Miners will be able to export these ores as long as they show progress toward **building smelters** in a five-year period, such as keeping aside 30% of nickel production for smelting.
- Indonesia's domestic demand for coal was 25% of production in 2016 (up from 15% in 2013), and this level is anticipated to rise in the next years. Indonesia plans to increase power generation by 35 gigawatts (GW) by 2019, of which **20 GW is expected to be generated using coal**. In order to reduce the impact on the current account deficit from oil-based power generation, coal is expected to play a larger role in Indonesia's power sector. Moreover, the domestic industry is seeking to capitalise on growing demand for coal from not only China but also increasingly from other Asian emerging markets such as Vietnam, Malaysia and the Philippines. Many **new coal mining companies** are now set to start operations. There are now about 2,000 mining permit holders that have completed their feasibility studies - or construction at their facilities - and are ready to commence production.
- The government is focusing on developing the **rare earth elements industry**. To develop projects that process rare earth elements, the ministry is establishing a consortium comprising research agencies, such as the Agency for the Assessment and Application of Technology Agency (BPPT), the National Nuclear Energy (Batan), and various universities.



- **Nickel ore production growth** will continue to accelerate in 2018 as Indonesia sees a recovery in production levels. For the next decade, it is forecasted that Indonesia’s nickel industry will grow by 8.1%, in part benefiting from stricter environmental regulations in its biggest regional competitor, the Philippines.

4.5 Overview of the Municipal Waste Sector

The most recent data suggests that approximately **105,000 tons of municipal solid waste is generated daily in Indonesian urban areas**, and quantities continue to rapidly increase, with an expected 150,000 tonnes of waste produced daily by 2025. It is estimated that approximately 40% of solid waste is generated by private households, whereas the remaining percentage is produced by a variety of sources, such as markets (20%), streets (9%), public facilities (9%), offices (8%), and industry (6%). Hence, not only does Indonesia need to increase collection to include roughly 30% of existing urban households currently with no service access, but will also need to contend with the annual increase of about 4,000 tons of solid waste produced every year due to increasing urban populations and rates of waste generation. The **main waste generators** in Indonesia are the capital cities such as Jakarta, Surabaya, and Bandung.

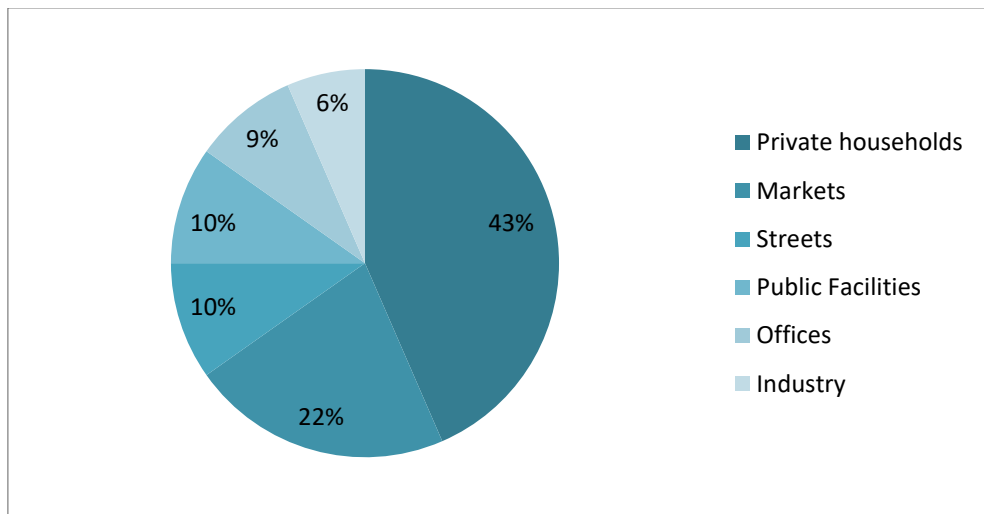


Figure 20: Producers of Solid Waste in Indonesia

Source: World Bank

It is currently estimated that only **70% of Indonesia’s 135 million urban residents have access to waste collection services** and only 55% of urban solid waste is handled at a transfer station or processing facility. However, collection of solid waste **varies widely between cities**. Some cities have strong performance in solid waste management, with high collection rates (>80%), recycling schemes and local budget allocations that demonstrate commitment to the sector. On the other hand, some cities have abysmal performance with low collection rates.



Following decentralisation reforms, the national government's role has been limited to an advisory and regulatory role with **municipal governments as the primary implementers**. The responsibilities of the Ministry of Public Works and Housing (MPWH) in solid waste management are generally (not strictly) limited to providing technical advice, promoting pilot projects, and supervising large-scale off-site solid waste facilities. The Ministry of Environment and Forestry (MoEF) also has an important responsibility for developing policies, formulating regulations, and coordinating efforts in pollution control. However, local governments are ultimately responsible for solid waste management, as established in Presidential Decree No. 2/2002 and reaffirmed in the Waste Management Act (No. 18/2008).

The BAPPEDA (municipal planning agency) and DLH (cleansing services unit) are the **key local government agencies** responsible for the planning and implementation of solid waste management. However, the funds allocated by local governments have been critically insufficient for the high recurrent expenditures needed for collecting waste, and for investments and maintenance of sanitary landfills. In addition, the transfer of solid waste responsibilities to local governments was often not accompanied by a subsequent transfer of the necessary technical skills.

In addition to serious waste collection shortfalls, **final disposal of waste** is also an urgent and challenging issue. Of the 55% of solid waste actually collected and transferred to disposal sites, roughly 60% of the collected waste is not deposited in a sanitary landfill with appropriate environmental and social standards.

Importantly, **Indonesian companies** are able to produce only a **small portion of the industrial waste treatment equipment** that is needed in the country. Most of the equipment is imported and is expected to grow in future together with the increase in production of municipal waste.

4.6 Overview of the Biomass Sector

In recent years, diminishing non-renewable energy sources and an increasing need for more power generation has forced Indonesia to shift gears and refocus its attention on green sectors such as biomass. The country has good potential to produce energy from biomass with a quickly maturing market and steadily improving regulatory environment. As the country sets itself on a path to achieving the 23% renewable energy share in the energy mix by 2025, it is increasingly eyeing opportunities to accelerate the utilisation of biomass for power generation.



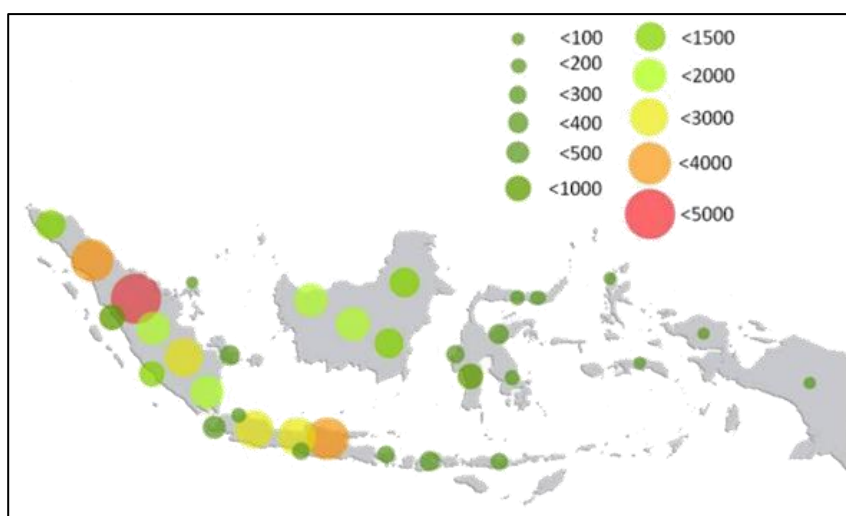


Figure 21: Biomass Potential in Indonesia (MWe)

Source: Fan Way Machinery

Indonesia is currently the **largest producer of biomass** available for energy purposes in the **South East Asian region**. A tropical country with large forestry and agricultural sectors, it has abundant biomass resources. Agricultural residues, including rice husk, bagasse, rubber and waste from the oil palm industry, and the residues from forestry activities, are among the potential resources for biomass-to-energy projects.

It is estimated that Indonesia produces approximately **150 million tons of biomass each year**, equivalent to 470 GJ of energy. According to the Danish Ministry of Foreign Affairs, approximately 15% of biomass resources come from forest sources and 85% from agriculture. The present utilisation of biomass for energy generation, however, reaches only 10% of the total available potential.

No	Potential (MWe)	Sumatra	Kaliman tan	Java-Bali-Madura	Nusa Tenggara	Sulaw esi	Maluku	Papua	Total (MWe)
1	Palm oil	8,812	3,384	60	-	323	-	75	12,654
2	Sugar cane	399	-	854	-	42	-	-	1,295
3	Rubber	1,918	862	-	-	-	-	-	2,781
4	Coconut	53	10	37	7	38	19	14	177
5	Rise husk	2,255	642	5,353	405	1,111	22	20	9,808
6	Corn	408	30	954	85	251	4	1	1,733
7	Cassava	110	7	120	18	12	2	1	271
8	Wood	1,212	44	14	19	21	4	21	1,335
9	Cow dung	96	16	296	53	65	5	4	535
	Total potential	15,283	4,995	7,688	587	1,863	56	136	30,589

Table 37: Biomass Energy Potential in Indonesia

Source: Re4I (2017)



Some interesting developments related to the Indonesian biomass industry are listed below:

- In January 2018, Indonesia's government announced its plans to **expand biodiesel subsidies** to cover consumption of palm oil-blended fuels by the mining sector. The subsidy for a programme known as B20 - referring to a blended fuel with 20% biodiesel content - has previously only been available to the power sector and to fuels sold to the public by PT Pertamina and PT AKR Corporindo. The government is targeting expanding use of palm-blended fuels from an estimated 2.53 million kilolitres (kl) in 2017 to about 3.5 million kl in 2018 - an increase of 38%.
- The first **US-Indonesia municipal waste-to-bioproducts project**, known as JababECO, was officially underway in April 2018 after US vice president Mike Pence participated in a ceremony in Jakarta celebrating the signing of multiple Memorandums of Understanding (MoU).

The municipal waste-to-bioproducts plant will process food waste into bioproducts such as bioethanol, animal feed, fertiliser and distilled water. Over five years, the plant will have a cumulative product sales value of USD 6 billion, using local waste resources to make locally sold bioproducts.

- In April 2018, the Centre for International Forestry Research (CIFOR) signed a memorandum of understanding with Clean Power Indonesia (CPI), starting the "Listrik Gotong Royong," **bamboo-based biomass power generation projects**. CPI is focused on expanding biomass energy development and usage in Indonesia and bringing renewable energies to the most remote places in Indonesia.

Another MoU aim is for the organisations to collaborate on is the expansion of areas using bamboo biomass for energy. CPI has brought electricity to the remote villages of Siberut, but look to expand with CIFOR.

4.7 Market Entry Considerations

Local competitive landscape

Indonesia has one of the most dynamic sectors for mining and construction in South East Asia. Because of the growth of these industries, the market for material handling products is well-developed, with many foreign players having established a solid presence in the country. American, European, and Japanese companies are the leading actors in the Indonesian market, where **domestic companies are traditionally not manufacturers**, but rather distributors or specialists in repairing and maintenance.

The element that sets apart American companies from European ones and to a certain extent from Japanese players too, is the fact that the latter have established **manufacturing plants** in



Indonesia, while the former have limited to entering the market through local distributors or representative offices. For example, the British Weir Group has opened Flow Control and Minerals Handling product line manufacturing facilities in Batam Island and Balikpapan, respectively. The Danish LSmidth signed extensive minerals design and services agreement with PT Antam (Persero) Tbk to develop mining projects by providing plant designs, machinery, pilot testing, integration of plants with other technologies, co-engineering, O&M services and training. Finally, the Japanese Komatsu as two manufacturing plants in Indonesia.



Figure 22: Weir Group's Manufacturing Plant in Balikpapan
Source: Weir Group

Trade Data (import statistics)

The tables below analyse in detail the position of the United Kingdom related to exports of material handling machines and components to Indonesia. For all these products, the UK has to face strong competition from countries that are regularly among the top 5 exporters to Indonesia, such as China, Japan, the United States, Germany, and Malaysia. For most products analysed, the UK's position is between the 15th and the 20th largest exporter to Indonesia. However, there are some bright areas, such as Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, where the UK was the 5th largest exporter to Indonesia in 2017, selling products for over 1 million USD.



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	43,420	38,548	41,942	43,795	-
China	19,933	15,557	26,483	31,620	1 st
Japan	10,790	6,215	2,609	2,228	2 nd
Malaysia	3,672	2,787	1,165	1,706	3 rd
United States of America	891	1,676	1,163	1,187	4 th
United Kingdom	231	947	614	1,178	5 th

Table 17: Imports of Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, Incl. Those in Powder or Paste Form (HS: 847410) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	204,052	248,090	135,355	88,200	-
China	91,889	60,266	88,630	75,073	1 st
Germany	66,469	99,973	9,270	2,236	2 nd
Taiwan	16,644	1,838	1,889	2,217	3 rd
India	1,288	2,551	4,456	1,557	4 th
Austria	696	58	800	866	5 th
United Kingdom	10	1,426	32	491	9 th

Table 39: Imports of Crushing or Grinding Machines for Solid Mineral Substances (HS: 847420) by Indonesia Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	3,111	2,566	2,267	5,944	-
China	176	96	139	2,108	1 st
Singapore	54	77	255	1,844	2 nd
Japan	585	492	571	647	3 rd
United States of America	238	108	141	284	4 th
Australia	166	67	60	162	5 th
United Kingdom	11	8	14	46	12 th

Table 18: Printed Books, Brochures and Similar Printed Matter, in Single Sheets, Whether or not Folded (HS: 490110) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	432	667	681	503	-
China	283	408	412	163	1 st
Singapore	0	7	24	131	2 nd
Korea, Republic of	0	0	0	104	3 rd
Sweden	0	0	2	35	4 th
Taiwan	127	38	34	25	5 th
United Kingdom	0	2	0	1	16 th

Table 19: Imports of Parts and Accessories for Carriages for Disabled Persons (HS: 871420) by Indonesia

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	176,793	164,894	145,926	139,033	-
Australia	42,793	40,088	41,851	36,907	1 st
China	38,535	32,132	39,699	34,351	2 nd
Germany	17,159	5,565	7,152	12,803	3 rd
USA	17,369	21,921	12,811	11,223	4 th
Singapore	9,276	9,398	9,888	7,800	5 th
United Kingdom	1,409	677	976	1,100	16 th

Table 20: Imports of Parts of Machinery for Working Mineral Substances of Heading 8474 (HS: 847490) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	284,049	281,889	199,185	182,191	-
China	32,266	30,074	30,351	45,150	1 st
Japan	92,442	110,039	56,115	39,945	2 nd
Germany	19,621	15,505	15,002	18,504	3 rd
Italy	9,338	5,076	18,392	12,354	4 th
Korea, Republic of	26,405	39,861	10,809	11,000	5 th
United Kingdom	7,104	2,416	12,854	1,767	16 th

Table 21: Imports of Machines and Mechanical Appliances, n.e.s. (HS: 847989) by Indonesia

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	116,928	228,371	234,436	299,434	-
China	28,159	115,247	157,273	165,392	1 st
India	6,210	5,745	5,883	23,388	2 nd
Germany	9,386	16,330	21,104	22,119	3 rd
Denmark	251	-	23	17,253	4 th
Singapore	3,825	2,688	2,279	13,335	5 th
United Kingdom	1,124	4,044	3,098	808	18 th

Table 22: Imports of Mixing, Kneading, Crushing, Grinding, Screening, Sifting, Homogenising, Emulsifying or Stirring Machines, n.e.s. (excluding industrial robots) (HS: 847982) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	927,880	937,930	771,591	884,173	-
China	111,676	201,410	248,994	342,752	1 st
Japan	97,537	188,092	120,761	98,424	2 nd
Malaysia	219,992	161,024	126,413	87,725	3 rd
Germany	76,621	73,879	56,100	3,094	4 th
Singapore	81,346	41,421	25,397	45,675	5 th
United Kingdom	9,387	7,593	16,565	5,024	18 th

Table 23: Imports of Machines and mechanical appliances having individual functions (HS: 8479) by Indonesia

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	46,595	44,257	46,592	44,188	-
China	21,444	18,976	21,014	22,153	1 st
Germany	5,519	6,272	5,122	4,628	2 nd
Japan	3,649	3,346	2,420	3,776	3 rd
Malaysia	5,782	5,602	5,054	3,443	4 th
Singapore	2,159	2,127	2,423	2,523	5 th
United Kingdom	96	110	3,085	207	19 th

Table 24: Imports of AC Motors, Multi-Phase, of an Output > 750 W but <= 75 kW (HS: 850152) by Indonesia

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	17,439	55,715	35,412	32,625	-
China	12,354	34,783	24,973	26,202	1 st
Japan	619	2,952	2,511	1,154	2 nd
Germany	857	11,149	373	991	3 rd
Korea, Republic of	1,482	245	859	970	4 th
Singapore	1,002	387	425	695	5 th
United Kingdom	-	5	1,687	13	24 th

Table 47: Imports Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	33,447	30,421	32,299	25,882	-
China	4,315	2,759	4,282	6,968	1 st
Spain	94	489	2,141	2,613	2 nd
Japan	3,460	2,676	5,261	2,543	3 rd
United States of America	5,085	8,213	4,696	2,445	4 th
Singapore	6,072	7,202	4,646	2,297	5 th
United Kingdom	45	42	51	9	29 th

Table 48: Imports of Buckets, Shovels, Grabs and Grips for Machinery of Heading 8426, 8429 and 8430 (HS: 843141) by Indonesia (Unit: USD Thousand)

Source: International Trade Centre

Applicable Tariffs

The table below reveal the average tariffs applied from Indonesia to UK exports of material handling products in 2017. The majority of British exports faced an average tariff of 5%. However some other products such as some types of AC motors and wheelchair parts had an average tariff of 10%. On the other hand, printed books, brochures and similar printed matter, in single sheets were tariff-free.

Description	HS Code	Average Tariffs
Wheelchair parts n.e.s.	871420	10.00%
AC motors, multi-phase, of an output exceeding 750 W but not exceeding 75 KW	850152	10.00%
Machines and mechanical appliances, n.e.s.	847989	5.70%



Description	HS Code	Average Tariffs
Machines and mechanical appliances having individual functions	8479	5.30%
Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines, n.e.s.	847982	5.00%
Parts of machinery for working mineral substances of heading 8474	847490	5.00%
Crushing or grinding machines for solid mineral substances	847420	5.00%
Sorting, screening, separating or washing machines for solid mineral substances, incl. those in powder or paste form	847410	5.00%
Buckets, shovels, grabs and grips for machinery of heading 8426, 8429 and 8430	843141	5.00%
Continuous-action elevators and conveyors for goods or materials, belt type (excluding those for underground use)	842833	5.00%
Printed books, brochures and similar printed matter, in single sheets, whether or not folded	490110	0%

Table 49: Average Tariffs Applied by Indonesia to UK Exports in 2017

Source: International Trade Centre

Barriers to entry

Indonesian **infrastructure** and service networks have not been developed or maintained to keep pace with the booming consumer-led economy, causing increased transaction costs and inefficiencies that hamper exporters and investors. Deregulation has reduced some barriers, but **non-tariff barriers** remain widespread and the **bureaucracy** can still be cumbersome. Laws are often opaque or conflicting. **Import licensing** procedures and permit requirements, product labelling requirements, pre-shipment inspection requirements, local content and domestic manufacturing requirements, and quantitative import restrictions are significant barriers to entry.

Although significant anti-corruption measures have been undertaken by the Indonesian government, corruption remains a concern for many businesses looking to operate within Indonesia.

Although improving, significant rule-of-law issues persist. Formal dispute settlement mechanisms are not considered effective, and business and regulatory disputes may be considered criminal cases in Indonesia. The court system is widely viewed as corrupt. In addition, international arbitration is widely discouraged by the government of Indonesia.



Competition from third country firms such as Singapore, China, the U.S., Japan, Australia, Korea, Russia, France, and other regional players is intense.

4.8 Useful Information

Key Government Agencies

Ministry of Public Works. Previously known as the Ministry of Settlements and Regional Development (1999-2000) and the Ministry of Settlements and Regional Infrastructure (2000-2004), the Ministry of Public Works is the government's department in charge of public works matters, including infrastructure development and maintenance.

Contact Information

Address: Jl. Pattimura, No. 20 Kebayoran Baru, Jakarta 12110 Indonesia
Phone: +62 21 739 2262
Website: www.pu.go.id

Ministry of Environment. The Ministry of Environment is the government's department in charge of formulating policies and coordinating the planning, implementation, monitoring and control of issues related to environment in Indonesia.

Contact Information

Address: Jl. DI Panjaitan Kav. 24 Jakarta Timur 13410 Indonesia
Phone: +62 21 858 0067
Website: www.menlh.go.id

Associations

ICA – Indonesian Contractors Association. The association houses all the major contractors in Indonesia's construction industry and it aims to enhance the overall reliability and competitiveness of the country's construction industry. The association strives to achieve its aim by several means, such as providing technical training for members, provision of data and information for future projects, assist members with breaking into new international markets, as well as act as a platform for cooperation and networking between members.

Contact Information

Address: Wijaya Graha Puri Blok D-1 Jl. Darmawangsa Raya No. 2 Jakarta 12160, Indonesia
Phone: +62 21 720 0794
Website: www.aki.or.id

Heavy Equipment Manufacturer Association of Indonesia (HINABI). Seeking to develop Indonesia's heavy equipment industry, HINABI takes on the role of intermediary between government and the industry, as well as between members, to promote communication and exchange of information. Part of its work involves the facilitation of heavy equipment trade.



Contact Information

Address: Industrial Development Center Komatsu Indonesia Jl. Raya Cakung Cilincing, KM 4 Jakarta Utara 14140, Indonesia
Phone: +62 21 4400611
Website: www.hinabi.org

Indonesia Coal Mining Association. The Coal Mining Association seeks to provide the Mining industry a reliable platform for the facilitation of communication between mining players ranging from the upstream aspects to the downstream aspect of the industry. The association also seeks to represent mining players' views and pushes for the implementation of more favourable government mining policies. There are currently 87 coal-producing members and 60 coal mining service members in the association.

Contact Information

Address: Menara Kuningan Building 1st Floor, Suite A, M & N Jl. H.R. Rasuna Said, Block X-7 Kav.5 Jakarta Selatan 12940, Indonesia
Phone: +62 21 3001 5935/ 3001 2477
Website: www.apbi-icma.org/en

Indonesian Mining Association. With 40 mining company members and 79 associate members currently, the Indonesian Mining Association is a strong non-profit organisation that seeks to represent the interests of the mining community in Indonesia. The Association seeks to facilitate the flow of information and technological skills within the industry and between companies and government. This is done via conferences, workshops and meetings organised by the association itself.

Contact Information

Address: Jl. Dr. Saharjo Raya No. 111, Tebet, Jakarta Selatan, DKI Jakarta, 12810, Indonesia
Phone: +62 021 8370 3632
Website: www.ima-api.com

Trade Exhibitions

Concrete Show Southeast Asia 2018, which has been held successfully for four years in Jakarta, is recognised as the leading event in the South East Asia region focused on the production, use and maintenance of concrete and concrete products. As well as an international exhibition that showcases companies from Europe, USA, Japan, China, and Indonesia, Concrete Show South East Asia features an extensive program of conferences, seminars, and workshops.

Dates: 19 - 21 September 2018
Location: Jakarta International Expo
Website: concreteshowseasia.com



In its 6th year, the **Indonesia Infrastructure Week (IIW) 2018** would bring together some 16,000 trade & professional attendees from across the Transport, Energy, Utilities and Construction & Engineering Sectors. For 3 days, all the key stakeholders from across the Indonesia infrastructure supply chain come together to learn about new opportunities, exchange ideas, see the latest products & services and network with their peers.

Dates: 31 October - 02 November 2018
Location: Jakarta International Expo
Website: www.indonesiainfrastructureweek.com

Construction Indonesia, now in its 20th edition is Indonesia's largest and most popular construction exhibition, held at Jakarta International Expo. The event will be held together with **Mining Indonesia**, Asia's largest international mining equipment exhibition and provides a professional platform for Indonesia's mining industry to do business.

Dates: 19 - 21 September 2018
Location: Jakarta International Expo
Website: www.constructionindo.com

PALMEX Indonesia 2018 is the only specialised Palm Oil event in Asia that brings together an international congregation of both upstream and downstream palm oil companies and also its supporting industries gathered in the capital city of North Sumatera, Medan to showcase the latest developments in the palm oil industry.

Dates: 9 - 11 October 2018
Location: Santika Premiere Dyandra Hotel & Convention Jl. Maulana Lubis, Medan, Sumatra Utara
Website: palmoilexpo.com

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5.0 Thailand

5.1 Thailand Country Profile

Thailand in Numbers (2017)	
GDP (USD Billion)	437.8
GDP - Real Growth Rate	3.7
GDP Per Capita (PPP) (USD)	17,800
GDP Composition by Agriculture	31.8%
GDP Composition by Industry	16.7%
GDP Composition by Services	51.5%
Total Imports (USD Billion)	190
Total Exports (USD Billion)	228.2
Total Population (July 2017 est.)	68,414,135
Urban Population	52.7%
Literacy Rate	92.9%
Total Area (sq. km)	513,120
Land Area (sq. km)	510,890
Water Area (sq. km)	2,230
Currency	Thai Baht (THB)
Exchange Rate per US dollar	THB 34.34
Official Language	Thai

Table 25: Singapore – Key Statistics

Source: Central Intelligence Agency – The World Factbook



With a GDP of USD 437.8 billion, Thailand is the world's 32nd largest economy and the second largest economy in South East Asia. Its economy expanded by 3.7% in 2017, and is estimated to grow by 4.1% in 2018, driven by government spending and improved exports in 2018.

The country has a population of around 68.4 million, with approximately half living in urban areas.

Thailand's economy is well diversified and competitive. As a result, the country is resilient to external and domestic economic shocks. Thailand is one of the world's most visited countries and tourism is vital to the Thai economy; it contributes approximately 10% of the country's GDP.

The country offers a favourable business environment owing to its open, market-oriented economy, efficient regulatory system, relatively low tax rates, and open policies towards investment and trade. Many global multinational enterprises (MNEs) have invested in Thailand as the country features well-developed infrastructure, competitive human capital and a fast growing economy.



Thailand currently ranks 26th in the World Bank's latest Doing Business Rank for 2018. According to the World Bank, Thailand is steadily making progress to ease the process of doing business and it continues to focus on reforms to promote a better business environment, in addition to implementing public infrastructure investments, developing skilled workers through quality education and promoting innovations.

5.2 Overview of the Infrastructure / Building & Construction Sector

The Thai construction industry accounts for 8.5% of the national GDP. So the sector's health has important consequences for employment and linkages with related industries.

BMI estimates that **Thailand's construction industry will grow by 5.0% in real terms in 2018** and at an annual average of 4.6% between 2018 and 2027. Growth over the next decade will outpace growth in earlier years. Some notable developments include:

- In early 2018, Thailand approved the much-awaited law for the development of its USD 45 billion **Eastern Economic Corridor (EEC)**, an industrial and infrastructure development plan that covers Thailand's Eastern Seaboard.
- **Chinese and Japanese** investors and companies are playing increasingly important roles in Thailand's construction and infrastructure industries, especially in the rail and power sectors.
- Robust growth in Thailand's construction industry over the 2018-2027 period will be supported by **government-led development initiatives** encompassing the entirety of the infrastructure sector.
- In addition to their domestic businesses, **Thai construction companies**, especially larger ones, **are increasingly expanding their customer base into overseas' markets**, in particular to the CLM (Cambodia-Lao PDR-Myanmar) region due to these countries' rapid economic expansion and the concomitant development of their national infrastructure and built environment including, for example, road building and large-scale residential development.
- The Thai military junta is expected to continue ruling the country irrespective of the elections planned for November 2018, but it will be a **stabilising factor** for infrastructure investment and construction plans.

There were some **80,000 construction companies** registered in Thailand in 2015. Of these, only 1% qualify as large-scale operators but these hold a 75% market share measured by income. Just the three largest, Italian-Thai, Ch. Karnchang and Sino-Thai, account for half of the market.



Rank	Company	Market Share (%)	Public/ Private Work
1	Italian Thai (ITD)	26	53 : 47
2	Ch. Karnchang (CK)	18	30 : 70
3	Sino-Thai (STEC)	9	41 : 59
4	Uniq Engineering (UNIQ)	5	99 : 1
5	Nawarat (NWR)	4	59 : 41
6	Christiani&Nielsen (CNT)	4	13 : 87
7	Syntec Construction (SYNTEC)	4	1 : 99
8	Trc Construction (TRC)	2	10 : 90
9	Sriracha (SRICHA)	1	0 : 100
10	Thai Polycons (TPOLY)	1	47 : 53

Table 26: Key Operators by Sales, 2015

Source: Bloomberg

The sector is split domestically into construction for the public and private sectors, with investment in the two occurring at a ratio of around 55:45.

- **Public construction:** Most of these projects are concerned with infrastructure. These run to around 70% of the total value of public construction, with the remaining 30% being accounted for by government buildings, housing for civil servants, and other items such as structures for water and public utility management. Large companies gain advantages in contracting for government work, especially for large infrastructure projects, due to their experience, expertise, financial strength, and specialist techniques and technologies. SMEs working in public construction tend to operate as subcontractors.
- **Private construction:** 55% of this segment is accounted for by construction of residential property, 11% by industrial property, 10% by commercial property, and the remaining 24% by other projects, such as hotels and golf courses. Larger operators with experience, financial strength, and management framework will be able to undertake large-scale projects, while SMEs tend to work with lower-valued projects.

Regarding the **technologies employed** by Thai construction companies, this differs considerably between large and smaller operators:

- **Large companies:** These companies are able to invest in the development and deployment of modern technology, bringing savings in time and costs and reducing the risk of labour-shortages. They may also have investments in companies which manufacture construction materials, such as prefabricated concrete.



- **SMEs:** At present, SMEs tend not to develop their own technology and still rely heavily on labour but they are beginning increasingly to use readymade materials, such as precast concrete and metal sheet walling.

Major projects driving the Thai sector include:

Railways

- **Mass Transit in Bangkok:** Two new lines and three extensions totalling 107 km and costing USD 7.9 billion are currently under construction in the Thai capital, and form part of the city's long-term plans to expand the transit system from the current 110 km to nearly 570 km by 2029. Construction on the Blue Line and Green Line extensions, and the new Red and Dark Red Lines is being undertaken by a mix of local and foreign companies including Thai firms **Italian Thai Development** and **Unique Engineering and Construction**, Japanese firm **Japan Tunnel Systems**, and Chinese firms **Sinohydro** and **China Harbour Engineering**.
- **China-Thailand Railway:** Construction of the 873 km USD 5 billion higher-speed line that will link Thailand, Laos and China officially began in December 2017. The line will connect the capital of Bangkok and the port city of Rayong to the Lao border at Vientiane, after which trains would be able to continue to Kunming, China via the China-Laos Railway.

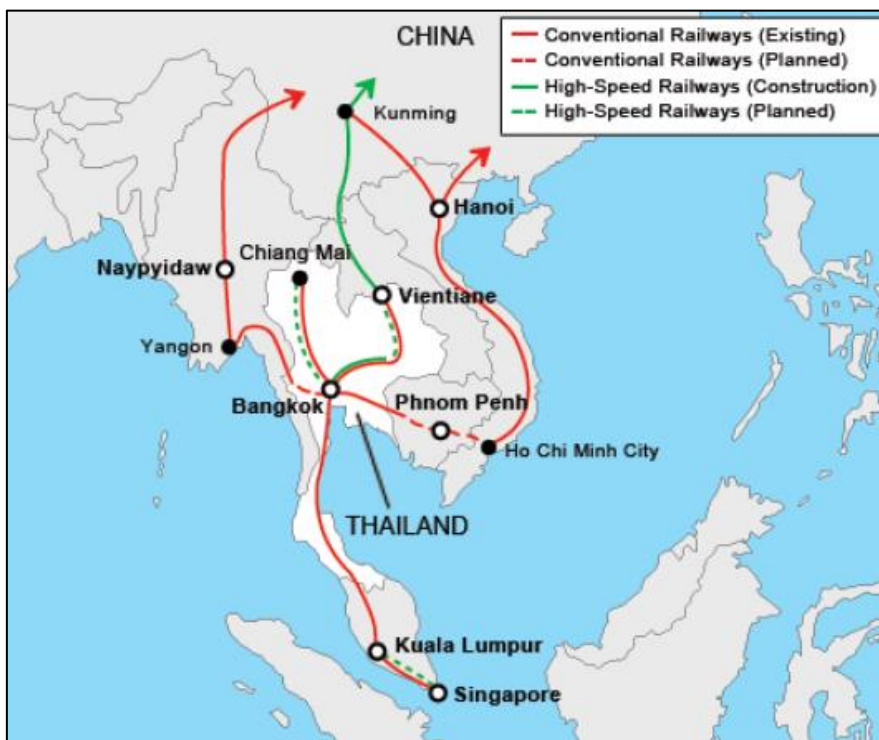


Figure 23: Existing and Planned Railways in South East Asia, 2018

Source: BMI



Roads

- **Bang Yai District - Kanchanaburi - Ban Phu Nam Ron Border Checkpoint Motorway:** Currently under construction, the 180 km, USD 2.8 billion project is planned to link the outskirts of Bangkok with the Myanmar border to facilitate growing trade between the two countries. Approved by the Thai cabinet in 2015, the public-private partnership (PPP) project was tendered out to **Asia Pacific Prosperity**.
- **Pattaya - Rayong Motorway:** Currently under construction, the 32 km, USD 400 million project will connect the resort city of Pattaya to industries and the port in Rayong and the region's U-Tapao International Airport.

Airports

- **Bangkok Suvarnabhumi Airport Expansion:** The Airports of Thailand (AoT) have revealed that PCS Joint Venture will be the main contractors for the USD 332 million expansion project of the Suvarnabhumi airport. The joint venture, comprising of **Power Line Engineering** and **China Construction Engineering**, will build the first midfield concourse building at the site, as well as the connection to the southern tunnel.
- **Bangkok Don Mueang Airport Expansion:** Passenger traffic at Bangkok Don Mueang Airport has more than doubled over the last four years, driven by rapid expansion in Thailand's low-cost airline sector. Don Mueang handled 38 million passengers in 2017. Don Mueang airport has proposed a USD 70 million renovation project for its old domestic terminal to Airports of Thailand Plc (AoT).

Ports

- The bidding process for the **Phase 3 of the Laem Chabang port expansion** will take place in October 2018. The construction of Laem Chabang port Phase 3 is estimated to cost USD 4.5 billion. The ambitious mega-project of Thailand's main deep-sea port expansion in Chon Buri has been fast-tracked by the government as part of the Eastern Economic Corridor (EEC) Development Plan, which focuses on significant investments in infrastructure and innovation.
- **Hutchison Ports Thailand**, a port operator in Thailand, introduced in May 2018 its USD 600 million Terminal D facility at Laem Chabang during a press conference. The new facility features the world's first container terminal that will be fully equipped with remote control technologies. The new Terminal D will be capable of handling some of **the largest ocean vessels** currently in operation.



5.3 Overview of the Construction & Demolition Recycling Market

The Construction & Demolition (C&D) waste sector in Thailand is mostly comprised of concrete, brick, metal, ceramics, roofing, gypsum, and wood. It can be classified into two categories: **recyclable (70%) and no recyclable (30%) waste**. However, only a fraction of recyclable C&D waste is actually recycled.

In general, Thai construction companies value only easily reusable and recyclable C&D debris such as steel left from the cut off, framework wood for reuse and steel and aluminium scrap. The rest of C&D waste, such as concrete debris and the cut off piles were mixed with other types of waste, to be disposed as fill material. Transportations of C&D waste is operated by construction companies themselves or by hiring others to remove and dispose C&D waste off-sites. The reusable and recyclable C&D waste are stored at construction sites or transferred and kept at companies' warehouses. Most of construction sites have limited area for construction material storage. Some sites need to rent vacant land nearby for site storage. Also site managers often do not realise the benefit of C&D waste recycling.

A major obstacle for the development of a well-functioning C&D recycling market in Thailand is the **lack of clear rules** and operational guidelines for waste management, including waste minimisation at source, waste segregation, reuse, recycle, transportation and disposal.

5.4 Overview of the Aggregates, Mining & Quarrying Sector

Thailand was formerly a major tin producer, but now produces mainly **gold, silver, iron, zinc, limestone, gypsum and basalt**. Thailand is currently a net importer of mineral commodities. The country's identified mineral resources are being produced for domestic consumption and export.

The most-produced target minerals in 2016 were industrial minerals and industrial rocks, silver ore and gold ore. Between 2015 and 2016, mining production for almost all minerals reduced with a few exceptions.

Thailand's rich minerals are concentrated mainly in the following regions: Northern region near Chiang Mai Mae Hong Son and Lampang; Western region around Phetchaburi and Ratchaburi; North Eastern region of Udon Thani; and Southern region around the intersection between Surat Thani and Nakhon Si Thammarat.

The **Department of Mineral Resources (DMR)** drafts national mineral policies and provides technical assistance for geological prospecting and mineral exploration. However, given the relatively limited mineral wealth of the economy, little potential for expansion of the mining industry in Thailand is expected.



Minerals	Mine Production		Reserves
	2016	2017	
Barite	223	150	18,000
Feldspar and Nepheline Syenite	1,300	1,300	N/A
Fluorspar	42	40	N/A
Gypsum	11,300	11,000	N/A
Rare Earths	1,600	1,600	N/A
Tin	100	70	170,000

Table 52: Mine Production and Reserves for Selected Minerals in Thailand

Source: USGS

Unit: Thousand Metric Tons

There is **no legal classification system** for reporting mineral resources and mineral reserves. In practice, the Department of Primary Industries and Mines, Ministry of Industry (DPIM) will classify the ore reserves based on reserves in mining lease areas and in areas of mineral potential.

Mining rights are granted by the Minister of Industry. The Minerals Act states that no person shall mine in any area, regardless of any person's right over the surface area to be mined unless a mining lease has been obtained. In Thailand, minerals belong to the state. Mining rights do not grant title to minerals in the ground. A **Thai limited company** is the usual choice of entity to hold a mining licence.

The **import of foreign machinery and equipment** is subject to customs duty at rates prescribed in the customs tariff, and VAT (currently at the rate of 7%). Exemptions may be granted by the Board of Investment of Thailand (BOI) for promoted projects. In the case of a non-promoted company, the ratio of foreign staff to Thai staff shall not be greater than 1:4. The exemption to this limitation can be granted to the promoted company with the requirement that training and instruction must be expedited and support must be given to the Thai personnel in order that they can perform work in the promoted project in place of the foreign staff within the period of time prescribed by the BOI. **Standard international forms are not commonly used** in Thailand. It is the practice to split international EPC contracts into an offshore supply agreement ('sales of goods agreement' not subject to withholding tax or stamp duty), and an onshore hire of work contract (subject to W/H tax and stamp duty). It is common to find provisions for settlement of disputes to prescribe arbitration. SIAC (Singapore International Arbitration Centre) in Singapore is a popular arbitration administrator.

Thailand is expected to stop mining one of its major products – zinc – by 2018. Mining production in Thailand in general will **largely stagnate** over the next years despite the country's sizeable reserves, with most segments registering limited growth.

Some of the most important recent development in the local industry include:



- It is expected that from 2018 onwards, **Thailand's gold output will be nil** as result of the government's decision to halt all gold mines. Up till 2016, Thailand was the 6th largest producer of gold in Asia, producing 0.3 million ounces of gold in 2015. Government agencies have also been ordered to stop issuing and renewing gold mining and exploration licences. The largest player in Thailand's gold mining sector, Akara Resources, a subsidiary of Australian KCL was worst hit as the company operated the largest gold mine in Thailand, the Chatree mine.



Figure 24: Thailand's Gold Belts

Source: The Department of Mineral Resources

- The National Legislative Assembly passed an amendment to Thailand's mining legislation in March 2016, which will allow the junta **greater control over mining operations** in the country, including the right to gazette land for the purpose of mining development.
- Depleting domestic coal reserves will see Thailand **increasing imports of coal**, instead of relying on domestic production to fuel power generation. Due to coal being the most cost-effective fuel source, it will be the preferred fuel for power generation over the coming years due to the country's dire natural gas situation. The current energy mix in Thailand is unsustainable over the long-term, in terms of both costs and availability of fuel.



5.5 Overview of the Municipal Waste Sector

In 2015, the amount of residual waste was reduced from 30.4 million tonnes to 10.46 million tonnes (a reduction of 66%). This was due to some landfill sites’ policy of burying waste and the closure of other landfill sites. In 2015, **26.85 million tonnes of municipal solid waste** was generated nationwide. This amount equalled an average of 73,560 tonnes/day, which was an increase from the amount generated in 2014 (26.19 million tonnes). The waste generation per person rate rose from 1.11 kg/person/day to 1.13 kg/person/day.

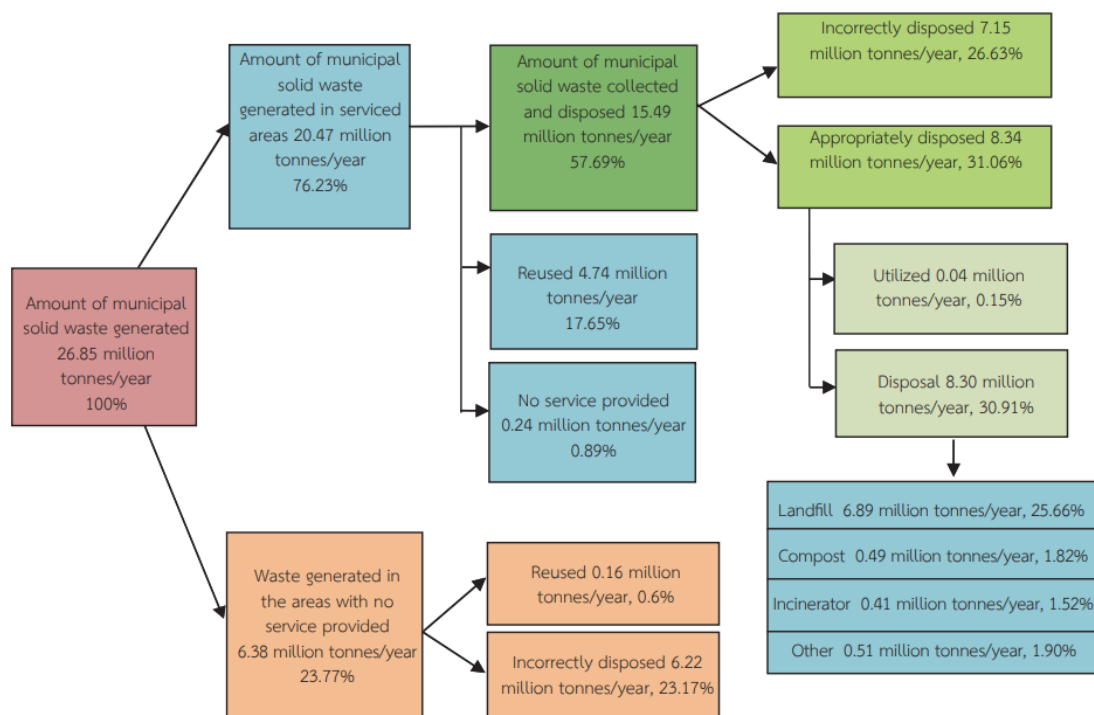


Figure 25: Municipal Solid Waste Flow Chart, 2015
 Source: Thai Pollution Control Department

In 2015, the **top five waste generation provinces** per capita were Bangkok, Chon Buri, Nakhon Ratchasima, Samut Prakan, and Khon Kaen. 15.49 million tonnes or 58% of the solid waste generated were collected for disposal. 8.34 million tonnes (31% of the solid waste generated) were disposed of correctly. However, 7.15 million tonnes (27% of the solid waste generated) were not appropriately disposed of. For example, some waste was dumped in ground pits, burned in open fires, and illegally dumped in unoccupied areas. 4.74 million tonnes (18% of the solid waste generated) were reused, which mostly came from household recycling waste that was sold to used goods stores, community recycling centres, recycling banks, and organic waste utilisation programs.





Figure 26: Amount of Municipal Solid Waste (Million Tonnes)

Source: Thai Pollution Control Department

In 2015, there were **448 waste disposal sites** that operated correctly, which was a reduction from 480 sites registered in 2014. There were two causes for this decline, firstly, landfill sites with a capacity of less than 50 tonnes/day either changed the method from controlled dumping to open dumping, or ceased operations because of various issues facing the local administrations such as lack of funding, difficulties finding land and lack of personnel, etc. Another reason for the decline was that some sites ceased operation of delivering the waste to appropriate disposal sites, which contributed to the rise in the amount of waste that was disposed of correctly since 2014.

Public sites		Private sites	
Type	Number	Type	Number
Sanitary landfills/ engineered landfills	78	Sanitary landfills/ engineered landfills	6
Controlled dumps with a capacity of less than 50 tonnes/day	224	Controlled dumps with a capacity of less than 50 tonnes/day	97
Incinerators with air pollution system	1	Incinerators with air pollution system	3
Incinerators with a capacity of less than 10 tonnes/day and having an emission control system	14	Incinerators with a capacity of less than 10 tonnes/day and having an emission control system	-
Sorting systems, compost, and correct landfill systems	20	Sorting systems, compost, and correct landfill systems	3
Mechanical biological treatment systems	1	Mechanical biological treatment systems	1
Total public sites	338	Total private sites	110

Table 27: Suitable and Operational Waste Management Facilities in 2015

Source: Thai Pollution Control Department

Furthermore, the number of waste disposal sites that operated with open dumping measures increased to 2,075 sites from 1,898 sites in 2014, especially for small landfills and small village



landfills in the northeast. This was because relevant authorities at the provincial level understood the problems of waste disposal in the area and proceeded to gather more detailed information on the issue.

5.6 Overview of the Biomass Sector

Biomass plants in Thailand are typically run by operators of sugar mills and tapioca plants. In the past, there have been shortages of raw materials and prices were driven up. Public oppositions against biomass plants also intensified, leading to a cancellation of 203 projects with around 1,800 MW of capacity.

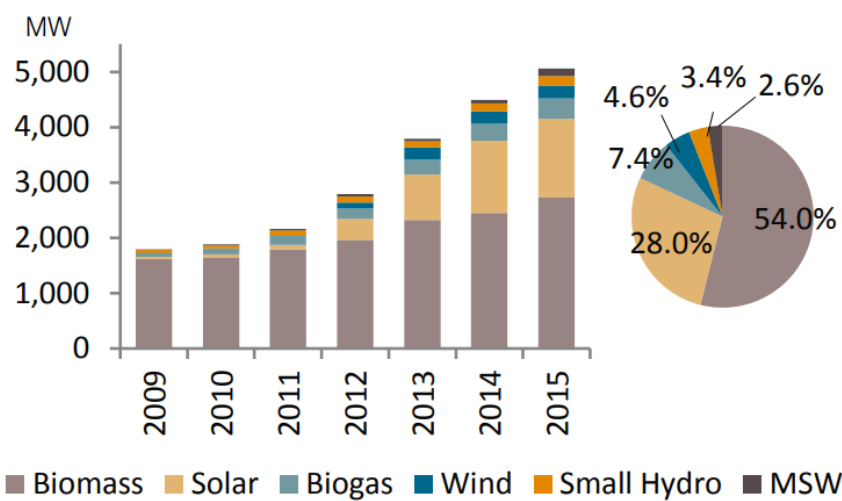


Figure 27: Installed Capacity of Biomass and Other Sources of Renewable Energy
Source: Krungsri Bank

In order to strengthen Thailand’s long-term energy security and global economic competitiveness the country has committed itself to develop its alternative energy capabilities. This policy emerged at the national level as the **Alternative Energy and Development Plan (AEDP)**, a 10 year initiative (2012- 2021) to better diversify and build a more sustainable energy sector.

Energy sourced from **biomass is set to be one of the main players in the AEDP initiative** to ramp up renewable energy production. This strategy is advantageous because, Thailand, being an agriculture based economy, produces around 80 million tons of agriculture waste per year. Biomass energy production utilises the combustion or partial-combustion of organic material that could be converted to electricity or fuel. In 2014, Thailand consumed 2,452 megawatts of energy from biomass. According to the AEDP, Thailand aims to increase the use of biomass for energy to 4,800 megawatts by 2021. The government has also included biomass energy in the country’s Feed-in Tariff scheme.



Some interesting developments for the Thai biomass industry are listed below:

- In March 2018 the **Asian Development Bank (ADB) and Gulf Chana Green Company Limited (Chana Green)** achieved financial close for a loan equivalent of **USD 35 million** to help increase Thailand’s share of renewable energy by developing a **biomass power project** in the southern part of the country. Michael Barrow, Director General of ADB’s Private Sector Operations Department remarked that “ADB’s 18-year loan shows the bank’s long-term confidence in Chana Green and provides a positive signal to other banks and developers considering investing in infrastructure assets in the less-developed areas of southern Thailand.”

ADB’s financing will help Chana Green construct and operate a **25 MW biomass power project located in Chana, Songkhla province** in southern Thailand. The primary source of feedstock will be rubberwood waste sourced from local farmers, sawmills, and intermediary suppliers located within the project area. All electricity produced by the project will be purchased by Electricity Generating Authority of Thailand under the Small Power Producers program. The project will receive a tariff incentive of THB 0.3 per kWh for utilising biomass and THB 1.0 per kWh for investing in southern Thailand both for a period of 7 years from commercial operations.



Figure 28: The Primary Source of Feedstock for the Chana Power Plant
Source: Bioenergy International

- The **German company Pöyry** has been awarded with the engineering services assignment for the Chana 20.6 MW net biomass power plant project.



Pöyry's assignment covers complete contractor's engineering services for the project, including process and plant engineering, plant layout design, civil and structural design, mechanical and piping design, control and instrumentation design, electrical design, and procurement and tendering services. The overall schedule for the project is 24 months and it is expected to have a March 2020 Commercial Operation Date.

This biomass power plant is being implemented under Thailand's Small Power Producer (SPP) scheme, whereby 20.6 MW are sold to the Electricity Generating Authority of Thailand (EGAT). The project has received notice to proceed in early March 2018.

- In September 2017 another Germany company, **Siemens**, announced its intention to support Thailand attain its renewable energy goals in turning biomass to fuels to comply with the reduction of carbon emissions under the Paris Accord. Willi Meixner, CEO of Siemens's Power and Gas Division, highlighted how Siemens' new generation of turbines is suitable for crops such as cane sugar and maize, which are abundantly produced by Thai farms. The CEO also announced a week-long series of meetings with around **100 Thai customers**.

5.7 Market Entry Considerations

Local competitive landscape

As chapter 8.0 illustrates in detail, there is a wide array of **material handlings companies** that have recognised the potential of the Thai market by opening local branches or by working with local distributors. Several renowned European players have opted for setting up sales offices and service centres in Thailand. Large European companies are well established in Thailand and the region, and are perceived to sell equipment of high-quality. American and Japanese products are also popular. Japanese companies have a solid presence in Thailand, and they often have established local branches, reflecting the importance that this market has also because of geographical proximity. The presence of local companies is more limited. However, because of their niche expertise and ties to the local industry, some Thai manufacturers have managed to withstand international competition. A good example is represented by Chiang Mai based Siam Recycling System, which designs and develops a comprehensive range of **recycling and shredding equipment**.





Figure 29: Conveyor Feed from Thai Manufacturer Siam Recycling System

Source: Siam Recycling System

Considering those companies that specifically target the **aggregates, mining & quarrying sector**, a popular modality of market entry, especially for companies that manufacture specialised products or that do not have the resources for opening new branches, is working with local distributors, some of the most known include: Wirtgen Thailand, distributing brands like Vogele, Hamm and Kleemann; ItalThai Industrial, selling equipment from Powerscreen, Yutong, and Atlas Copco; and Solids Handling and Process Engineering, distributing Kek-Gardner, Process Components, Floveyor, Yorker Engineering and Base Handling Products. Within this segment there are virtually no Thai manufacturers of material handling equipment.

Trade Data (import statistics)

The tables below analyse in detail the position of the United Kingdom related to exports of material handling machines and components to Thailand. The UK is ranked 1st in exporting Parts of Machinery for Working Mineral Substances in 2017, getting a 67% market share of Thailand's imports in terms of value. China, Germany, the United States and Japan are the countries who are repeatedly among the top five exporters to Thailand. Meanwhile, the UK's position in terms of export value ranges from 1st to 15th. Thailand's largest import category in 2017 was Machines and Mechanical Appliances Having Individual Functions, which had an import value of USD 856 million. The UK's share on this was only USD 5 million or 0.6%.



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	35,439	25,372	39,753	27,761	
United Kingdom	235	326	382	9,578	1 st
China	8,440	5,846	17,771	6,985	2 nd
Germany	7,604	6,729	5,588	2,598	3 rd
United States of America	1,588	1,277	4,362	1,023	4 th
Italy	728	550	497	901	5 th

Table 28: Imports of Parts of Machinery for Working Mineral Substances of Heading 8474 (HS: 847490) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	737	419	655	826	-
United States of America	106	45	70	204	1 st
Japan	170	116	130	197	2 nd
Germany	79	96	238	86	3 rd
China	93	31	48	85	4 th
Singapore	20	8	30	54	5 th
United Kingdom	21	21	8	34	6 th

Table 55: Imports of Printed Books, Brochures and Similar Printed Matter, in Single Sheets, Whether or not Folded (HS: 490110) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	236,340	32,120	53,192	29,754	-
United States of America	2,448	2,529	905	8,725	1 st
China	13,931	6,575	13,691	6,759	2 nd
Germany	182,608	6,244	20,750	3,322	3 rd
India	1,733	1,434	642	2,552	4 th
Australia	92	187	67	1,839	5 th
United Kingdom	399	3,136	2,505	1,400	8 th

Table 56: Imports of Crushing or Grinding Machines for Solid Mineral Substances (HS: 847420) by Thailand Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	6,585	9,448	7,649	6,931	-
China	1,449	1,982	1,626	2,231	1 st
Germany	1,579	867	1,021	839	2 nd
United States of America	665	1,180	416	655	3 rd
Japan	1,067	725	1,210	578	4 th
Malaysia	229	256	23	393	5 th
United Kingdom	425	452	351	301	8 th

Table 57: Imports of Buckets, Shovels, Grabs and Grips for Machinery of Heading 8426, 8429 and 8430 (HS: 843141) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	15,577	14,326	12,410	12,949	-
China	3,719	3,227	3,435	3,932	1 st
Germany	920	1,307	779	1,986	2 nd
Japan	847	1,853	855	1,719	3 rd
Singapore	240	160	1,661	1,248	4 th
United States of America	707	2,568	1,126	1,004	5 th
United Kingdom	351	1,378	204	260	11 th

Table 58: Imports of Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, Incl. Those in Powder or Paste Form (HS: 847410) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	267	218	738	1,152	-
China	33	49	362	779	1 st
Taiwan	179	158	342	275	2 nd
India	0	0	23	39	3 rd
Korea, Republic of	0	0	0	36	4 th
Malaysia	0	0	1	12	5 th
United Kingdom	8	0	1	1	11 th

Table 59: Imports of Parts and Accessories for Carriages for Disabled Persons (HS: 871420) by Thailand

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	93,993	75,266	81,410	73,594	-
China	16,364	26,032	23,572	25,083	1 st
Japan	24,298	12,945	11,564	7,711	2 nd
Germany	7,775	5,204	5,944	7,465	3 rd
Italy	8,118	3,650	2,325	6,939	4 th
Taiwan	7,885	3,149	4,579	6,123	5 th
United Kingdom	2,378	1,585	1,786	1,329	12 th

Table 60: Imports Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	95,141	72,862	77,450	80,259	-
China	30,671	27,299	30,016	29,978	1 st
Japan	19,289	11,236	10,373	13,669	2 nd
Germany	10,471	7,163	8,086	8,596	3 rd
Viet Nam	5,844	5,954	5,893	5,020	4 th
Taiwan	6,290	3,367	4,036	3,924	5 th
United Kingdom	1,064	951	815	826	13 th

Table 29: Imports of AC Motors, Multi-Phase, of an Output > 750 W but <= 75 kW (HS: 850152) by Thailand

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	593,033	521,968	452,728	465,703	-
Japan	250,349	219,268	189,414	162,195	1 st
China	72,144	56,823	57,751	68,420	2 nd
Germany	44,986	30,717	30,938	43,679	3 rd
United States of America	23,312	39,605	36,342	33,511	4 th
Singapore	20,075	15,465	14,552	25,301	5 th
United Kingdom	3,484	15,675	3,893	2,847	14 th

Table 30: Imports of Machines and Mechanical Appliances, n.e.s. (HS: 847989) by Thailand

Unit: USD Thousand

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	955,053	882,222	832,522	856,531	-
Japan	347,662	296,545	266,030	250,218	1 st
China	151,327	142,135	128,115	157,499	2 nd
Germany	81,026	100,949	120,654	125,582	3 rd
United States of America	38,610	59,770	65,723	52,076	4 th
Malaysia	35,304	51,747	28,486	41,367	5 th
United Kingdom	11,698	19,651	8,275	5,657	15 th

Table 31: Imports of Machines and mechanical appliances having individual functions (HS: 8479) by Thailand

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	164,481	149,017	150,587	156,464	-
China	40,295	38,433	31,229	43,672	1 st
Japan	34,178	25,840	20,070	23,958	2 nd
Germany	21,030	24,630	29,587	23,435	3 rd
Italy	6,764	11,080	5,864	10,269	4 th
Taiwan	7,414	6,814	9,392	7,952	5 th
United Kingdom	7,425	2,576	3,230	1,995	15 th

Table 32: Imports of Mixing, Kneading, Crushing, Grinding, Screening, Sifting, Homogenising, Emulsifying or Stirring Machines, n.e.s. (excluding industrial robots) (HS: 847982) by Thailand (Unit: USD Thousand)

Source: International Trade Centre

Applicable Tariffs

The table below reveals the average tariffs applied from Thailand to UK exports of material handling products in 2017. A number of British exports had a tariff-free status in Thailand. On the other hand, products such as AC motors had the highest average tariff at 10%. British exports of other material handling products had an average tariff that ranges from 0% to 5%.

Description	HS Code	Average Tariffs
AC motors, multi-phase, of an output exceeding 750 W but not exceeding 75 KW	850152	10.00%
Buckets, shovels, grabs and grips for machinery of heading 8426, 8429 and 8430	843141	5.00%
Continuous-action elevators and conveyors for goods or	842833	3.33%



Description	HS Code	Average Tariffs
materials, belt type (excluding those for underground use)		
Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines, n.e.s.	847982	1.67%
Machines and mechanical appliances having individual functions	8479	0.53%
Wheelchair parts n.e.s.	871420	0%
Machines and mechanical appliances, n.e.s.	847989	0%
Parts of machinery for working mineral substances of heading 8474	847490	0%
Crushing or grinding machines for solid mineral substances	847420	0%
Sorting, screening, separating or washing machines for solid mineral substances, incl. those in powder or paste form	847410	0%
Printed books, brochures and similar printed matter, in single sheets, whether or not folded	490110	0%

Table 65: Average Tariffs Applied by Thailand to UK Exports in 2017

Source: International Trade Centre

Barriers to entry

Corruption and lack of transparency in government procurements are major concerns. Where corruption is suspected during the bidding process, government agencies and state enterprises reserve the right to accept or reject any or all bids at any time and may also modify the technical requirements. This allows considerable leeway for government agencies and state-owned enterprises to manage procurements, while denying bidders recourse to challenge procedures. There are frequent allegations that the Thai government makes changes to technical requirements for this purpose during the course of procurements. Thailand is not party to the World Trade Organization Agreement on Government Procurement; it obtained observer status in June 2015.

Customs law in Thailand does not fulfil the standards established by The International Convention on the Simplification and Harmonization of Customs Procedures, otherwise known as “the Kyoto Convention.” Major problem areas include Thailand’s Customs Penalty Regime and Customs Valuation Procedures.

The regulatory environment protecting intellectual property in Thailand is at times difficult to navigate. Patent registration can be a lengthy process, sometimes requiring several years. Patent and trademark infringement is common in Thailand.



5.8 Useful Information

Key Government Agencies

Ministry of Natural Resources and Environment. The Ministry of Natural Resources and Environment of the Kingdom of Thailand is a cabinet ministry in the Government of Thailand. The ministry was founded in 2002. It has a wide variety of responsibilities. These include the protection of the nation's natural resources: water, oceans, minerals, and forests. It is also responsible for the protection and restoration of the environment.

Contact Information

Address: 92 Soi Phohol Yothin 7, Phohol Yothin Road, Phaya Thai, Bangkok, Thailand
Tel: +66 2 278 8500
Website: www.mnre.go.th/en/index

Department of Mineral Resources of Thailand. The Department of Mineral Resources (DMR) is the main governmental organisation applying its geological knowledge and information to help increase life quality and the economic and social development. The DMR serves the country as a geological fact-finding agency that predominantly studies and researches minerals, fundamental and applied geology in order to provide geological understanding about natural resources condition, as well as issues or problems related to geological process and phenomena.

Contact Information

Address: 75/10 Rama VI Road, Ratchatewi, Bangkok 10400, Thailand
Tel: +66 2 621 9600
Website: www.dmr.go.th/main.php?filename=index__EN

Department of Pollution Control. Established in 1992, the Pollution Control Department (PCD) is responsible for the prevention and control of pollution throughout the country through the enforcement of the Enhancement and Conservation of the National Environmental Quality Act of 1992. PCD is the national agency within Thailand's Ministry of Natural Resources and Environment with the mission to control, prevent, reduce and eliminate pollution and to conserve and rehabilitate the environment for the benefit of all Thais.

Contact Information

Address: 92 Soi Phahon Yothin 7 Phahon Yothin Rd., Sam Sen Nai, Phayathai, Bangkok, Thailand
Tel: +66 2 298 2000
Website: www.pcd.go.th/indexEng.cfm

Department of Alternative Energy Development and Efficiency. The Department of Alternative Energy Development and Efficiency is the entity responsible for energy efficiency



promotion, energy conservation regulation, energy sources provision, alternative development of integrated energy uses, and energy technology dissemination in Thailand.

Contact Information

Address: 17 Rama I Road, Kasatsuk Bridge, Pathumwan, Bangkok, Thailand

Tel: +66 2 298 2000

Website: www.pcd.go.th/indexEng.cfm

Associations

Thai Contractors Association. This association strives to improve transfer and sharing of technological and scientific ideas by facilitating programs such as lectures and conferences for industry players. The association also aims to promote a healthy and positive relationship between industry players and public/government by acting as the bridge for affected parties to resolve conflicts.

Contact Information

Address: No. 110 Building, Oriental Residence Bangkok Wireless Road 3rd Floor, Lumpini, Pathumwan Bangkok 10330, Thailand

Tel: +66 2 251 4471

Website: www.tca.or.th

Trade Exhibitions

CONCRETE ASIA. CONCRETE ASIA is an international exhibition and conference for the concrete and building construction industry. CONCRETE ASIA showcases the latest in concrete, concrete surfaces, decorative concrete, material handling, concrete production, cement, building materials, construction equipment & machinery with the latest technologies and techniques to sustain and grow their business.

Dates: 6-8 September 2018

Location: Hall 7 and Outdoor Area IMPACT Exhibition and Convention Centre in Bangkok

Website: concrete-asia.com

Metalex. The industrial event named as Metalex Thailand puts on display numerous industrial tools including that of welding machinery, equipment's with wires and tubes, pumps, valves, molds and sheet metalworking products and associated tools and machinery. This four-day event occupies a significant place in the heart of industrial sectors which display wide ranges of industrials and automation tools.

Dates: 21-24 November 2018

Location: BITEC Exhibition Centre, Bangkok

Website: www.metalex.co.th/en/Home



PALMEX Thailand. PALMEX Thailand 2018 is the only specialised Palm Oil event in Thailand that brings together an international congregation of both upstream and downstream palm oil companies and also its supporting industries gathered in Krabi, Thailand to showcase the latest developments in the palm oil industry.

Dates: 16-17 August 2018
Location: The Maritime Park & Spa Resort, Krabi
Website: www.thaipalmoil.com

5.9 Sources

ADB, Gulf Chana Green Achieve Financial Close for Biomass Power Project in Southern Thailand, 2018, Asian Development Bank

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Thailand - Trade Barriers, 2017, International Trade Administration

Thailand Alternative Energy, 2015, Board of Investment of Thailand

Thailand Infrastructure Report, 2018, BMI Research

Thailand State of Pollution Report, 2015, Pollution Control Department

Waste Generated in High-Rise Buildings Construction: a Current Situation in Thailand, 2017, 2017 International Conference on Alternative Energy in Developing Countries and Emerging Economies



6.0 Philippines

6.1 Philippines Country Profile

The Philippines in Numbers (2017)	
GDP (USD Billion)	321.2
GDP - Real Growth Rate	6.6%
GDP Per Capita (PPP) (USD)	8,200
GDP Composition by Agriculture	9.4%
GDP Composition by Industry	30.8%
GDP Composition by Services	59.8%
Total Imports (USD Billion)	90.4
Total Exports (USD Billion)	53.2
Total Population (July 2017 est.)	104,256,076
Urban Population (2017)	44.2%
Literacy Rate	96.3%
Total Area (sq km)	300,000
Land Area (sq km)	298,170
Water Area (sq km)	1,830
Currency	Philippines Peso (PHP)
Exchange Rate per US dollar	PHP 59.21
Language(s)	Tagalog, English

Table 66: Philippines – Key Statistics

Source: Central Intelligence Agency – The World Factbook

Philippines' ranking slipped to 113th place from the 99th place last year across the 190 countries. The country has made sound improvements in various areas, from dealing with construction permits, getting electricity and paying taxes. It has also bettered its transparency in building regulations, tax payment schemes have been made easier as the online filing and payment were introduced, while offline completion of corporate income tax and VAT returns have also been allowed. The decrease in ranking, however, was a result of other economies making larger improvements relative to the Philippines, which downgraded its ranking.



According to the World Bank, the Philippines is the world's 10th fastest growing economy globally with annual growth projected to be at 6.7% in both 2018 and 2019.

With a population of over 100 million, the Philippines is the 13th most populous country in the world. Due to its strong and stable economy and sound macroeconomic, fiscal and monetary policies, it has emerged as an attractive market for foreign companies. The government's plans for sustained infrastructure spending between up to 2022, are expected to help keep the country's economic engine running smoothly.

In the latest Ease of Doing Business 2018 Report by the World Bank, however, the



The Philippines allows 100% foreign ownership in almost all sectors. Government corporations are being privatised and the banking, insurance, shipping, telecommunications, and power industries have been deregulated. Incentive packages include the corporate income tax, reduced to a current 32%, with companies in the Special Economic Zones subject to only 5% overall tax rates.

Being the world's third largest English-speaking country, the Filipino workforce is one of the most compelling advantages the country has over any other Asian country. With higher education priority, the literacy rate in the country is 96.3% - among the highest in the region.

6.2 Overview of the Infrastructure / Building & Construction Sector

Over the past few years, construction in the Philippines has been flourishing amid the climate of political stability and upbeat business confidence, spurred by growth in overseas foreign worker remittances, inbound investments into business process outsourcing, rising numbers of tourist arrivals, and government spending on large- and small-scale infrastructure.

In value terms, the **construction industry as a whole is expected to grow by a compound annual growth rate (CAGR) of 18.3% and reach USD 54.5 billion by 2022**. Over the period of 2013-2017, residential construction industry grew by a CAGR of 14.3%, while commercial building market posted a CAGR of 18.8% and infrastructure construction grew by a CAGR of 17.3%. In terms of contribution to the country's macroeconomic performance, the construction and real estate development sectors make up around 20% of the country's economy.

With increased investments in the residential, non-residential and infrastructure segments, the construction industry has a solid and balanced long-term prospect. Key drivers for the construction industry's growth include the rapid growth of the economy, which averaged a 6.2% GDP growth rate between 2010-2015; growth in the business process outsourcing (BPO) industry, which has led to the shortage of office spaces and increasing demand for new commercial buildings in cities, such as Manila, Cebu, Davao, Iliolo and Legazpi; expanding tourism industry, which is estimated to require more than 10,000 new hotel rooms in the short-term as well as other tourism infrastructure; rapid population growth, which is projected to translate into the demand of more than 6 million new homes by 2030; investments in reconstruction and rehabilitation of buildings due to yearly typhoons; and the significant government investment in large- and small-scale infrastructure.

According to the latest statistics from the Philippine Statistics Authority, the construction investments grew by 13.6% in 2016, amounting to PHP 781.9 billion (USD 14.9 billion), including the 29% rise in government infrastructure projects to PHP 185 billion (USD 3.5 billion), and 9.5% increase in private construction projects, which reached the value of PHP 596.9 billion (USD 11.4 billion).



The total number of construction generated from approved building permits in 2016 amounted to 147,998 (including 113,097 residential constructions, 17,845 non-residential constructions, and 17,056 others). **The top five regions for construction projects (CALABRAZON, Central Visayas, Central Luzon, National Capital Region, and Davao Region) accounted for 59% of the total construction in 2016.**

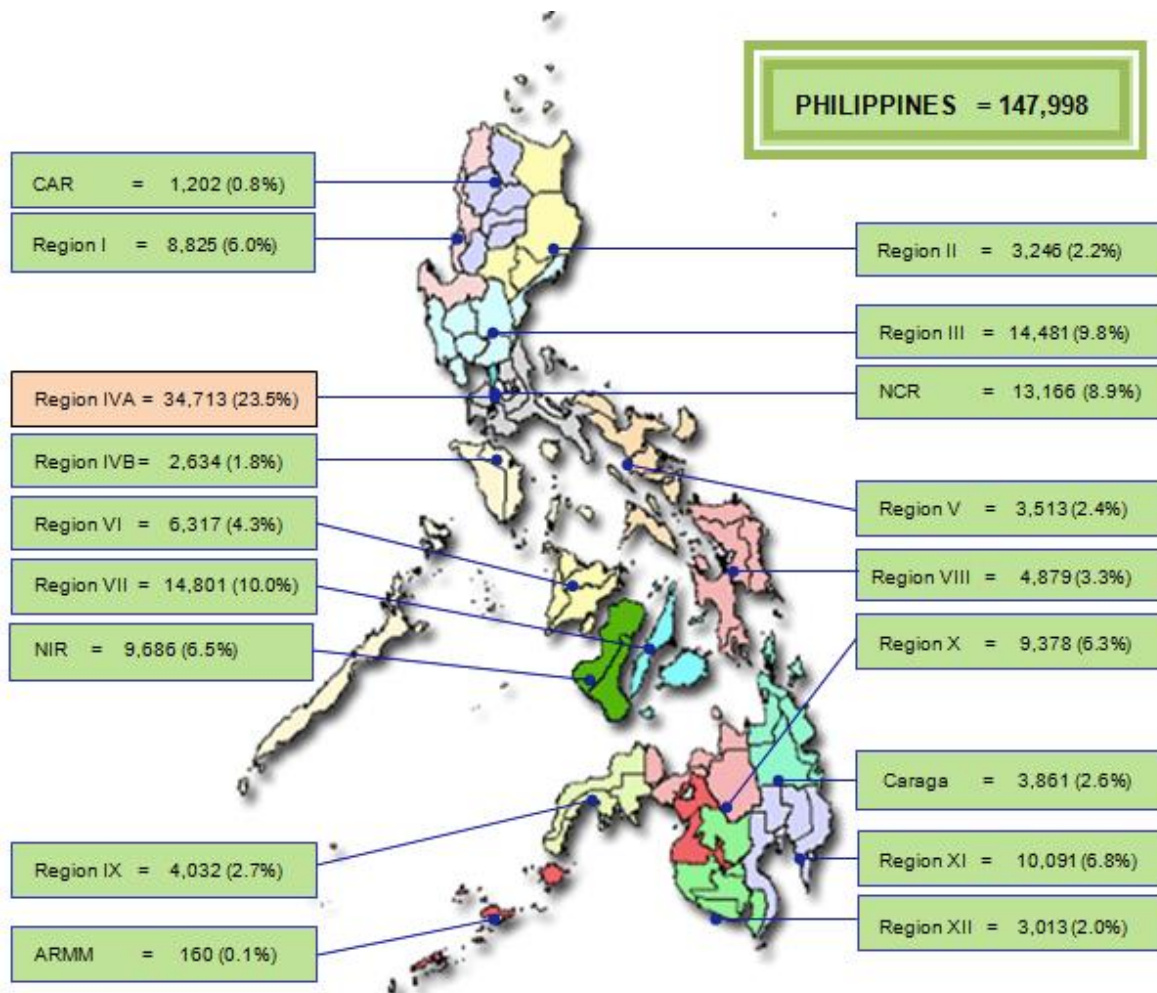


Figure 30: Distribution of Construction Projects by Region, 2016
 Source: Philippine Statistics Authority

The Philippines has around **10,112 accredited contractors**, out of which large contractors (AAAA, AAA & AA) account for 6% of the total contracting population, while medium-sized contractors (A & B) comprise 33%, and small contractors (C, D, Trade/E) make up 61% of the total contracting population. The industry has a substantial employment share, which stood at 8.2% of the total employment in 2016.



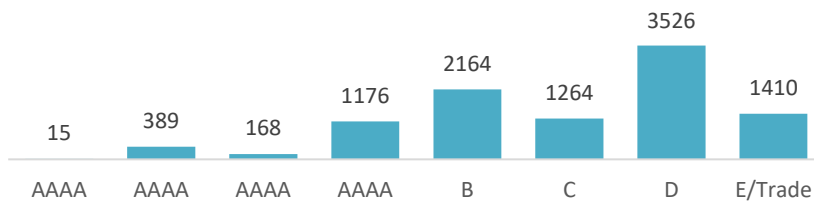


Figure 31: Licensed Construction Contractors in the Philippines, as of January 2018

Source: Construction Industry Authority of the Philippines

The market is dominated by the Filipino firms (9,412 domestic Filipino firms) with around 35 foreign companies (17 Chinese, 5 Japanese, 7 Korean, 3 Italian, 2 Singaporean, and 1 Australian) in the construction, building and infrastructure industry. The industry also has around 24 construction equipment dealers and 91 lessors as well as around 86 construction materials manufacturers (19 cement, 16 rebar, 95 lumber, 17 G.I Sheets/Pipes, and 34 aggregates manufacturers).

The country's residential and non-residential construction industry remains dominated by the real estate construction arms of local conglomerates, but foreign companies still find it easy to become involved in financing, construction and/or operations. Infrastructure sector is dominated by a handful of domestic industrial conglomerates that have stakes in the financing, construction and operations of projects. However, there remains significant competition from smaller companies and foreign firms. Foreign firms have an advantage in projects that require technical expertise, such as rail transport and energy. Foreign companies in transport sector are primarily involved in financing, advising and supplying technology and equipment, while domestic firms are in charge of construction and operations. As one of the least regulated sectors in the region, the energy and utilities construction segment has significant competition between domestic and foreign firms across all stages of projects.

Within the construction industry, professional services, such as project management, transaction advice and technical feasibility studies are not readily available locally. The skills, organisation and mobilisation of Filipino workers are often considered to be not up to the standards of their ASEAN counterparts in countries, such as Malaysia and Thailand, leaving considerable service gaps which require involvement of foreign companies. **The country is almost completely dependent on imported construction equipment**, with Japan, the US and Singapore as the main supply sources.

Accounting for 21% of the industry's total value in 2016, infrastructure construction is the second-largest market segment (after residential segment) and it is projected to be the fastest growing segment in the industry, with projected value of USD 14.7 billion by 2020 and a CAGR of 14.14% between 2017-2020. Although the country's infrastructure is severely underdeveloped, the recent push from the government to make significant improvements is likely to drive considerable market growth.



During the former Aquino administration, the infrastructure budget increased from USD 2.2 billion in 2011 to USD 17.3 billion in 2016, or from 1.8% to 5% of the country's GDP. The current President Duterte's administration has promised game-changing projects under the so-called "Golden Age of Infrastructure" programme, under which it plans to spend around PHP 7-9 trillion (USD 133-171 billion) on infrastructure development between 2017-2022. For 2018 alone, the government has allocated more than PHP 1 trillion (USD 19.05 billion) for infrastructure spending and has committed itself to increase annual infrastructure spending to 7.4% of GDP by 2022. Under its Public Investment Programme 2017-2022, the government is expected to pursue around 4,000 infrastructure projects, out of which 75 will be large-scale developments. Major projects zoom into the transport, railways, roads, airports, ports, energy and utilities, oil & gas pipelines, and water infrastructure. Out of the 75 flagship projects, 22 have been approved so far.

Foreign companies are not allowed to take full ownership of any infrastructure project, and the local-foreign ownership ratio of 6:4 applies to all sectors related to infrastructure development

Key projects currently driving the Philippine construction market include:

Railways

- Within the next 5 years, growth in the railway segment will be mostly driven by proposed and ongoing expansions of Metro Manila's rapid transit system, which currently consists of two light rail lines (LRT Lines 1 & 2). And one heavy rail line (MRT Line 3). Many of the expansions are being built as PPPs with Philippine firms taking on construction and international companies providing equipment and technical expertise. For example, work began on the 23km, USD 1.4 billion MRT Line 7 in April 2016 with completion date in 2020; work is also underway on a 3.9km, USD 48 million eastern extension of the LRT 2 Line.
- Other projects in pre-construction phase include: LRT Line 1 Cavite Extension; LRT Line 6 in Cavite; LRT Line 4 and MRT Line 5 (Makati-Pasay-Taguig Mass Transit System Loop). The Philippines is also planning two long-distance rail networks to improve passenger and freight capacity across the country – the North South Waylway Project and rail network in Mindanao.

Roads

- Major ongoing road projects include: the 47 km, USD 2.75 billion Laguna Lakeshore Expressway Dike; the 66 km, USD 685 million Central Luzon Link Expressway, connecting cities of Catanatuan and San Jose; the 8 km, USD 578 million Cebu-Cordova Bridge, which is to be finished by 2020; the USD 214 million Secondary Roads Development Project to upgrade 222 km of national highways in Eastern Visayas; and bus rapid transport lines in Metro Manila and Cebu.



Airports

- The airport segment is expected to pick up in 2019-2022 when construction begins on a number of upcoming projects. One of the most ambitious plans is to transform Clark International Airport into one of the Philippines primary air gateways. In 2015, NEDA (National Economic and Development Authority) announced the investment of USD 300 million for construction of a terminal which will eventually be able to handle 8 million passengers per year.
- In 2016, the Department of Transportation re-opened the PPP bidding for operations, maintenance and development at five regional airports, worth a total of USD 2.2 billion. These include the USD 418 million Bacalod-Silay International Airport in Negros Occidental; the USD 676 million Iloilo Airport; the USD 325 million Laguindingan Airport in North Mindanao; the USD 87.5 million New Bohol Airport in Central Visayas; and the USD 900 million Davao Airport.

Ports

- Two projects currently underway include a 210,000 sq. m., USD 300 million expansion of the Manila International Container Terminal, and 60,000 TEU, USD 30 million Inland Container terminal in Laguna, south of Manila. Both projects are being built by the International Container Terminal Services, Inc.

6.3 Overview of the Construction & Demolition Recycling Market

The Construction & Demolition (C&D) Waste Recycling market in the Philippines is **very nascent** with only a few players operating in this sector to a limited extent (construction companies, which re-use the construction materials, such as metal constructions). The C&D waste in the country typically includes asphalt, concrete, dirt, metal, wood, brick, glass, gypsum, plastic, polystyrene, porcelain, corrugated cardboard, carpet and roofing shingles.

In general, the Philippine construction and demolition companies rarely reuse or recycle building materials. Most of the times, C&D waste, such as construction debris and the cut off piles are mixed with other types of waste and disposed as fill material.

Transportation of C&D waste is operated by construction companies themselves or by hiring others to remove and dispose C&D waste off-sites.

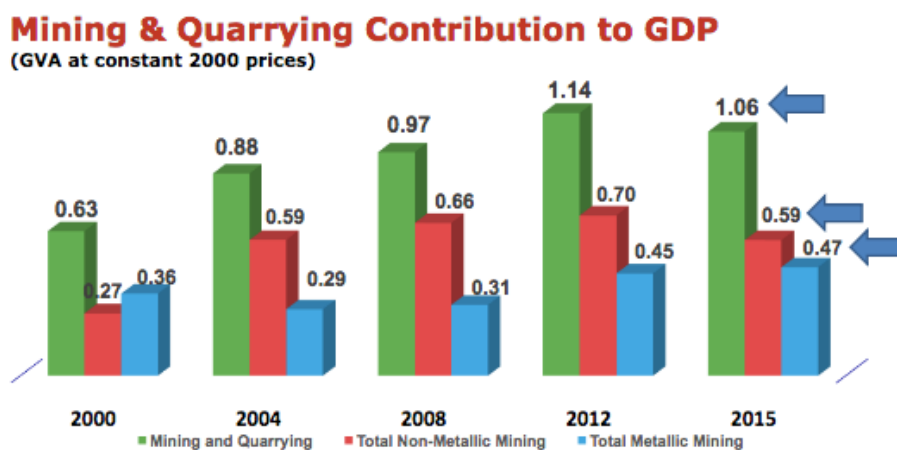
The C&D waste recycling sector has not taken off significantly in the Philippines due to several factors, including the low level of knowledge and awareness among site managers, developers and contractors on the benefits and potential savings from engaging in C&D waste recycling, as well as the absence of clear rules and operational guidelines to govern the C&D waste sector.



6.4 Overview of the Aggregates, Mining & Quarrying Sector

The Philippines is endowed with significant mineral resources and the mining & quarrying industry plays an important role in the country’s economy. Based on the Mines and Geosciences Bureau (MGB) estimations, about 9 million hectares of land areas (or 30% of the country’s total land area) are identified as having high mineral potential and around **30 million hectares of land are deemed as possible areas for metallic minerals**. In addition, around 5 million hectares are also known to be potential sites for non-metallic mineral reserves, while the country’s offshore areas, covering around 2.2 million square km, also contain placer minerals, such as gold, magnetite and chromite-bearing sands as well as aggregate resources like sand and gravel, decorative stones and polymetallic sulphide deposits. According to the Philippine Department of Environment and Natural Resources (DENR), the large reserves of various kinds of minerals put the Philippines among the **top 5 most mineral-rich countries in the world**, indicating significant potential for the Philippines to be among top 10 largest mining powers in the world.

The country is endowed with around **USD 1.4 trillion in mineral reserves**, including the metallic minerals of gold, copper, nickel, silver, iron, chromite, lead, aluminium, zinc, cobalt, platinum, mercury, manganese, and molybdenum, among others, as well as non-metallic minerals, such as sand and gravel, limestone, marble, clay and other quarry materials. The Philippines **metallic mineral deposits are estimated at 21.5 billion metric tonnes and non-metallic minerals are at 19.3 billion metric tonnes**. Notably, the country is world’s biggest supplier of nickel ore and it has the 3rd largest reserves of gold, as well as the 4th largest reserves of copper in the world.



4

Figure 32: Mining & Quarrying Contribution to GDP

Source: Philippine Statistics Authority



The mining, aggregates & quarrying industry plays an important role in the country's economic development. Although its contribution to the GDP in 2015 was only around 1% (0.59% for quarrying and 0.47% for mining), in areas where it occurs, it typically forms the most important economic sector. For example, mining & quarrying contribution to the region's GDP in MIMAROPA & CARAGA exceeded 20% in 2015.

Across the Philippines, applications for mineral exploration cover around 40% of the country. However, many no-go zones and uneconomic mining conditions prevent mining activities across a number of potential sites. Currently, **mining occurs in less than 0.3% of the total land area** and only around 2% of potential mineral deposits have been granted mining permits. The provinces with significant mining activities include Benguet, Compostela Valley, Davao, Palawan and Surigao. **In terms of gross value added, nickel accounted in 2015 for the largest share (74%),** followed by gold (14%) and copper (10%). Gold and copper remain the most sought-after minerals by mining operators and investors.

According to the Mines and Geosciences Bureau (MGB), large scale metallic mining had a gross production value of PHP 107.7 billion (USD 2.1 billion) in 2016. Small scale gold mining accounted for PHP 0.9 billion (USD 17.1 million) while non-metallic mining had a gross production value of PHP 73.6 billion (USD 1.4 billion) in 2016. Copper, gold and nickel remain the country's top mineral exports with Japan, Australia, Canada and China as the major countries of destination.

The country has around 50 operating metallic mines, 5 processing plants/smelters as well as 62 non-metallic mines/quarries. Metallic mines include 4 copper (with gold & silver), 8 gold (with silver), 3 metallurgical chromite (ore & concentrate), 30 nickel, and 5 iron ore mines. The processing plants/smelters include 1 copper smelter (PASAR), 2 gold processing plants (Masbate Gold & Co-O Gold), and 2 nickel processing plants (Coral Bay & Taganito HPAL). Among the 62 non-metallic mines/quarries, there are 35 limestone/shale quarries, 6 silica quarries, 15 aggregate quarries, 2 sand & gravel quarries, 1 dolomite quarry, and 3 clay quarries. In addition, there are around 2,397 small quarries and sand & gravel operations in the Philippines covered by permits issued by Local Government Units (LGUs).

In 2015, based on the latest data from the Philippine Statistics Authority, there were a total of 228 establishments engaged in mining and quarrying activities in the formal sector of the economy, employing over 232,000 people (0.6% of total employment).



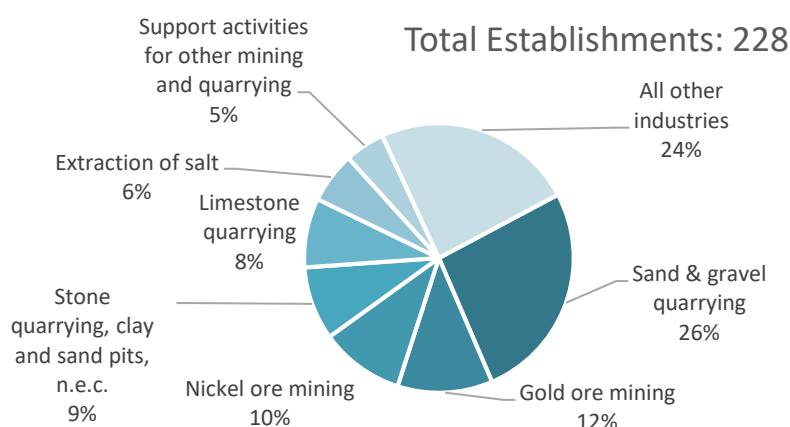


Figure 33: Establishments in the Mining & Quarrying Industry, 2015

Source: Philippine Statistics Authority

Under the Philippine Constitution, the state owns all natural resources and it has the power to grant private parties the right to explore, develop and utilise metallic and non-metallic minerals. Private parties usually use a corporation to carry on mining activities (except for small-scale mining, which is usually conducted by individuals). A Philippine corporation that is wholly owned by non-Philippine nationals may hold an exploration permit, or an FTAA. **A mineral agreement, however, is available only to Philippine citizens or to corporations, at least 60% of whose capital is owned by such citizens.**

According to the Mining and Degraded Areas Rehabilitation Research Centre, there are **350 registered mining companies** operating in the country. The mining industry structure in the Philippines ranges from near-monopolies in the coal sector (Semirara Mining accounts for almost 97% of total coal production) to the relatively fragmented structure of the gold industry (where approximately 60% of the production is by small-scale, artisanal mines). As for the copper and nickel industries, production is dominated by a number of large companies. **There is a number of mining companies with a large foreign equity**, including Benguet Corporation (40% American), Eldore Mining Corporation (40% Australian), Gold Fields Philippines Corporation (40% Australian), Philippine Gold Processing & Refining Corporation (99.99% British), TVI Resource Development Philippines, Inc. (40% Hong Kong), Carrascal Nickel Corporation (100% Japanese), Platinum Group Metals Corporation (85.72% Malaysian), Rio Tuba Nickel Mining Corp (40% Japanese), and Oriental Synergy Mining Corp (31.3% Chinese). The largest producers of key metallic minerals in the Philippines are provided in the table below:

Metallic Mineral Resource	Largest Players
Gold	Phil. Gold Processing & Refining Corp., Oceana Gold Philippines Inc., Mindanao Mineral Processing and Refining, Philex Mining Corp., and APEX Mining Company Inc.
Silver	APEX Mining Company, Inc.; Oceana Gold Philippines Inc., Phil. Gold Processing & Refining Corp.; Philex Mining Corporation.



Metallic Mineral Resource	Largest Players
Copper	Philex Mining Corporation; Lepanto Cons. Mng. Corp.; Carmen Copper Corporation; Oceana Gold Philippines Inc.
Chromite	Techniron Resources Inc.; Kromico Inc.
Iron Ore	Leyte Ironsand Corp.; Ore Asia Mining & Development Corporation.
Mixed Nickel-Cobalt Sulfide	Coral Bay Nickel Corporation; Taganito HPAL Nickel Corporation.
Nickel	Taganito Mining Corp.; Carrascal Nickel Corporation; Platinum Group Metals Corporation.

Table 67: Largest Producers of Key Metallic Minerals in the Philippines

Source: SES

In general, **there are no restrictions and limitations imposed on the importation of machinery and equipment or services required in connection with mining activities.** However, to the maximum extent compatible with efficient mining operations, the contractor is expected to give preference to products, services and technologies produced and offered in the Philippines of comparable quality. In particular, the contractor is expected to give preference to Philippine-owned construction enterprises and use buildings that can be constructed through materials and skills available in the Philippines, employ Philippine subcontractors for roads construction and the transportation and purchase of Philippine household equipment, furniture and food. A 3% import duty tax is applied to heavy mining equipment under the Most Favoured Nation rate (MFN) rate and a sales tax of 12%. Among the technologies used in mining, High Pressure Acid Leaching (HPAL) is common for liberating nickel and other metals in solution.

The mining industry is regulated through laws and regulations issued by the national government. Local government units also issue ordinances that may affect mining activities within their respective jurisdictions. The principal laws and regulations that regulate the mining industry are Republic Act No. 7942 (the Mining Act) and DENR Administrative Order No. 21-10 (DENR Order No. 21-10). The DENR is the primary government agency responsible for the regulation of the mining industry.

Some of the important recent developments related to the Philippine industry include:

- Recent major regulatory changes implemented by the Duterte administration has created uncertainty for the mining industry. In 2016, 28 operating mines have been closed and a ban on open pit mining has been instigated. Duterte’s government has also announced plans to “tax mining firms to death” if they neglected environmental protection. In April 2017, ban on open-pit mining has been extended while in 2018 President Duterte also ordered mining companies to conduct tree planting projects and threatened to continue banning all open pit mining next year. Environmental regulations remain a top concern for mining firms. Other challenges for mining firms include proposals to increase taxes and resource nationalism.



- There are two new copper mining projects, which are close to production stage, namely, the KingKing Mining Project and the Silangan Mining Project. The KingKing Mining Project is being developed by the Philippine St. Augustine Gold and Copper (40% equity share) and the Nationwide Development Corporation (60% equity share). The production is projected to start some time in 2018 with the production capacity of 62.6 kt/year and the mine life time of 22 years. The mine is estimated to hold 617 million tonnes of copper reserves. The second development, the Silangan Mining Project, is being developed by Philex Mining and is estimated to have 125 million tonnes of copper resources in Bayugo deposit and 273 million tonnes in Boyongan deposit. It is also expected to start production some time in 2018.
- The recent nickel ore export ban in Indonesia has led to increased Chinese buying of the Philippine ore, significantly boosting exports to the country and increasing the Philippines' importance within the global nickel supply chain. The production of nickel is therefore expected to play a more significant role in the Philippines' mining industry.

6.5 Overview of the Municipal Waste Sector

Solid waste management remains a major challenge in the Philippines, especially in urban areas like Metro Manila. Improper waste disposal, inefficient waste collection and lack of disposal facilities are among the dominant concerns in the country's solid waste management.

The Philippines' waste generation continues to rise with the increase in population, improvement of living standards, rapid economic growth, and industrialisation, especially in the urban areas. The National Solid Waste Management Commission (NSWMC) calculates that from 37,427.46 tons per day in 2012, **the country's waste generation has steadily increased to 40,087.45 tons in 2016**, with an estimated average per capita waste generation of 0.40 kg/day for both rural and urban areas. The National Capital Region (NCR) generated the largest volume of wastes for the past five years due to its population size, larger number of establishments and modernised lifestyle. With an estimated population of 12 million, Metropolitan Manila generated 9,212.92 tons/day of wastes in 2016. It was followed by Region 4A, with waste generation of 4,440.15 tons/day (11.08%) and Region 3 with 3,890.12 tons/day (9.70%).

Region	2012	2013	2014	2015	2016
1	1,709.17	1,739.54	1,769.90	1,800.27	1,830.64
2	1,100.64	1,120.19	1,139.75	1,159.31	1,178.86
3	3,631.99	3,696.52	3,761.05	3,825.58	3,890.12
4a	4,145.52	4,219.18	4,292.83	4,366.49	4,440.15
4b	909.43	925.59	941.74	957.90	974.06
5	1,878.74	1,912.12	1,945.50	1,978.88	2,012.26
6	2,700.14	2,748.11	2,796.09	2,844.06	2,892.04
7	2,605.68	2,651.97	2,698.27	2,744.57	2,790.86



Region	2012	2013	2014	2015	2016
8	1,479.47	1,505.75	1,532.04	1,558.33	1,584.61
9	1,391.95	1,416.68	1,441.41	1,466.15	1,490.88
10	1,693.94	1,724.03	1,754.13	1,784.23	1,814.32
11	1,818.05	1,850.35	1,882.65	1,914.95	1,947.26
12	1,348.20	1,372.15	1,396.10	1,420.06	1,444.01
13	884.69	900.41	916.13	931.85	947.57
CAR	620.64	631.67	642.70	653.72	664.75
NCR	8,601.60	8,754.43	8,907.26	9,060.09	9,212.92
ARMM	907.64	923.76	939.89	956.02	972.14
TOTAL	37,427.46	38,092.46	38,757.46	39,422.46	40,087.46

Table 33: Waste Generation (Tons/Day), 2012-2016

Source: NSWMC

The World Bank in 2012 estimated that **solid waste generation by Philippine cities will go up by 165% to 77,776 tons/day from 29,315 tons/day by 2025** as a consequence of a projected 47.3% hike in urban population. It has also projected a doubling of municipal solid waste generation per capita at 0.9 kg/day by 2025.

Solid wastes in the Philippines are generated from residential, commercial, industrial and institutional sources. **Residential wastes account for more than half (57%) of the total solid wastes** (e.g. kitchen scraps, yard waste, paper and cardboards, glass bottles, etc.). Wastes from commercial sources, which include commercial establishments and public/private markets, accounts for 27%. Wastes from institutional sources such as government offices, educational and medical institutions account for about 12% while the remaining 4% is waste coming from the industrial and/or manufacturing sector.



Figure 34: Solid Waste Sources (left) and solid waste composition (right) in the Philippines
Source: NSWMC

The country's **solid wastes typically contain more organic components than other materials**. According to NSWMC, disposed waste is dominated by biodegradable waste with 52%,



followed by recyclable waste which accounts for 28% and residuals at 18%. Biodegradable wastes come mostly from food waste and yard waste while recyclable wastes include plastic packaging wastes, metals, glass, textile, leather and rubber. The significant shares of biodegradables and recyclables indicate that composting and recycling have great potential in reducing solid wastes.

Solid Waste Management

Under Republic Act No. 9003 (RA), otherwise known as the “Ecological Solid Waste Management Act of 2000”, collection, transport and disposal of solid wastes are the responsibilities of the local government units (LGUs). At present, most LGUs administer their own collection systems or contract out this service to private contractors.

In Metro Manila, **the most common types of collection vehicles are open dump trucks and compactor trucks**. Nationwide, about 40-85% of the solid waste generated is collected while in Metro Manila it is 85%. The poorer areas of cities, municipalities, and rural barangays are typically unserved or under-served. Uncollected waste ends up mostly in rivers, esteros (estuaries) and other water bodies, thus polluting major water bodies and clogging the drainage systems, which results to flooding during heavy rains. It is interesting to note, however, that the 85% collection rate of Metro Manila is above the average collection rate of other countries in the Philippines’ income bracket (around 69%) and among East Asia and Pacific countries (around 72%).

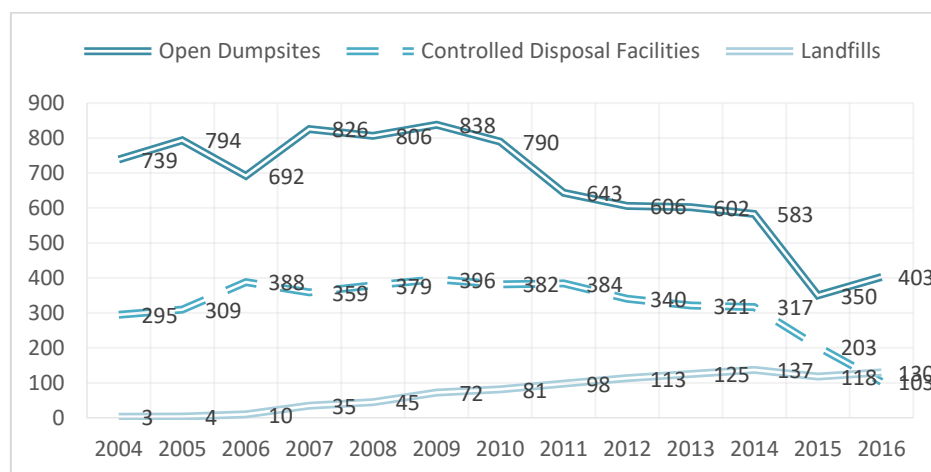


Figure 35: Disposal Facilities in the Philippines by Type, 2004-2016

Source: NSWMC

Open dumping remains the general practice of waste disposal in the country as controlled dumpsites and sanitary landfills (SLFs) are very limited. Republic Act No. 9003 required LGUs to close their existing open dumpsites by 2006 and to establish controlled disposal facilities or SLFs. As of 2016, there were still **403 open dumpsites and 103 controlled dumpsites in operation**. The number of SLFs is also insufficient to service all LGUs. While SLFs increased



from 48 in 2010 to 130 in 2016, LGUs with access to SLFs remain below 15%. It is interesting to note that the Department of Environment and Natural Resources (DENR) is now pushing for the establishment of cluster sanitary landfills or common sanitary landfills in the country to address waste disposal problems. Through cluster sanitary landfills, LGUs may share funds in establishing sanitary SLFs and consolidate efforts on solid waste management efforts. Through cost-sharing, LGUs can save financial resources and services.

As of 2015, **solid waste diversion rate in Metro Manila is 48% while outside Metro Manila the rate is 46%**. RA requires at least 25% of all solid wastes from waste-disposal facilities to be diverted or recovered through reuse, recycling, composting, and other resource-recovery activities. LGUs are also mandated to put up or establish several waste facilities such as materials-recovery facilities (MRFs) for processing recyclable and biodegradable waste. As of 2016, about 9,883 MRFs are in operation in the country serving 13,155 barangays (31.3% of the 42,000 barangays in the country).

To date, there are 55 active provincial solid waste management (SWM) boards, 614 active city/municipal boards and 5,549 active Barangay Committees. The local SWM boards are tasked to prepare, submit and implement a plan for the safe and sanitary management of solid wastes generated in areas under its geographic and political coverage. The Barangay SWM Committees, on the other hand, are tasked to formulate SWM programmes consistent with the City/Municipality SWM plan that is to segregate and collect biodegradable, compostable, reusable wastes, and to establish a MRF.

According to the Philippine Statistics Authority, in 2015, there were **25 collection of non-hazardous waste and 56 materials recovery establishments** in the country. Collection of non-hazardous waste employed 1,148 workers while materials recovery had 1,008 workers in 2015. Total value of output generated by collection of non-hazardous waste was PHP 4.6 billion (USD 87.6 million), and PHP 2.2 billion (USD 41.9 million) for materials recovery sector. Treatment and disposal of non-hazardous waste recorded PHP 0.3 billion (USD 5.7 mn) value of output in 2015.

6.6 Overview of the Biomass Sector

The biomass industry in the Philippines, while still lags far behind fossil fuel-based power generation, is rapidly advancing, especially as fossil fuel prices continue to rise. As mainly an agricultural country with a land area of 30 million hectares, the **Philippines utilises around 43% of its land (around 13 million hectares) for agricultural use**, distributed among food grains, food crops and non-food crops. As a result, it has abundant supplies of biomass resources, which include agricultural crop residues, forest residues, animal waste, agro-industrial waste, municipal solid waste and aquatic biomass.

Among the crops grown, **rice, coconut and sugarcane are the major contributors to biomass energy resources**. The most common agricultural wastes are rice hull, bagasse, cane trash,



coconut shell/husk and coconut coir. The country has a very good potential for biomass power plants, as approximately half of the country's agricultural land produce includes rice, coconut and other tropical fruit products. Consequently, large volumes of rice straw, husks and the waste of tropical fruit produce are generated. The rice hull is perhaps the most important, underdeveloped biomass resource that could be fully utilised in a sustainable manner.

Currently, biomass technologies used in the Philippines include the use of bagasse as boiler fuel for cogeneration; rice and coconut husks dryers for crop drying; biomass gasifiers for mechanical and electrical applications; fuelwood and agricultural wastes for oven kilns; and furnaces and cooking stoves for cooking and heating purposes. **Biomass technology represents the largest installations in the country in comparison with other renewable energy or energy-efficient and greenhouse gas abating technologies.** Biomass energy sources account for approximately 15% of the primary energy use in the Philippines.

It is estimated that around **70% of this biomass use can be traced to the cooking needs of the residential sector**, with the remainder attributed to industrial and commercial applications. 92% of the biomass industrial use is traced to boiler fuel applications for power and steam generation followed by commercial applications like drying, ceramic processing and metal production. Commercial baking and cooking applications account for 1.3% of its use.

The volume of residues from rice, coconut, palm oil, sugar and wood industries stands at around 16 million tons per year. Bagasse, coconut husks and shell account for at least 12% of the total national energy supply. The World Bank's Energy Sector Management Assistance Programme estimated that residues from sugar, rice and coconut could produce 90 MW, 40 MW and 20 MW, respectively. Two of the largest biomass power plants are fired by bagasse and were put up in the "sugar bowl" of Negros Occidental by packaged food and beverage producer Universal Robina Corp. (URC) and diversified sugar manufacturer Victorias Milling Co. (VMC), having 46 MW and 34 MW, respectively, and both connected to the grid. VMC's plant is currently undergoing expansion plans to reach 63 MW of installed capacity.

According to the Philippines Department of Energy (DOE), the country had **21 operational grid-connected biomass projects as well as 16 operational biomass plants for own-use**, as of 30 June 2017. The total installed capacity of biomass projects in June 2017 reached 389.58 MW for grid-connected and 119.86 MW for own use plants. The DOE has further awarded 5 projects for own use and 27 projects for grid connection, which represent additional 23.07 MW and 326.68 MW of potential capacity, respectively. Visayas region currently has the largest share of installed capacity (53%), followed by Luzon (32%) and Mindanao (15%). The largest planned additions are expected to come from Luzon (40%), followed by Visayas (34%) and Mindanao (26%) regions.



As of 30 June 2017	Installed Capacity (MW)	Potential Capacity (MW)
Luzon	161.35	138.28
Visayas	269.79	119.12
Mindanao	78.30	92.35

Table 69: Installed and Potential Power Capacity (from Awarded Projects) from Biomass

Source: Philippines Department of Energy

Some interesting developments related to the Philippine biomass industry are listed below:

- In 2018, biomass and run-of-river hydro technologies successfully secured 2-year extension on their FiT incentive scheme, allowing pre-approved projects to benefit from the FiT subsidies, which will result in a successful pipeline of new biomass development projects.
- In November 2017, a 25-MW biomass power plant in **Manapla** town, Negros Occidental, has been endorsed for construction. The new plant will be developed by North Negros BioPower Inc. The plant will add to the current power supply in the province and is expected to be operational between 2020-2021. The plant would primarily use cane trash, wood chippings and other agricultural scraps such as coconut husks and rice straw.
- Victorias Milling Company Inc (VMC) has completed the PHP 2 billion, 40 MW **cogeneration biomass power plant** in September 2017 and it is now engaged in the second phase of construction, which is set to increase the generation capacity to 63 MW. Around 25 MW of the current capacity is exported to the grid while the remaining 15 MW are generated for VMC's own use. The plant runs mainly on bagasse, a by-product of sugarcane processing.
- In 2016, Bronzeoak Philippines, Inc. announced that it would be building **3 biomass projects** over the next three years. The company has targeted the completion of the first project in Negros Occidental by the end of 2017, with the second plant coming online a year after, and the third plant being constructed by the end of 2019. The three plants would be located in San Carlos, La Carlota and Manapla sites and would generate 70 MW of electricity under the Feed-in Tariff (20 MW in San Carlos and 25 MW each in La Carlota and Manapla). The projects are developed in partnership with the International Finance Corp (IFC), which has invested USD 161 million. The biomass projects would convert agricultural waste to generate reliable base load power.
- San Carlos BioPower, a ThomasLloyd SICAV-SIF – Cleantech Infrastructure Fund project in the Philippines is developing a **stand-alone base load power** plant with gross electricity production capacity of 19.99 MW, which will produce 141 million kWh of electricity once it has been completed and supply 212,000 people with renewable energy.



- According to the Philippines Department of Energy (DOE), there are least **7 newly awarded biomass projects** which will add additional capacity in the upcoming years. These include the 12 MW rice husk-fired biomass power plant in Bulacan, which is developed by Hypergreen Energy Corporation; the 6 MW multi-feedstock biomass power plant project in Santa by V.S. Gripal Power Corporation; the 1.2 MW biogas power plant in Candelaria by First Quezon Biogas Corporation; the 20 MW waste-to-energy power plant in Naga City by CJ Global green Energy Philippines Corp.; the 2.5 MW rice husk-fired biomass power plant project in Ormoc by UGEP Ormoc Biomass Power; the 5 MW napier grass-fired biomass power plant in Manolo Fortich by Pilipinas Joule Energy Corporation; and the 24 MW biogas power plant in Maasim by Natures Renewable Energy Development Corporation.
- At least 15 biomass projects are currently undergoing construction across Philippines, which would add at least **200 MW to the biomass generation** capacity, while at least 109 MW would be added from projects which have recently received approval for construction.

6.7 Market Entry Considerations

Local competitive landscape

There is intense competition among well-established players, such as Hitachi Philippines, Caterpillar Inc., Volvo and Komatsu. A wide array of material handling equipment and machinery suppliers are operating in the market, which offer a broad range of materials handling solutions, from crushers, breakers, grinders, feeders and screening solutions to forklifts, demolition tools, concrete mixing plants, wheel loaders, and many other product categories. Distributors represent a number of international players, including those from the US, Japan, Australia, the UK and Germany. While Western suppliers are making their mark in the Philippines industry, they face strong competition from high quality, competitive priced products from Japan.

The market is also becoming increasingly targeted by cheaper Chinese brands, which are likely to have a greater presence in the region in the upcoming years. Duterte's tilt towards China, with which he has signed USD 24 billion worth of infrastructure financing and investment deals in October 2017, is likely to have an impact on the competitive landscape in materials handling equipment sector. Many Chinese construction firms have signed memorandums of understanding with the Philippine firms to build railways, rapid transit, power plants and ports, and are likely to source the required equipment from the Chinese market.

Some international companies have entered the market by developing strong local presence through local partners and distributors, which have relationships with mining contractors and construction consultancy companies. With well-established local relationships between existing suppliers and end-users, the market is becoming considerably tough for new entrants without competitive product advantage, based on pricing or new technology innovations.



Trade Data (import statistics)

The tables below analyse in detail the position of the United Kingdom related to exports of material handling machines and components to the Philippines. The UK faces competition from countries such as China, Japan, Singapore, Korea, and the United States who are among the top exporters to the Philippines. Meanwhile, the export ranking of the UK in terms of value ranges from the 9th to 23rd. Crushing or Grinding Machines for Solid Mineral Substances and Printed Books, Brochures and Similar Printed Matter were the product categories wherein the UK clinched its highest export position in 2017.

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	18,747	26,592	15,231	44,151	-
China	9,263	8,870	6,197	10,282	1 st
Germany	1,028	4,525	394	9,419	2 nd
Japan	468	503	1,379	7,812	3 rd
Denmark	-	-	-	3,792	4 th
United States of America	996	450	319	2,919	5 th
United Kingdom	271	2,289	19	1,111	9 th

Table 70: Imports of Crushing or Grinding Machines for Solid Mineral Substances (HS: 847420) by the Philippines

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	164	486	442	3,945	-
Singapore	-	4	68	1,182	1 st
Japan	11	4	12	800	2 nd
United States of America	115	255	94	509	3 rd
China	2	54	24	456	4 th
India	-	5	10	292	5 th
United Kingdom	-	5	10	16	9 th

Table 34: Imports of Printed Books, Brochures and Similar Printed Matter, in Single Sheets, Whether or not Folded (HS: 490110) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	5,824	7,720	8,462	11,788	-
United States of America	1,002	303	873	2,616	1 st
China	1,581	2,735	3,082	2,096	2 nd
Singapore	146	456	103	1,573	3 rd
Malaysia	5	522	747	1,478	4 th
Australia	791	251	451	1,021	5 th
United Kingdom	-	78	38	240	13 th

Table 35: Imports of Sorting, Screening, Separating or Washing Machines for Solid Mineral Substances, Incl. Those in Powder or Paste Form (HS: 847410) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	32,909	49,990	41,508	47,446	-
China	5,555	11,730	10,108	11,659	1 st
Japan	654	1,636	2,698	9,093	2 nd
India	1,819	3,507	5,583	5,883	3 rd
Germany	2,475	16,534	4,329	4,852	4 th
Indonesia	1,132	283	1,445	1,918	5 th
United Kingdom	938	2,112	1,321	767	13 th

Table 36: Imports of Parts of Machinery for Working Mineral Substances of Heading 8474 (HS: 847490) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	5,754	10,857	16,307	66,120	-
Japan	518	827	1,192	19,604	1 st
Korea, Republic of	216	213	480	16,827	2 nd
China	1,638	1,580	2,371	7,286	3 rd
Italy	88	323	1,824	4,897	4 th
Singapore	274	1,089	1,269	3,327	5 th
United Kingdom	22	124	725	308	13 th

Table 37: Imports of Mixing, Kneading, Crushing, Grinding, Screening, Sifting, Homogenising, Emulsifying or Stirring Machines, n.e.s. (excluding industrial robots) (HS: 847982) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	5,192	7,484	8,708	12,795	-
China	1,663	1,674	2,211	4,192	1 st
United States of America	1,427	1,441	1,393	2,440	2 nd
Germany	416	1,451	1,015	1,099	3 rd
Brazil	7	3	205	1,095	4 th
Singapore	446	584	1,009	693	5 th
United Kingdom	5	55	256	17	13 th

Table 38: Imports of AC Motors, Multi-Phase, of an Output > 750 W but <= 75 kW (HS: 850152) by the Philippines
Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	196,897	220,837	288,805	236,837	-
Japan	35,074	51,877	75,172	43,254	1 st
Korea, Republic of	24,662	25,798	31,624	39,191	2 nd
Singapore	15,138	30,784	21,215	30,646	3 rd
China	15,889	20,946	61,490	26,479	4 th
Hong Kong	9,181	7,126	12,024	20,279	5 th
United Kingdom	93	446	565	1,444	14 th

Table 76: Imports of Machines and Mechanical Appliances, n.e.s. (HS: 847989) by the Philippines

Unit: USD Thousand

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	571,542	865,918	1,364,440	823,671	-
Japan	163,376	305,183	580,482	302,031	1 st
Korea, Republic of	64,450	95,037	134,377	105,164	2 nd
China	54,171	98,239	150,128	79,414	3 rd
Singapore	47,527	73,801	80,969	63,966	4 th
United States of America	37,974	68,399	92,347	44,388	5 th
United Kingdom	2,409	4,742	4,624	3,164	16 th

Table 77: Imports of Machines and mechanical appliances having individual functions (HS: 8479) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre



Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	13,294	23,018	43,116	21,914	-
China	2,529	15,708	21,062	14,716	1 st
Korea, Republic of	763	1,026	7,228	2,596	2 nd
Japan	88	1,412	659	1,043	3 rd
Thailand	276	28	839	589	4 th
Germany	297	110	1,127	578	5 th
United Kingdom	643	18	706	16	17 th

Table 78: Imports of Continuous-action Elevators and Conveyors for Goods or Materials, Belt Type (Excluding Those for Underground Use) (HS: 842833) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	2,052	5,211	4,364	9,726	-
China	367	868	913	2,464	1 st
Korea, Republic of	259	140	512	2,168	2 nd
Japan	467	771	279	964	3 rd
Singapore	42	472	205	804	4 th
Australia	18	714	747	653	5 th
United Kingdom	-	7	26	18	23 rd

Table 79: Imports of Buckets, Shovels, Grabs and Grips for Machinery of Heading 8426, 8429 and 8430 (HS: 843141) by the Philippines (Unit: USD Thousand)

Source: International Trade Centre

Exporters	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017	Position in 2017
World	1,078	2,713	435	5,555	-
Thailand	56	355	89	1,352	1 st
Viet Nam	33	456	37	1,294	2 nd
Indonesia	496	1,198	3	1,007	3 rd
China	255	554	213	907	4 th
Japan	-	7	24	453	5 th
United Kingdom	-	-	-	-	N.A.

Table 80: Imports of Parts and Accessories for Carriages for Disabled Persons (HS: 871420) by the Philippines

Unit: USD Thousand

Source: International Trade Centre



Applicable Tariffs

The table below reveals the average tariffs applied from the Philippines to UK exports of material handling products in 2017. All British exports to the Philippines had an average tariff range of 1% to 5%.

Description	HS Code	Average Tariffs
Crushing or grinding machines for solid mineral substances	847420	5.00%
Sorting, screening, separating or washing machines for solid mineral substances, incl. those in powder or paste form	847410	5.00%
Printed books, brochures and similar printed matter, in single sheets, whether or not folded	490110	5.00%
Wheelchair parts n.e.s.	871420	3.00%
Parts of machinery for working mineral substances of heading 8474	847490	3.00%
Machines and mechanical appliances having individual functions	8479	1.26%
Machines and mechanical appliances, n.e.s.	847989	1.25%
Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines, n.e.s.	847982	1.08%
AC motors, multi-phase, of an output exceeding 750 W but not exceeding 75 KW	850152	1.00%
Buckets, shovels, grabs and grips for machinery of heading 8426, 8429 and 8430	843141	1.00%

Table 81: Average Tariffs Applied by the Philippines to UK Exports in 2017

Source: International Trade Centre

Barriers to entry

The Philippine Government has made major strides in fighting graft and corruption. However, corruption, a constraint to business and outside investment, remains pervasive and long-standing challenge. The country's ranking in Transparency International's Corruption Perceptions Index has consistently declined; from 85th place in 2014, 95th place in 2015, to 101st place in 2016. The country's complex, slow and complicated judicial system is also sometimes seen as the inhibitor for timely and fair resolution of commercial disputes. Most cases take many years to reach a final verdict.

Customs procedures are burdensome and not transparent in their application. The Bureau of Customs is seen as highly politicised and subject to vested interests. There are problems with



regard to manifold import declarations, valuation of merchandise, reference pricing, etc. In terms of legislation, the recently adopted Customs Modernisation and Tariff Act of 2016 and the ratified Trade Facilitation Agreement will help provide for more standardised approaches and the new BoC (Bureau of Customs) leadership seems genuine in tackling some of the corruption and looking for international best practice. Yet, operators are still waiting for improvements in practice.

Government procurement laws and regulations also favour Philippine-controlled companies and domestically-produced materials and supplies. A 40% limit on foreign ownership exists for bidders in the procurement of goods and consulting services, except for foreign funded projects, or in case of reciprocity. The limitation on foreign participation is 25% for infrastructure, with no consideration of reciprocity. When allowing foreign participation, a price differential is imposed and/or countertrade demanded. Complex administrative documentation is required for participation. Philippines has signed the instrument to accede The Hague Apostille Convention abolishing the requirement for legalisation of foreign public documents and started an e-Registry system, but implementation will take time. In general, domestic market-oriented firms are generally limited to 40% foreign equity.

It is noteworthy to mention that the Board of Investments also imposes a higher export performance requirement on foreign-owned enterprises (70% of production) than on Philippine-owned companies (50% of production).

The Philippines also lags behind many of its neighbours in infrastructure development and ranks as one of the lowest in the region for internet penetration, connectivity and speed. Cybersecurity remains a concern, as the government has only recently developed a national plan and agency to prevent or investigate cyber-attacks.

Specific to the mining, quarrying and aggregates market, Foreign Investment Negative List (FINL) notes that foreign investment in small-scale mining is outright prohibited, and the sector is subject to limitations for natural resource extraction.

The mining industry has objected to draft legislation which levies an inordinately high tax rate that would make the country uncompetitive for foreign investments. The government is additionally proposing a ban on the export of unprocessed mineral ores similar to many other emerging economies.

Finally, the VAT tax is high: a 12% tax is levied on the sale of all goods and services, including imports of goods into the Philippines.



6.8 Useful Information

Key Government Agencies

Construction Industry Authority of the Philippines (CIAP). The CIAP promotes, accelerates and regulates the growth and development of the construction industry in the Philippines. Via various boards under its jurisdiction, it issues, suspends and revokes licenses of contracts; formulates and implements policies and programmes for public and private construction domestically and overseas; and moderates any disputes arising from government and private contracts.

Contact Information

Address: 5/F Executive Building Center, 369 Sen. 369 Gil J. Puyat Ave., 1209 Makati City
Tel: (+632) 895 4424 | (+632) 895 6826
Website: www.ciaph.dti.gov.ph

Department of Public Works and Highways (DPWH). It is one of the key departments of the government undertaking major infrastructure projects. The DPWH is mandated to undertake (a) the planning of infrastructure, such as national roads and bridges, flood control, water resources projects and other public works, and (b) the design, construction, and maintenance of national roads and bridges, and major flood control systems.

Contact Information

Address: Bonifacio Drive, Port Area, Manila
Tel: (+632) 304 3300
Website: www.dpwh.gov.ph/dpwh

Department of Energy (DOE). This is the executive department of the Philippine Government, responsible for preparing, integrating, manipulating, organising, coordinating, supervising and controlling all plans, programmes, projects and activities of the Government relative to energy exploration, development, utilisation, distribution and conservation.

Contact Information

Address: Energy Centre, Rizal Drive, Bonifacio Global City, 1632 Taguig City
Tel: (+632) 840 2134
Website: www.doe.gov.ph

Mines and Geosciences Bureau (MGB). This is a government agency under the Department of Environment and Natural Resources, responsible for the conservation, management, development and proper use of the country's mineral resources, including those in reservations and lands of public domains.

Contact Information

Address: MGB Compound, North Avenue, Diliman, 1100 Quezon City
Tel: (+632) 9201 1635



Website: www.mgb.gov.ph

Department of Environment and Natural Resources (DENR) is the executive department of the Philippine Government responsible for governing and supervising the exploration, development, utilisation, and conservation of the country's natural resources.

Contact Information

Address: Visayas Avenue, Diliman, 1100 Quezon City

Tel: (+632) 929 6626

Website: www.dent.gov.ph

Board of Investments (BOI). The agency under the Department of Trade and Industry (DTI), which leads investments promotion in the Philippines. It is at the forefront of the government's efforts to attract direct investments into the country to contribute to economic growth and jobs creation. The agency is designed to promote inward investments and assist local and foreign investors in their venture of the desirable areas of business, defined in the annually-prepared investment Priorities Plan (IPP).

Contact Information

Address: Bldg 385 Sen. Gil. Puyat Ave, Makati City

Tel: (+632) 895 3640

Website: www.investphilippines.gov.ph

Associations

Philippine Constructors Association (PCA). The association acts as a catalyst for the continuous improvement of standards and practices for the local building industry. The PCA has 1,500 members nationwide, undertaking 80% of government infrastructure projects. Members of the association are engineering, building, trade and specialty contractors duly accredited by the Philippine Contractors Accreditation Board (PCAB), including construction materials and equipment suppliers and distinguished personalities of the construction industry and other allied organisations. Associate membership is open to firms engaged in the business of manufacturing or supplying construction materials, supplies or equipment, or providing credit and guarantee facilities, underwriting insurance for the construction industry, or actually engaged as technicians performing allied or auxiliary services to the construction industry.

Contact Information

Address: 3/F Padilla Bldg., Francisco Ortigas Jr. Avenue, Ortigas Center, 1605 Pasig City

Tel: (+632) 631 2778 | (+632) 631 3135

Website: www.philconstruct.com

Association of Carriers & Equipment Lessors (ACEL). The association was formed in 1966 to address the problems associated with the procurement and utilisation of construction equipment needed to pursue national initiatives. It was conceived as a way to find solutions



for unavailability of construction equipment in construction activities in sectors such as power, irrigation, transport, commercial, housing and real estate. The key focus of ACEL is to contribute to the equipment industry by formulating and implementing policies, advocacies and standards for the equipment sector by promoting business.

Contact Information

Address: Jollibee Plaza Condominium, F. Ortigas, Jr. Road, Ortigas Complex, Pasig City
Tel: (+632) 631 3136
Website: www.ancel.com.ph

Trade Exhibitions

PhilConstruct is the largest construction show in the Philippines, which has played a major role in the industry development for almost three decades. The trade show has become a solid platform for construction industry and serves as a meeting place for the industry's movers, gathering thousands of leading brands and buyers from around the globe.

Dates: 8-11 November 2018
Location: SMX Convention Centre, Pasay, Philippines
Website: www.philconstructevents.com

Philippine Building & Construction Exposition (Philbex) is a 4-day event showcasing products, such as building materials, equipment and services; construction materials, equipment and services; interior designs and renovation products; mechanical engineering systems; electrical engineering systems; construction promotions; information technology; telecommunications; real estate and housing, and other solutions for the building and construction industry.

Dates: 13-16 September 2018
Location: M City Cebu, Cebu, Philippines
Website: www.metalex.co.th/en/Home

Mining Philippines is a trade show that features companies involved in mining, quarrying and mineral processing industries. Organised by the Chamber of Mines of the Philippines, the event exhibits equipment and solutions for efficient exploration, development and utilisation of minerals. Mining Philippines gathers around 20,000-50,000 visitors and 500+ exhibitors. Exhibitor product profiles include shaft sinking, underground mining, crushing, storage, boring and driving, cutting and filing, ventilation, deep hole drilling, coal conversion plant, electrical plant equipment, material handling, surface mining, and other technologies.

Dates: 18-20 September 2018
Location: Sofitel Philippine Plaza Manila, Pasay, Philippines
Website: www.metalex.co.th/en/Home



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7.0 Competitor Profiles

7.1 American Competitors

Vermeer Corporation

Vermeer Corporation is an American manufacturer of industrial and agricultural equipment. The privately-held company distributes products globally from seven production facilities and offices in Pella, Iowa, US, and multiple locations worldwide. Founded in 1943, Vermeer serves the construction, landscaping, environmental, excavation, forestry and forage markets in the US and internationally. Serving customers in more than 60 countries, Vermeer equipment and solutions are backed by a worldwide sales and support network of independent Vermeer equipment dealers and nearly 3,000-strong team, located around the world. Vermeer has a dealer network covering more than 600 locations across the US, Europe, Middle East, Africa and Asia.

For agriculture sector, the company offers bale processors, bale wrappers, balers, disc mowers, forage innovations, mower conditioners, rakes, tedders and trailer mowers. For utility installation, it offers concrete cutters, directional drills, mini skid steers, pile drivers, trenchers-plows-rockwheels, and trenchless boring equipment. For surface mining & civil construction, it offers terrain leveller SEMs (surface excavation machines). It also has bucket wheels, concrete cutters, pipeline trenchers and reclaimers. For recycling sector, it offers compost turners, horizontal grinders, stationary processing solutions, trammel screens and tub grinders. It also has brush chippers, stump cutters and trailers. It additionally offers forestry tractors, horizontal grinders, tub grinders and whole tree chippers, among other product lines.



Figure 36: Vermeer's Stationary Processing Solution

Source: Vermeer Corporation

In South East Asia, it operates via authorised dealerships. Vermeer Asia Pacific in Singapore distributes agricultural products in Singapore. Vermeer (SEA) Pte Ltd, based in Singapore, is the exclusive authorised dealer for Vermeer equipment in many South East Asian territories including Singapore, Malaysia, Myanmar, Laos, Cambodia, Vietnam and the Philippines. The



company also distributes its products in Indonesia via PT Vermeer Indonesia and in Thailand via Asia Technical Consulting Company Ltd.

Astec Industries, Inc.

Founded in 1972, Astec Industries, Inc. designs, engineers, manufactures and markets equipment and components used primarily in road building and related construction activities. The company's segments include Infrastructure Group, Aggregate and Mining Group and Energy Group.

The company's products are used in each phase of road building operations, from quarrying and crushing the aggregate to application of the road surface. The company also manufactures certain equipment and components unrelated to road construction, including equipment for the mining, quarrying, construction and demolition industries; port and rail yard operators; gas and oil drilling rigs; water well and geothermal drilling rigs; industrial heat transfer equipment; whole-tree pulpwood chippers; horizontal grinders; blower trucks; concrete plants; wood pellet plants; commercial and industrial burners; and combustion control systems. Through its subsidiary companies, it manufactures more than 220 products from rock crushing and screening plants to hot mix asphalt facilities, concrete plants, water, oil & gas drilling rigs, geothermal drills, milling machines, asphalt pavers, material transfer vehicles, and wood processing equipment, among others. Its main customer base includes companies in highway construction, civil construction, open mine and quarry operations, oil field service, wood pallet production, forestry, oil & gas, industrial sites, soil remediation, and water well drilling industries.

Its **Infrastructure Group** segment is made up of five business units, which are Astec, Inc. (Astec), Roadtec, Inc. (Roadtec), Carlson Paving Products, Inc. (Carlson), Astec Mobile Machinery GmbH (AMM), and Astec Australia Pty Ltd. (Astec Australia). Astec, Roadtec and Carlson business units design, engineer, manufacture and market a line of asphalt and wood pellet plants and their related components, asphalt pavers, screeds, milling machines, asphalt recycling equipment, soil-stabilising-reclaiming machinery, material transfer vehicles, stabilisers and related ancillary equipment. AMM and Astec Australia primarily sell, service and install products produced by the manufacturing subsidiaries of the company. Infrastructure Group primarily competes with Gencor Industries, Inc., ADM, Almix, Ammann, Fayat/Marini, Benninghoven/Wirtgen, Wailer, Caterpillar Paving Products, Inc., Volvo Construction Equipment, Bomag Fayat Group, Lee Boy and CMI.





Figure 37: KPI-JCI and Astec Mobile Screens – Mining Technology
Source: KPI-JCI and Astec Mobile Screens

Aggregate and Mining Group consists of six business units that are focused on designing and manufacturing heavy processing equipment, as well as servicing and supplying parts for the aggregate, metallic mining, recycling, ports and bulk handling markets. These business units are Telsmith, Inc (Telsmith), KPI-JCI and Astec Mobile Screens, Breaker Technology Ltd/Breaker Technology Inc. (BTI), Osborn Engineered Products, SA (Pty) (Osborn), Astec do Brasil Fabricacao de Equipamentos Ltda. (Astec Brazil) and Telestack Ltd (Telestack). Telsmith's products are crushers, vibrating equipment, modular relocatable stationary plants, mobile portable plants and larger track mounted systems. KPI-JCI and Astec Mobile Screens designs, engineers, manufactures and supports a line of stationary and portable aggregate processing equipment for the aggregate metallic and non-metallic, bulk handling, sand and gravel, mining, quarrying, concrete and asphalt recycling and industrial markets. Its products line includes conveyors, screening plants, pugmill plants, sand and aggregate washing/classifying systems and all types of mobile, portable and stationary aggregate processing plants for the aggregate, recycle and construction industries, as well as a line of primary, secondary, tertiary and quaternary crushers, industrial jaw, horizontal and vertical shaft impactor, and high frequency screens. BTI designs, engineers, manufactures and markets a line of rock breaker systems for the mining, quarry and recycling industries, and provides large-scale stationary rock breakers for open pit mining, as well as mid-sized stationary rock breaker for underground applications. Osborn manufactures and markets a line of materials processing equipment while Astec Brazil markets products in Brazilian market for other Astec Aggregate and Mining companies. Telestack designs and engineers mobile bulk material handling solutions that are designed to handle all free-flowing bulk materials, including ores, coal, aggregates, fertilisers, grains, woodchips and pellets. The Aggregate and Mining Group competes with Metso Minerals, Sandvik Mining and Construction, Terex MP and Powerscreen, Atlas Copco Mining, McCloskey, Superior Industries, Wirtgen, Deister, McLanahan, CDE Global and Weir Minerals.



Energy Group includes five business units focused on supplying heavy equipment, such as heaters, drilling rigs, concrete plants, wood chippers and grinders, pump trailers, storage equipment and related parts to the oil & gas, construction and water well industries. These business units include Heatec, CEI, GEFCO, Inc. (GEFCO), and Peterson Pacific, Inc. (Peterson). Heatec designs, engineers, manufactures and markets various thermal fluid heaters, waste heat recovery equipment, liquid storage systems, and polymer and rubber blending systems. CEI designs and manufactures thermal fluid heaters, portable and stationary storage tanks, rubberised asphalt and polymer blending systems for the asphalt and other industries. GEFCO manufactures portable drilling rigs and related equipment for the water well, environmental, groundwater monitoring, construction, mining and shallow oil & gas exploration, and production industries. Peterson manufactures large whole-tree pulpwood chippers, biomass chippers, horizontal grinders and blower trucks primarily for the construction, landscaping, recycling and biomass energy markets. The Energy Group competes with Gencor, Almix, Sigma Thermal, Erie Strayer, Con-E -Co, Meeker, Versa Drill, Schramm, Atlas Copco, Biohm & Vos, Stewart & Stevenson, Dragon, Morbark, Terex, Precision Doppstadt, Bandit, Jenz, Komptech, Fin and Webster Engineering.

With an authorised dealer network that spans around the globe, the company has a strong presence in South East Asia. Local dealers distribute its material handling, crushing, screening, track mount, washing & classifying equipment. The company is represented in Indonesia by PT Servita Beningdo, based in Bekasi, and by Emil Randa in Jakarta. In Malaysia, its product lines are represented by Kina Quarry Consultants Sdn. Bhd. in Sabah and Pelican Pumps & Equipment in Kuala Lumpur. In the Philippines, it has an authorised distributor, the BSME Trading, while in Thailand and Vietnam it is represented by DKSH Limited and FATT Vietnam Co., Ltd., respectively. It also has a distributor in Myanmar, the Mya KanEngineering Co. Ltd.



Figure 38: Astec Authorised Dealer Network Coverage

Source: Astec Industries



Caterpillar (CAT)

Founded in 1925, Caterpillar is the world's largest heavy industrial, construction and mining equipment manufacturer. It manufactures and sells construction and mining equipment, diesel and natural gas engines, industrial gas turbines, and diesel-electric locomotives for construction, resource, and energy and transportation industries. The company has around 98,400 full-time employees with sales and revenues in 2017 amounting to USD 45.462 billion (sales outside the US accounted for 59% of the revenue). The company principally operates through its three primary segments – Construction Industries, Resource Industries and Energy & Transportation – and also provides financing and related services through its Financial Products segment. Uniting 21 brands, CAT serves agriculture, construction, demolition and scrap recycling, forestry, government, landscaping, marine, material handling, oil & gas, paving, power plants, quarry & aggregates, and other industries.

CAT's product line of over 300 machines includes one of the world's broadest range of equipment, including articulated trucks, asphalt pavers, backhoe loaders, compactors, dozers, drills. Shovels, excavators, forest machines, forwarders, harvesters, knuckleboom loaders, material handlers, motor graders, various trucks, pipelayers, road reclaimers, skidders, skid steer loaders, telehandlers, longwalls, utility vehicles, wheel excavator, and many others.

It also offers various attachments, including augers, backhoes, bale grabs, blades, brooms, buckets, compactors, excavators, delimiters, mowers, forks, hammers, harvester heads, material handling arms, multi-processors, pulverisers, rakes, directional felling heads, saws, shears, snow blowers, thumbs, tillers, trenches, winches, and others.

Caterpillar's global reach and presence is very significant. It serves the customers in more than 180 countries around the globe. Its manufacturing, marketing, logistics, service, R&D and related facilities along with its dealer locations total more than 500 locations worldwide, ensuring that it remains geographically close to its global customer base. The company has 171 dealers, servicing 192 countries worldwide.

In response to customer demand and industry growth, Caterpillar continues to make significant investments in the Asia Pacific region to increase production of construction machinery. Caterpillar's presence in the Asia Pacific region includes Australia, China, India, Japan, New Zealand, South Korea and South East Asia. Nearly 20% of Caterpillar's employees and nearly 30% of its global dealers are located in this region. In addition, around 30% of Caterpillar's sales in 2011 were generated from Asia Pacific region.

In South East Asia, Caterpillar offers new and used equipment, power systems, various attachments and parts, as well as technology solutions. Main clients in the region come from waste, quarry aggregates and cement, power plant, pipeline, paving, oil & gas, OEM solutions, mining, material handling, marine, landscaping, power generation, government, forestry, demolition & scrap recycling, construction and agricultural sectors.



In Indonesia, it has an authorised dealer, Trakindo CAT. In Malaysia, it offers its machines via Tractors Malaysia CAT, Trakindo CAT, and Metro CAT, while the Singaporean market is serviced via its distributor, Tractors Singapore CAT. Monark CAT is responsible for Caterpillar’s sales in the Philippines, while Thai market is served by Metro CAT, and Vietnam market by Phuthai CAT.

Bandit Industries, Inc.

Founded in 1983, the American Bandit Industries, Inc. manufactures chippers and grinders for wood and waste processing industries. Over 50,000 Bandit machines have been sold around the world and are used daily. It offers hand fed chippers, stump grinders, skid steer attachments, horizontal grinders, whole tree chippers, stationary chippers, and track carriers. The company also offers used equipment. Its products are used in municipality/land clearing, tree care, forestry/biomass and paper, fire management, and recycling applications as well as in renewable energy markets. The company sells its products through dealers in the US and internationally. In South East Asia, it has appointed an authorised distributor, PT Wahana Inti Selaras, which is a subsidiary of Indomobil Group, one of the largest automotive distributors and manufacturers in Indonesia.



Figure 39: Bandit Beast 1680 Track Recycler
Source: Bandit Industries, Inc.

SSI Shredding Systems, Inc.

SSI Shredding Systems, Inc. designs and manufactures industrial shredders and size reduction systems for solid waste recycling and scrap shredding applications. It offers shredders, primary reducers, transfer station compactors, and mobile scrap compactors for municipal and government departments, hazardous waste cleanup sites, industrial, fuel blender and incineration sites, medical waste, tires, and shipboard waste processors in the US and internationally. With installations in 46 countries, SSI’s single-rotor, two-shaft and four-shaft shredders have become the proven solution for many size and volume reduction applications worldwide. The company has distributors in over 60 countries worldwide and a well-



established presence in Asia-Pacific, including countries, such as China, Japan, New Zealand, Australia, South Korea, Taiwan, Indonesia and Thailand. In Thailand, it has appointed River Engineering Company Limited as its distributor for government and water-related waste sectors, and TJ Green Energy Company Limited for private sector applications. In Indonesia, SSI products are supplied via Indonesia-based PT Teknotama Lingkungan Internusa (TLI), an EcoStar Group company.

Sturtevant, Inc.

Sturtevant is an international manufacturer of material processing equipment, including crushers, fine grinders and air classifiers, providing processing solutions to the chemical, pharmaceutical, food and mineral processing industries worldwide. Its product line includes air classifiers, attrition mills, grinders and grinding mills, hammer, impact and jaw crushers and mills, jet mills and pulverisers, roller and rotary crushers, spiral jet mills, vertical shaft impact crushers and wet grinders, among others. The company services the South East Asian region through its distributor in Singapore, Hannibal Solutions International Pte Ltd., which has an extensive network of companies in Singapore, Indonesia, and across the rest of South East Asia.

Terex Corporation

Terex Corporation, with its headquarters in Westport, Connecticut, is a global manufacturer of lifting and material processing products and services delivering lifecycle solutions that maximize customer return on investment. Major Terex brands include Terex, Genie, Powerscreen and Demag. Terex solutions serve a broad range of industries, including construction, infrastructure, manufacturing, shipping, transportation, refining, energy, utilities, quarrying and mining.

The company's material handling machinery offerings include crushers and screens under the Powerscreen, Terex Minerals Processing Systems, Terex Finlay and EvoQuip lines, catering to the needs of quarrying, mining, construction, demolition, agriculture and recycling industries. Terex Washing Systems Products include modular solutions, feeding & stacking, washing & classifying, water management and screens, while Terex Ecotec products encompass shredders, chippers, screens, waste handlers, windrow turner and tracked conveyors. Terex Concrete and Construction Products include concrete mixer trucks and roller pavers. Terex Fuchs, a part of Terex Deutschland GmbH, which is a subsidiary of Terex Corporation, provides a range of equipment for handling of waste and scrap.





Figure 40: Terex Finlay J-1160 jaw crusher & 684 inclined screen
Source: Terex Finlay

Terex has subsidiaries in Singapore and Malaysia, namely Terex Singapore Pte Ltd. and Terex Malaysia Sdn Bhd respectively.

Huasing Construction & Trading Pte Ltd. is the authorised Powerscreen distributor in Singapore for sales and support of Powerscreen mobile crushing and screening equipment. Argyle Equipment Pte Ltd. Provides Terex Finlay crushers, screeners and conveyors, along with Terex cranes in Singapore. Bonco Enterprise Pte Ltd. also distributes Terex site dumpers and compaction rollers and Terex Finlay mobile crushers and mobile screeners in Singapore.

Terex distributors include TCIM Sdn Bhd and Trac Wheels (M) Sdn Bhd in Malaysia; PT United Equipment, PT Berlian Cranserco and PT Multi Guna Equipment in Indonesia; and Machine Technology Co. Limited in Thailand.

7.2 European Competitors

Weir Group Plc

Founded in 1971, the British Weir Group is an engineering company headquartered in Glasgow, Scotland. The company designs, manufactures and sells highly-engineered products and services worldwide, focusing on mining, oil & gas and power markets. It operates through three business segments: Minerals, Oil & Gas, and Flow Control.

Its Minerals segment engineers pumps, valves, rubber, crushers, screen media systems, screens, hose and pipe tools, centrifuges, pontoons and barges, hydrocyclones, wear linings, mill liners, feeders, conveyors, and washers. It also offers slurry handling equipment and



associated aftermarket support services for mining, oil sands and general industrial sectors. The Oil & Gas segment provides products and service solutions for upstream, production, transportation, and related industries, while the Flow Control segment designs and manufactures valves and pumps, and provides specialist support services to the power generation, industrial, oil & gas, and other aftermarket-oriented process industries. The Group employs over 14,000 people, operating across more than 70 countries. Its Minerals division is the largest business segment, which generated £ 1.112 billion revenue in 2016.

The company offers its products under the Allen Steam Turbines, Aspir, Atwood & Morrill, AutoTork, Batley Valve, BDK, Begemann, Blakeborough, Cavex, Delta Industrial, Enduron, Floway, Gabbioneta, GEHO, Gemex, Hazleton, Hopkinsons, Hydrau-Flo, Isogate, Lewis, Linatex, Mathena, Multiflo, Novatech, Roto-Jet, Sarasin-RSBD, Seaboard, SEBIM, SPM, Stampede, Tricentric, Trio, Vulco, Warman, WEMCO, and WSP brand names.

Its major customers are major and junior mining houses, Engineering, Procurement and Construction Management companies (EPCMs), national and international oil and oilfield service companies, utilities, and general industrial companies.

In Asia-Pacific region, Weir Group has direct presence in Indonesia, Malaysia, Mongolia, Philippines, Singapore and South Korea. It has a team of 1,300 people, across 10 manufacturing, service and sales facilities, in addition to a strong distribution network across the region.



Figure 41: Weir Group's Established Service Centres and Sales Offices in South East Asia
 Source: Weir Group



In Indonesia, the company has Flow Control and Minerals Handling product line manufacturing facilities in Batam Island and Balikpapan, respectively. In addition, it has established a service centre and sales office in Balikpapan, sales office in Jakarta, and service centre in East Kalimantan. Weir Group also has several domestic distributors, including PT Walindo Jaya Abadi, Pressure Pumping – Indonesia, and PT Jepsen and Jessen Technology.

In Malaysia, it has a team of over 400 people across two manufacturing facilities and adjoining sales and service centres. It has also appointed Warmal as its local distributor to represent its heavy duty pumping products.

In the Philippines, the company established a local sales office in Manila for its equipment for the mining and minerals, and sand and aggregate sectors.

In Singapore, Weir has set up two sales offices as well as its head office for Asia-Pacific operations.

In Thailand, it also has a sales office as well as two service centres for Flow Control product lines. Its Minerals product segment is represented by two distributors, namely, Siam Southern Co. Ltd. and PNV Polytech.

In Vietnam, it has sales office for Flow Control products in Ho Chi Minh City. Its Minerals product lines are represented by two distributors, the Trepax International Hanoi and ASG New Technology Company Limited.

Wirtgen Group

Founded in 1961, the German Wirtgen Group is an internationally operating group of companies in the construction machinery sector incorporating product brands, such as Wirtgen, Vögele, Hamm, Kleeman and Benninghoven. The Group offers mobile machine solutions for road construction and road rehabilitation, plants for mining and processing minerals or recycling material and for the production of asphalt. Among other products, it manufactures road milling machines, cold recyclers, surface miners for open cast mining operations, asphalt pavers, compaction technology, crushing and screening plants, as well as recycling and asphalt mixing plants. It is the first company in the world to cover the complete process chain in road construction with its own technologies and premium brands: from crushing and screening, through mixing, paving and compaction to milling and recycling – all from a single source.

Wirtgen Group employs approximately 8,200 people around the world and has two manufacturing plants in Germany, in addition to factories in Brazil, China and India. It is represented worldwide by a combination of wholly-owned sales and services companies and selected dealers as local partners. Today, the Group has 60 distribution and services offices and over 150 authorised dealers around the globe. In 2017, the Wirtgen Group generated



consolidated sales of EUR 3 billion. In June 2017, Wirtgen Group was acquired by the American conglomerate Deere & Company for EUR 4.357 billion.



Figure 42: Wirtgen Group in South East Asia
Source: Weir Group

Established in 1996, the company’s South East Asian head office for marketing, sales and service of Wirtgen Group products is located in Singapore (Wirtgen Singapore Pte Ltd). The Group has also established sales and services companies in Malaysia (Wirtgen (M) Sdn Bhd), the Philippines (Wirtgen Philippines Inc.), and Thailand (Wirtgen (Thailand) Co., Ltd. as well as representative offices in Indonesia (Wirtgen Indonesia Rep. Office) and Vietnam (Wirtgen Vietnam Rep. Office). Via its subsidiaries and representative offices, the Group distributes its Wirtgen, Vögele, Hamm, Kleeman as well as Brazilian Ciber brand products across the region. In addition to its own sales channels, it also distributes some of its products via a network of authorised dealers.



Figure 43: Wirtgen Crushing Equipment (Kleeman Brand)
Source: Weir Group



In Malaysia and the Philippines, for example, it has appointed Dai Lieng Machinery Sdn. Bhd. and Asia International Auctioneers, Inc., respectively, to distribute its Hamm brand product lines. In Vietnam, it has authorised Vinh Phu General Joint Stock Corporation (VITRAC Corporation) to distribute Wirtgen, Vögele, Hamm and Kleeman product lines, while its Indonesian distributor PT Gaya Makmur Tractors is authorised to distribute Wirtgen, Vögele and Hamm machinery.

Metso Corporation

Finnish company Metso is a world-leading industrial firm offering equipment and services for the sustainable processing and flow of natural resources in the mining, aggregates, recycling and process industries. It services customers in the mining, aggregates, oil & gas, power generation, construction, recycling, pulp and paper, and other process industries. The company employs over 12,000 people in more than 50 countries on six continents, and it has a global network of over 80 service centres with around 11,000 services professionals. Metso is listed on the Nasdaq Helsinki Ltd, Finland, and had sales of about EUR 2.7 billion in 2017.

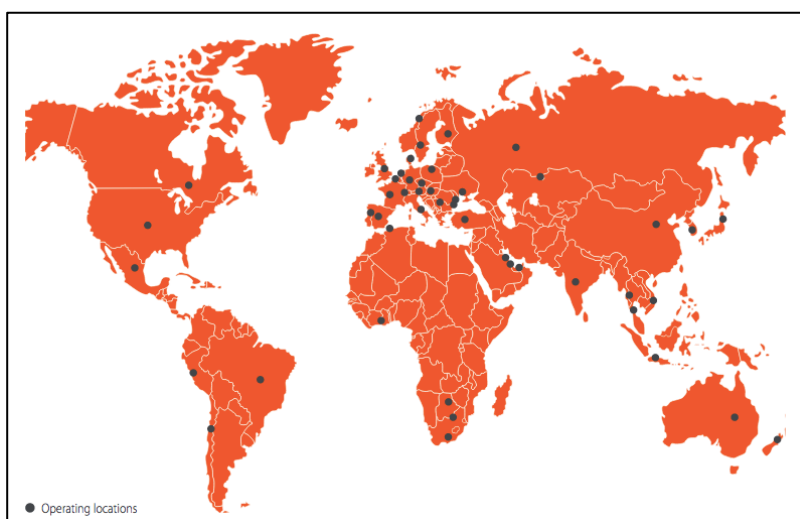


Figure 44: Metso's Operating Locations
Source: Metso Corporation

Its offering includes products, systems, projects and services business. The company's products range from mining and construction equipment and systems to industrial valves and controls. Large-scale project deliveries are typical for the mining industry, whereas its offering to the other industries mainly consist of individual equipment deliveries and smaller product packages.

Among other products, it showcases stationary, mobile and portable crushing, rock breaking, screening, shredding, grinding, air classification, separation, dewatering, pyro processing, bulk materials handling, slurry pumping and feeding equipment, as well as mobile, portable,



modular and industrial plants, balers, unloaders, dumpers, reclaimers, coolers, ball/pebble mills, briquetters, and shears. It also offers wear and spare parts, various valves, actuators, plugs and controllers.

Asia-Pacific (excluding China) is an important region for the company. In 2016, it accounted for 17%, or EUR 459 million, of Metso's total annual sales. Within Asia-Pacific, the company has a well-established presence in South East Asia with sales and services offices as well as the network of authorised distributors and agents.

In Singapore, Metso has an established subsidiary, Metso Asia Pacific Pte Ltd, which provides sales and services of mining, aggregates and flow control and sales of recycling product lines. In addition, it has authorised Minrock Process Machinery & Services (S) Co Pte Ltd. Singapore to distribute its mining and construction product lines.

In Indonesia, Metso provides sales, administration and services operations of mining and aggregates, and flow control product lines via its local subsidiary PT Metso Indonesia. Recycling product lines, including fine-shredders, pre-shredders, and other waste recycling products, are also distributed via its Thailand-based agent.

In the Philippines, Metso has appointed Process Machinery Company Inc. as an authorised distributor for its crushing and screening, minerals processing, wear protection and conveying equipment (including screens and feeders, crushing plants, cone crushers, vertical impact crushers, wear resistant products, grinding mills, bulk handling equipment, unloading systems, and waste recycling equipment, such as pre- and fine-shredders), while Leeleng Commercial Inc. is the authorised distributor of Metso's valves for process industries in domestic market. Recycling equipment is additionally distributed via its Thailand-based agent.



Figure 45: World's Biggest Mobile Jaw Crusher Plant – Metso Lokotrack LT 200E
Source: Metso Corporation



The mining and aggregates industries in Malaysia are serviced via sales and distribution office of Metso's Australian subsidiary, Metso Mineral (Australia) Limited, and the distributor Miroc Equipment Sdn Bhd. Metso's valves for process industries for domestic market are provided via Metso Malaysia Sdn Bhd, based in Kuala Lumpur, and two appointed distributors, namely, Turcomp Engineering Services Sdn Bhd in Labuan, and Precision Control Sdn Bhd in Shah Alam, Selangor. Its recycling equipment is distributed via its distributor Metatech Sdn Bhd.

In Thailand, Metso administers, sells and services mining and aggregates, waste recycling and flow control product demand via its subsidiary Metso (Thailand) Co., Ltd. and local distributor Uawithya Machinery Company Bangkok, which provides sales of various equipment and after-sales services. In addition, it has an authorised distributor, the Sahamit Machinery Public Company Limited, for its recycling product lines (fine-shredders, pre-shredders, spare parts and wear parts).

Sandvik

Swedish Sandvik is a high-tech, global engineering group offering products and services that enhance customer productivity, profitability and safety. The company engages in the development and manufacture of tools and tooling systems for metal cutting; equipment and tools, service and technical solutions for the mining and construction industries; products in advanced stainless steels and special alloys as well as products for industrial heating. It operates through three business areas, namely, Sandvik Machining Solutions, Sandvik Mining and Rock Technology and Sandvik Materials Technology. The company was founded in 1962 and is headquartered in Stockholm, Sweden. In 2016, it recorded over USD 9.52 billion in annual sales and had a market cap of USD 18.5 billion as of May 2017. The company has nearly 44,000 employees and production sites across four continents.



Figure 46: Sandvik's Operating Locations
Source: Sandvik Group

Within its Sandvik Mining and Rock Technology division, the company offers stationary and mobile crushers, underground drill rigs and bottlers, surface drill rigs, exploration drill rigs and



tools, underground loaders and trucks, mechanical cutting equipment, rock tools and drills, breakers, demolition tools and booms, and automation systems. Its representation spans 130 countries across the globe and the company also works through a global network of distributors, which provide a service based on local conditions with the support of Sandvik company.

Asian region accounts for the second largest revenue stream for the company. Within the region, Sandvik has extensive presence across South East Asia:

In Indonesia, it distributes its products via three sales offices, namely, PT Sandvik SMC in Kuala Kencana, Sandvik Mining and Construction Indonesia Kalimantan Timur in Kalimantan Timur, and PT Sandvik Mining and Construction Indonesia in Jakarta. In addition, it has appointed Power Drilindo in Ciputat Timur and PT Sinem Global in Jakarta as distributors for its rock tools and surface drills.

In Malaysia, it has a sales office, Sandvik Mining and Rock technology Malaysia, in Shah Alam. It has also appointed G.Stone Machinery to distribute Sandvik's rock tools, surface drills, stationary crushers and screens, screening media and wear protection equipment in Sarawak, Malaysia.



Figure 41: Sandvik's QA450 Triple Deck Screen

Source: Sandvik Group

In Singapore, it distributes its products via its sales office, Sandvik Mining and Construction Singapore.

In the Philippines, Sandvik has appointed Inframachineries in Quezon City as distributor for mobile crushers and screens, and Nitro Asia in Global City Taguig for rock tools and surface drills.

In Thailand, the company is represented by a local distributor P.V. Mining & Exploration, based in Bangkok, which distributes rock tools as well as mobile crushers and screens.



In Vietnam, the company has appointed Global Heavy Equipment Co., Ltd and VCAPITAL Investment Joint Stock Company as their local representatives. The company is also represented in Myanmar via two distributors.

FLSmidth

The Danish FLSmidth is a global engineering firm and a leading supplier of equipment and services to the global cement and minerals industries. The company operates across more than 50 countries and employs almost 13,000 people. It supplies everything from single machinery to complete processing plants to maintenance, support services and operation of processing facilities.

FLSmidth's product portfolio includes crushing and grinding equipment, gas analysis and reporting systems, pyroprocessing, air pollution control and material handling solutions, packing and dispatching, process control and optimisation products, laboratory solutions, and sampling & online analysis tools.

For mining, cement and aggregate industries, it offers crushers, feeder breakers and sizing equipment under brands, such as Fuller-Traulor, ABON, Buffalo, and Raptor. The company has installed more than 1,700 crushers, feeder-breakers and low-speed sizers worldwide.

FLSmidth is represented on all continents with project centres and sales and services offices. In addition, it has a wide distribution network, which allows it to cater its products to various clients worldwide.

In South East Asia, it has an established presence with subsidiaries in Singapore (FLSmidth Singapore and Automation Solutions Singapore), Indonesia (FLSmidth Indonesia in Jakarta), Thailand (FLSmidth Thailand in Bangkok), Vietnam (FLSmidth in Ha Noi), Malaysia (FLSmidth in Selangor), and the Philippines (FLSmidth Philippines, Inc. in Metro Manila).

The company is a strong regional player and has achieved numerous notable successes in regional markets. For example, it has signed extensive minerals design and services agreement with PT Antam (Persero) Tbk in Indonesia to develop mining projects in and around the country, by providing plant designs, machinery, pilot testing, integration of plants with other technologies, co-engineering, O&M services and training. It has been also chosen by PT Adaro Energy, owner of Indonesia's largest single coal mining operation, to supply an innovative crushing and conveying system. In 2015, it has also landed a large order in Vietnam from Vietnamese contracting giant Xuan Thanh Group, to construct a cement plant worth more than EUR 77 million.





Figure 48: Construction of South East Asia’s largest cement plant
Source: Xuan Thanh Group

AMUT Group

Founded in 1958, AMUT is an Italian manufacturer of extrusion and thermoforming plants for thermoplastic materials, and recycling lines for municipal and industrial waste. Headquartered in Novara, Italy, AMUT Group has 6 companies, which are able to offer a wide range of plastics and packaging machinery, including extrusion lines, thermoforming, recycling, production lines of flexible films, packaging, printing and converting. Among its subsidiary companies, AMUT-ECOTECH offers polymer waste recycling machines for plastic, film, paper and cardboard, car tyres, glass and metal cans recycling at various capacities. AMUT-WORTEX also offers various types of machines for sorting and separating urban and industrial waste from origin, and material handling systems. In South East Asia, the company operates through a network of distributors, which includes EPM Innovations Pte Ltd. in Singapore, PT Budiono’s World Plastindo in Indonesia, Plastic Solutions Co. Ltd. in Thailand, and local agent Andrea Peretto in Vietnam.



JCB



Figure 42: JCB's 3CX-15 Super Backhoe Loader

Source: JCB

J.C. Bamford Excavators Limited (JCB) is an English multinational corporation, with headquarters in Rocester, Staffordshire, England, manufacturing equipment for construction, agriculture, waste handling and demolition.

JCB is one of the world's top three manufacturers of construction equipment. It employs around 10,000 people on 4 continents and sells its products in 150 countries through 2,000 dealer depot locations.

It offers articulated dump trucks, backhoe loaders, compact track loaders, excavators, mini excavators, rough terrain forklifts, skid steer loaders, telescopic handlers, wheel loaders, agricultural telescopic handlers, agricultural wheel loaders, fastracs, multi-purpose vibratory compactors, single drum rollers, tandem rollers, industrial forklifts, articulated dump truck tipping trailers, and tracked excavators.

JCB has a local entity in Singapore called JCB International Asia Pacific Pte Ltd. With branches in Malaysia and Philippines. It also has subsidiaries in Indonesia (PT JCB International Indonesia) and Thailand (JCB International Holding (Thailand) Co. Ltd. JCB Sales Asia Pacific Pte Ltd, founded in 1995 and located in Singapore, conducts wholesale distribution of construction or mining cranes, excavating machinery and equipment.

JCB also has an extensive dealer network in South East Asia, including DM Equipment Sdn Bhd and Pansar Company Sdn Bhd in Malaysia and Persada JCB in Indonesia. JCB has appointed DKSH as its market expansion services provider in Thailand and DKSH provides sales, parts and service support for the full line of JCB machines. ICON Equipment Solutions Philippines Inc, the heavy equipment trading subsidiary of Concrete Masters Inc, is the exclusive distributor for JCB in the Philippines.



Volvo Construction Equipment

Headquartered in Gothenburg, Sweden, Volvo Construction Equipment (Volvo CE) is a leading international manufacturer of premium construction equipment. It has 14,000 employees worldwide and production facilities in Sweden, France, Belgium, Germany, United Kingdom, USA, Brazil, India, China and Korea. It manufactures a comprehensive range of equipment including crawler, wheeled and compact excavators; articulated haulers; rigid haulers; soil and asphalt compactors; large wheel, compact, compact track and skid steer loaders; asphalt pavers, pipelayers and forestry equipment.

In 1998, Volvo CE expanded its excavator business and established an Asian industrial footprint through the acquisition of Samsung's Construction Equipment Division in Korea. Now its Changwon factory is the biggest excavator production site within Volvo CE.



Figure 50: Volvo machines being used by KTC Group Holdings for earthmoving at the site for Changi Airport's Terminal 5

Source: Volvo CE

Following an official inauguration in June 2004, Singapore is the regional hub of Volvo Construction Equipment for Region APAC. In 2007, the Singapore dealership was set up.

Volvo CE offers a full range of construction equipment in Malaysia through Volvo Malaysia Sdn Bhd. Civic Merchandising Inc is the exclusive distributor of Volvo CE in the Philippines, while Italthai Industrial Co. Ltd., which has more than 14 branches in Thailand and Lao PDR, is Volvo CE's distributor in Thailand. PT Intraco Penta, Tbk handles distribution in Indonesia.



7.3 Japanese Competitors

KYC Group



Figure 51: KYC Stationary Crushing Plants

Source: KYC Group

KYC is a Japanese construction machine manufacturer, which offers a range of products, such as ready-mixed concrete plants, stone crushing plants, belt conveyors and steel pipe scaffoldings to Japan as well as Asian, Middle Eastern and African countries. The company has set up its first South East Asian footprint in Singapore in 1980s by establishing KYC Machine Industry (Singapore) Pte Ltd. by joint venture. Today, it has 4 subsidiaries in Singapore (KYC Engineering Services Pte Ltd., KYC Scaffolding Pte Ltd., KYC Asia Pte Ltd., and KMI Services Pte Ltd.) as well as a subsidiary and a production facility in Vietnam. The company entered Vietnam in 2014 by establishing a local subsidiary, KYC Machine Industry Vietnam Co., Ltd., and setting up a production factory, which produces steel pipe scaffoldings, ready-mix concrete plants, concrete mixers, belt conveyors and air cleaners. The company has also entered into the Philippine market by partnering with a construction firm EEI Corp. for establishment of a joint venture, JP System Asia Inc. (JPSAI). JPSAI aims to bring in the Japanese scaffolding and formworks rental standards and discipline to the Philippine construction industry. KYC's portable rock crushers and stationary rock crushers are also sold in the Philippines by JVF Commercial.

Komatsu Limited

Founded in 1921, Komatsu Ltd. is a Japanese multinational corporation that manufactures and sells construction and mining equipment, utilities, forest machines and industrial machinery. Headquartered in Tokyo, Japan, the Komatsu Group consists of Komatsu Ltd. and 182 other companies (146 consolidated subsidiaries and 35 companies accounted for by the equity method), employing nearly 60,000 people worldwide. Komatsu is the world's second largest manufacturer of construction and mining equipment after Caterpillar. It has manufacturing operations in Japan, Asia, Americas and Europe.



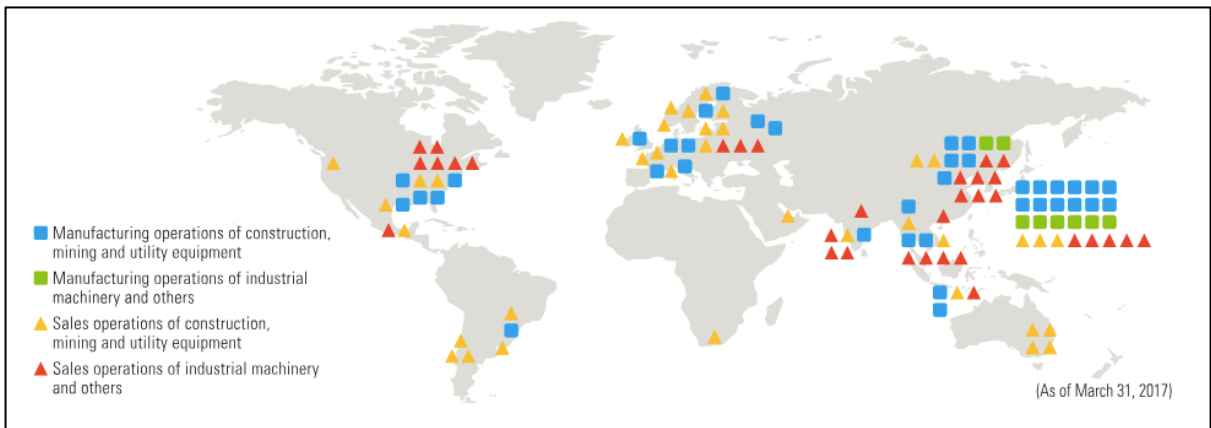


Figure 52: Komatsu’s Global Operations

Source: Komatsu Ltd.

With a full line of products supported by IoT technologies, regional distribution channels and a global service network, Komatsu holds a firm position as one of the leading players for construction, mining and utility as well as industrial machinery. Within its product line for construction and mining equipment, it offers mining excavators and shovels, rock breakers, blasthole drills, dozers, electric and hybrid shovels, feeder-breakers, wheel loaders, reclaim feeders, continuous miners, longwall systems, haul trucks, draglines, sizers, HAC systems, conveyor systems, roadheaders, shaft sinking equipment, jumbo and production drills, haulage systems drifters, bolting solutions, load haul dumps, and underground trucks. It additionally manufactures electric and internal combustion forklifts. For forestry equipment, it manufactures harvesters, forwarders, feller bunchers, and shredders. It also offers recycling equipment, such as mobile crushers and recyclers, mobile soil recyclers and mobile wood tub grinders/ recyclers. Furthermore, it has a range of tunnelling machines, including shield machines, small-diameter pipe jacking machines, and tunnel boring machines as well as various other products and parts. Komatsu’s equipment is being sold under several brand names, which include Komatsu, P&J, Joy, Montabert, Modular Mining Systems, Hensley Industries and Gigaphoton.





Figure 43: A Range of Komatsu's Mining Equipment

Source: Komatsu

In 2016, Asia (excluding China) has been the third largest sales region for Komatsu's construction, mining and utility equipment, amounting to 15% of the total sales share. The company has a very strong presence in South East Asia with 4 manufacturing operations (2 in Indonesia and 2 in Thailand), 3 direct sales operations, and 14 parts centres.

In Indonesia, Komatsu has appointed PT United Tractors Tbk as a sole distributor for its construction, mining and forestry equipment, while PT Bina Pertiwi serves as authorised dealer of Komatsu forklifts and diesel engines. It has also established PT Komatsu Marketing and Support Indonesia (KMSI) to provide sale and service of construction and mining equipment, and parts distribution in Indonesia (with its own 14 distributors); PT Komatsu Indonesia to manufacture and sell construction and mining equipment and castings; PT Komatsu Undercarriage Indonesia (KUI) to manufacture and sell crawler components and parts for construction and mining industry; and PT Komatsu Remanufacturing Asia (KRA) to sell remanufactured components. The company also has a dedicated marketing and support office for its industrial machinery division, 7 parts centres to serve the country, as well as 2 Reman and Rebuild centres.

In the Philippines, it has appointed Maxima Machineries, Inc. to distribute its construction and mining equipment as well as its forklift and engine product range.

In Singapore, Komatsu distributes its construction and mining equipment via, while forklifts are being sold via Scantruck Multico Equipment Pte Ltd.



In Malaysia, it sells its construction and mining products through UMW (East Malaysia) Sdn Bhd and UMW Equipment Sdn Bhd. Komatsu has also established 2 parts centres to serve its clients.

Komatsu's construction and mining equipment as well as diesel engines and forklifts in Vietnam are being distributed by Marubeni Heavy Equipment Co. Ltd., while Thailand's market is being served via Komatsu's own subsidiary Bangkok Komatsu Sales Co. Ltd. (BKS). BKS has a total of 22 service centres and branches across Thailand, over 200 professional mechanics to serve the country's clients as well as its own 14 authorised distributors. It has also established Bangkok Komatsu Co., Ltd as a local subsidiary to manufacture and sell construction equipment and iron casting in Thailand; Komatsu Parts Asia Co., Ltd. to distribute parts in South East Asia (excluding Indonesia and the Philippines), with 14 distributors in Asia and Oceania; CANTEC THAI Co., Ltd. to manufacture parts and components of construction equipment; and Bangkok Komatsu Forklift Co., Ltd to sell, service and rent forklift trucks. Komatsu has also established two parts centres as well as a training centre in Thailand.

Hitachi Construction Machinery

Hitachi Construction Machinery (HCM), a part of the Japanese conglomerate, the Hitachi Group, is a major manufacturer of construction and mining equipment. HCM has manufacturing facilities in Europe, the U.S. and Asia. The company offers heavy construction equipment leasing, sales and maintenance services, for customers in the construction, mining and quarrying, forestry, plantation and agriculture sectors.

HCM's main product line is hydraulic excavators, with the company manufacturing many models, from medium-sized and mini excavators all the way up to 780-ton ultra-large excavators. HCM also markets wheel loaders, off-road dump trucks and other products made by HCM Group companies or in partnership with major manufacturers.



Figure 54: Hitachi EX2600-6 Mining Excavator & Shovel Solution
Source: Hitachi Construction Machinery



HCM has a global manufacturing and distribution partnership with American equipment manufacturer, John Deere, since 1983. A Deere-Hitachi joint venture was officially formed in 1988 and based on an Integrated Marketing Agreement implemented in 2001, John Deere manages marketing for both the John Deere and Hitachi brands in the Americas and Hitachi does the same for John Deere construction and forestry products in the Asia Pacific. HCM also brands the Bell ADT (articulated dump truck) products from South African company, Bell Equipment, under the Hitachi marque in the Asia-Pacific region.

HCM has a long-standing presence in South East Asia through a network of subsidiaries in several of the countries.

Established in Singapore in August 1984, Hitachi Construction Machinery Asia and Pacific Pte Ltd. (HMAP) is a 100% owned subsidiary of HMC and it serves as the regional headquarters.

HCM has local subsidiaries in Indonesia, Malaysia and Thailand as well. In Indonesia, HCM operates through its subsidiary, PT Hexindo Adiperkasa Tbk, established in 1988. It is headquartered in Jakarta and offers Hitachi, John Deere, Krupp, and Bell branded products. Hexindo has many facilities equipped with services like remanufacturing, welding centre, e-services and training.

HCM's Malaysian subsidiary, Hitachi Construction Machinery (Malaysia) Sdn. Bhd. (HCMM), Petaling Jaya, was established in 1982. It undertakes distribution of Hitachi and John Deere Construction/Forestry equipment to Malaysia, Singapore & Brunei. HCMM also provides training for end users in Malaysia, Singapore & Brunei. Hitachi Construction Machinery (Thailand) Co., Ltd is located in Bangkok is HCM's Thai subsidiary.

In the Philippines, Brighton Machinery Corporation has been appointed the exclusive dealer of Hitachi construction & mining equipment, Bell equipment, and John Deere Construction equipment. Brighton has an existing Cebu branch office, and it is planning to branches in Davao and Cagayan de Oro.

7.4 South Korean Competitors

Hyundai Construction Equipment

Hyundai Construction Equipment Co. Ltd. (HCE) which previously operated as a division of Hyundai Heavy Industries was spun off in 2017. HCE started production in 1985, and now manufactures construction equipment including hydraulic excavators, wheel loaders, backhoe loaders, skid steer loaders as well as industrial vehicles.



It markets and supports its products through 500 local distributors in 140 countries. The division also maintains nine global operation centers in the United States, Europe, India, Indonesia, Brazil and China (Jiangsu, Shandong, Beijing).



Figure 44: Hyundai Construction Equipment's HX520 L heavy excavator
Source: Hyundai Construction Equipment

HCE has an established dealer network in South East Asia. The network includes Tiong Lee Huat Machinery & Construction Pte Ltd, Sia & Yeo Heavy Equipment Pte Ltd, Bonco Enterprise Pte Ltd. in Singapore; Premium Ark Enterprise (M) Sdn Bhd and DM Machinery Sdn Bhd in Malaysia; Arcos Machinery and A.V.N. Motorworks Co. Ltd. In Thailand; PT United Equipment in Indonesia and Good Morning International in Philippines.

HCE launched 'Hyundai Construction Equipment Auction', the first used construction equipment auction platform in Korea, in November 2017. HCE plans to increase its market share in emerging markets such as South East Asia through the used equipment auction, as these countries have a high demand for used equipment. The company hopes to expand its user base by exporting used equipment in these countries through the auction and increase its market share in the new equipment market by attracting the new users later to the new equipment market.

Doosan

Founded in 1977, Doosan Infracore Construction Equipment manufactures Doosan, Bobcat, Geith and Doosan Portable Power brand products. Bobcat Company, which distributes and supports compact equipment for global construction, industrial, landscaping and agricultural markets, is a subsidiary of Doosan Bobcat Inc, in turn a wholly owned subsidiary of Doosan Infracore Co. Ltd.



Its offerings include track, wheel and mini excavators, wheel loaders and articulated dump trucks. It operates 14 overseas subsidiaries & 16 branch offices and 5 parts logistics centers across the world and has a global network consisting of more than 176 dealers.

Doosan has a sales office in Singapore under the name, Doosan Bobcat Singapore Pte. Ltd. (DBSG). Its dealer network in the region includes Huasing Construction & Trading Pte Ltd. in Singapore; PT Kasana Teknindo Gemilang and PT Kobexindo Tractors in Indonesia; Power Brite Machines Sdn Bhd and WDG Resources Sdn Bhd in Malaysia.

Inframachineries Corporation is the exclusive distributor of Doosan Infracore products in the Philippines, while World Tractor (1996) Co. Ltd. is the exclusive distributor for Thailand.

7.5 Chinese Competitors

SANY

Chinese company, SANY is a global manufacturer of industry-leading construction and mining equipment, port and oil drilling machinery, and renewable wind-energy systems.

Its product lines include concrete machinery, excavator, crane, road machinery, pile driving machinery, wind turbine, port machinery, petroleum drilling machinery and mining machinery. It has become China's largest manufacturer of construction equipment and it moved its headquarters from Changsha, Hunan province to Beijing in 2012.

SANY has built 25 manufacturing bases, six sales regions, and over 100 offices with more than 400 agents and 8,000 suppliers worldwide. In China, SANY has established six industry parks in Beijing, Changsha, Shanghai, Shenyang, Kunshan and Urumchi. It has global R&D centres and manufacturing bases in the US, Germany, India and Brazil, and its products are exported to 150 countries and regions.

In 2012, SANY, together with the Chinese Private Equity company CITIC PE Advisors (Hong Kong) Limited as a minority shareholder, acquired 100% of Holding GmbH (Putzmeister). Putzmeister develops, produces and sells construction machinery worldwide, especially concrete pumps, for the building and mining industries, as well as for tunnel construction and large-scale industrial projects.

SANY entered the Asia-Pacific market in 2007. In March 2012, it established the SANY Asia-Pacific Business Division to be in charge of sales and services for Singapore, Indonesia, Thailand, Malaysia, Vietnam, the Philippines, Myanmar, Australia, Laos, Hong Kong SAR and Macau SAR. It has service offices in Indonesia, Philippines, Malaysia and Singapore. SANY South East Asia Pte Ltd. is located in Singapore.



Sunway Enterprise (1988) Sdn. Bhd., a part of the Malaysian conglomerate, Sunway Group, distributes SANY equipment in Malaysia, while Civic Merchandising Inc. is a distributor for Philippines. PT SANY PERKASA, is the sole distributor of SANY Hydraulic Excavator Brand in Indonesia, established since 2013 under the management of SANY Heavy Industry Co. Ltd.

In 2009, SANY opened a Thai subsidiary, SANY Heavy Industry (Thailand) Co. Ltd. According to a press release from SANY, the subsidiary sold over 2,000 units of machinery by 2016 and it had acquired a 60% market share for cranes and become one of the top five best-selling excavator brands in the country. In Thailand, SANY has also formed a joint venture with the Ariyawutipphan family to set up SANY Thaiyont Co, which handles excavator distribution. SANY holds a 51% stake in the JV.

XCMG

Xuzhou Construction Machinery Group Co., Ltd. (XCMG), with headquarters in Xuzhou, Jiangsu province, was founded in 1943. It is a state-owned enterprise. According to the XCMG website, it is the 5th largest construction machinery company in the world. XCMG has established a product sales network that covers more than 170 countries and regions and set up more than 300 XCMG distributors overseas to provide users with comprehensive marketing services.



Figure 45: XCMG ZL50G, XCMG's G-Series Wheel Loader
Source: XCMG

XCMG's product range includes wheel, backhoe and skip steer loaders; telescopic handlers; crawler and wheel excavators; mining trucks; dredgers; debris truck, tipper and off-road heavy duty tipper.

XCMG has an extensive dealer network in South East Asia. Teck Yien Sdn Bhd., Hock Hean Hui Trading Sdn Bhd, Viva Complete Sdn Bhd and Finbond Heavy Machinery are the distributors for XCMG in Malaysia. PT Gaya Makmur Tractors (GM Tractors) is the sole distributor of XCMG in Indonesia. XCMG Indonesia was opened in June 2017 to support and promote XCMG in Indonesia.



The XCMG website lists OCR Co. Ltd., T.M.C Industrial Public Company Limited and Bangkok Auction as distributors in Thailand. XCMG's equipment is available in the Philippines via HD Megatrucks & Equipment Inc. and D Limitless Vehicle Ventures Corp, a subsidiary of RDAK Transport Equipment. The latter is the exclusive distributor for SCMCG in the Visayas and Mindanao market.

LiuGong

LiuGong, headquartered in Liuzhou, China, has 19 product lines including wheel loader, excavator, bulldozer, pipe layer, motor grader, roller, paver, cold planer, skid steer loader, backhoe loader, forklift, aerial working platform, truck crane, lorry mounted crane, off-highway truck, rotary drilling rig, hydraulic diaphragm wall grab, hydraulic diaphragm wall drilling rig, trench cutter & hydraulic cutting and mixing rig.

LiuGong ranks as the 25th largest construction equipment manufacturer in the world. In 2017, LiuGong had USD 1.79 billion in sales revenue, selling more than 37,610 total units. LiuGong has a total of 20 manufacturing facilities worldwide. The company employs more than 8,400 people, including nearly 1,000 engineers

The company's market outside China accounts for nearly 35% of its total sales revenue. The company has more than 300 dealers in over 130 countries and 2,650 sales outlets, all supported by 12 regional offices with adjacent parts depots. Regional offices are currently located in South Africa, Brazil, United Arab Emirates, India, the Netherlands, Poland, Singapore, Russia, Hong Kong and the U.S.

LiuGong Machinery Asia Pacific Office located in Singapore serves as a sales hub, and a technical support and trading hub for Asia Pacific, excluding China. The facility is also the first spare parts distribution centre for South East Asia and the Pacific islands.

LiuGong's dealer network includes PT Panca Traktor Indonesia and PT Berca Mandiri Perkasa in Indonesia and Yontrakarn Machinery Co. Ltd in Thailand. CIH (Malaysia) Sdn. Bhd. Is the exclusive distributor & importer of LiuGong for the Malaysian market.



APPENDICES: DISTRIBUTOR & BUYER PROFILES



Appendix 1: SINGAPORE

Section 1: Singapore Distributor Profiles

1. H&Y Technique Pte Ltd

1057 Eunos Avenue 3
#02-73
Singapore 409848

Tel: +65 6743 5369
Fax: +65 6743 6935
Website: <https://www.hnymachinetools.com/>

ABOUT H&Y TECHNIQUE PTE LTD

H&Y Technique is a Singapore-based supplier and distributor of recycling machinery, sourcing its products from various global players. It currently distributes brands, such as Harden Machinery (China) with Styrofoam recycling equipment and compactors, Bronneberg (Netherlands) with cable strippers, large scrap presses and sheers for the processing of metal and iron scrap and Hassewell (China) that supplies recycling equipment for size reduction and volume reduction, such as balers, compactors, shredders, crushers and squeezers. In addition, it distributes the products of CMS Tecnocut – Waterjet technology (Italy), Joachim Richter Systeme und Maschinen GmbH (Germany), ReTOS Varnsdorf Sro (Czech Republic), and Weingartner Maschinenbau GmbH (Austria).

2. Recycling Partners Pte Ltd

33 Maude Road #02-01
Singapore 208344

Tel: +65 6298 8231
Fax: +65 6298 8460
Website: <http://recyclingpartners.sg/>

ABOUT RECYCLING PARTNERS PTE LTD

Recycling Partners is a Singaporean recycling services and equipment provider, which offers project assistance, engineering and supplies of turnkey plants for the waste management and recycling industry. It also trades single machinery and components. The company targets customers in all South East Asian countries. With its exclusive partners from Central Europe, it



works along the whole value chain of solid waste transportation, compaction and treatment. Its partners are experienced companies in sorting, RDF-production, including biodrying of wet organic waste and MBT-plants with organic treatment such as digestion and composting. It also offers machinery such as shredding technology, magnet and sensor sorting, bailing presses and stationary compactors, as well as minerals recycling systems.

The company represents such brands as Militz Consulting, Sutco Recycling Technik, Umwelt GmbH, Lindner, Steinert, Ludden & Mennekes, UnoTech LM Group, EMZ, and Biodegma. Its customers include both municipalities and private investors who are willing to contract sophisticated technology, supplies or services along the whole chain of the environmental industry.

3. Land Equipment Pte Ltd

Heavy & Light Equipment:
32 Joo Koon Road, Singapore 628985

Light Equipment:
5024, Ang Mo Kio Industrial Park 2,
#01-79, Singapore 569527

Tel: +65 6862 5223 / 6482 5503
Fax: +65 6861 5223 / 6482 3313
Website: www.land-equipment.com.sg

ABOUT LAND EQUIPMENT PTE LTD

Established in 1987, Land Equipment Pte Ltd specialises in trading, rental and servicing of heavy and light-weight construction equipment for both minor and multi-million-dollar projects in areas of oil & gas, residential and commercial constructions, engineering, infrastructure, and others. Over the years, the company has gained exclusive distribution rights of well-established brands, like TOKU from Japan, whereby it has captured a local market share of 65% for the hydraulic products CANYCOM from Japan, KUBOTA from Japan, ORIMAS from Malaysia, SANY from China, SELWOOD from the UK, THWAITES from the UK, and WEBER from Germany. Among its heavy equipment products, the company sells mini excavators, excavators, all terrain dumpers, track dumpers, TNB-hydraulic breakers, primary and secondary crushers, hydraulic steel cutters, carriers and mobile wood crushers, and water pumps. Its light equipment portfolio includes reversible compactors, rammers, rebar benders and cutters, tamping rammers, 1-tonne vibratory rollers and floor saws. It also provides construction equipment spare parts.



Land Equipment's local customers come from both government bodies and the private sector. Among its clients, the company services the Land Transport Authority (LTA), the Civil Defence Force (SCDF) former Public Works Department (PWD), Public Utilities Board (PUB), Telecommunications Authority of Singapore (TAS), Singapore Mass Rapid Transit (SMRT), Building and Civil Engineering Contractors as well as a number of foreign construction companies.

The company is currently seeking for new distribution partnerships to service Singapore market and the rest of Asia.

4. Bonco Enterprise Pte Ltd

11, Lim Chu Kang Lane 6
Singapore 718927

Tel: +65 6793 7805
Website: www.bonco.com.sg

ABOUT BONCO ENTERPRISE PTE LTD

Bonco Enterprise Pte Ltd was established in 1998, focusing on sales, rental and services of construction and civil engineering machineries and equipment. The company is one of the leading construction equipment rental firms in Singapore. With a fleet size of over 300 units, it offers a comprehensive range of industrial, material handling and construction equipment. Among the products for sale, it offers site dumpers, compaction rollers, trammel screens, mobile crushers, mobile screeners, forklifts, skid-steer loaders, telescopic handlers, portable light towers, single drum soil compactors, and whole tree chippers. It currently represents Terex, Volvo, Allmand, Manitou, Bobcat, and Hyundai brands.



Figure 1: Terex Finlay Mobile Crusher Model I-100RS, Offered by Bonco Enterprise

Source: Bonco Enterprise



Among its clients, Bonco Enterprise supplied various kinds of machineries and equipment to construction, landscaping and marine companies in Singapore. Local construction companies form the main bulk of its customer base, and Bonco directly sells or leases the equipment to them.

Its major clients include: Beng Soon Machinery Services (S) Pte Ltd, China Construction (South Pacific) Development Co Ltd., Chye Joo Construction Pte Ltd., DHC Construction Pte Ltd., Dragages Singapore Pte Ltd., Hua Siah Construction Pte Ltd., Hyundai Engineering & Construction Pte Ltd., Island Landscape & Nursery Pte Ltd., Kajima Overseas Asia Pte Ltd., Keppel Shipyard Ltd., Koh Brother Building & Civil Engineering Co (Pte) Ltd., Kok Keong Landscape Pte Ltd., Landscape Engineering Pte Ltd., Lian Beng Construction (1998) Pte Ltd., Shaft Build Construction Pte Ltd., Singapore Technologies Marine Ltd., Soon Li Heng Civil Engineering Pte Ltd., Techno CE Pte Ltd., Tehc International Pte Ltd., Toh Kim Bock C-E Contractor Pte Ltd., and Tanglin Corporation Pte Ltd.

5. Lian Hup Brothers Pte Ltd

18 Kranji Road
Singapore 739461

Tel: +65 6367 0625

Fax: +65 6367 9959

Website: www.lianhup-brothers.com.sg

ABOUT LIAN HUP BROTHERS PTE LTD

Lian Hup Brothers Pte Ltd specialises in general import and export of heavy vehicles, motorcycles, motorcars, spare parts, body parts (such as engines, gear box, cabin, chassis, pump, etc.) and other related accessories, including motor insurance and motor accident claims. Over the last decade, the company has also ventured into heavy machinery industry and fabrication and modification of heavy trucks, such as dump trucks and concrete mixer trucks.

Throughout the years, the company has actively exported to markets in Asia and Middle East, including Brunei, Cambodia, China, Hong Kong, Indonesia, Malaysia, Myanmar, Vietnam, Dubai, Pakistan, Sri Lanka, Bangladesh, and other countries.

Among other product categories, it sells and rents trucks, cranes, air compressors, asphalt finishers, backhoe loaders, bulldozers, crawler crushers, excavators, forklifts, lighting towers, motor graders, rammers, road makers, scissor lifts, skid steer loaders, wheel loaders, and



others. The company represents over 30 brands, including Bobcat, Sumitomo, KATO, Denyo, JCB and Sakai.

6. Sia & Yeo Heavy Equipment Pte Ltd

215 Kranji Road
Singapore 739486

Tel: +65 6368 8500
Fax: +65 6365 1560
Website: www.siayeo.com.sg

ABOUT SIA & YEO HEAVY EQUIPMENT PTE LTD

Established in 1977, Sia & Yeo Heavy Equipment is specialising in trading and reconditioning of various types of heavy equipment for the construction industry, including excavators, dumpers, wheel-loaders, and a wide range of spare parts. The company aims to provide customers with one-stop solutions and offers a variety of additional services, such as the fabrication and installation of new long-arms, buckets, wood grapples, metal grapples and rippers, in addition to diverse attachments such as breakers, crushers, magnets and vibros.



Figure 2: Sia & Yeo Heavy Equipment Facilities in Singapore

Source: Sia & Yeo Heavy Equipment Pte Ltd

Over the years, it has secured sole distributorship rights for Hyundai Heavy Industries, Sumitomo Excavators, Dongnam Heavy Industries, Yanmar, AUSA, and Guzzila. It also holds distribution rights for GKD Technik and Evergigm products. Distribution of construction equipment, such as forklifts and excavators are mainly done via its two outlets in Singapore. Its customer base primarily consists of companies that are operating locally.



7. **Tiong Lee Huat Machinery & Construction Pte Ltd**

6 Tuas South St 6, Singapore 636965

Tel: +65 6445 8611

Fax: +65 6241 9778

Website: www.tiongleehuat.com

ABOUT TIONG LEE HUAT MACHINERY & CONSTRUCTION PTE LTD

Tiong Lee Huat Machinery & Construction Pte Ltd was first established as Tiong Lee Huat Engineering Works in 1977. The business started out as rental services for hydraulic excavator to cater to the fast-growing construction market in Singapore. As business grew, more machineries were added, including hydraulic breakers and crushers. In 1988, Tiong Lee Huat Machinery & Construction was incorporated to offer rental and trading of used and new equipment as well as spare parts, mainly for excavators, breakers and crushers. Soon after, the company acquired dealership for hydraulic breaker from Japan Jacty Engineering and Korean manufacturer K&K Breaker, and later for Japanese Okada breaker and crusher. The company has also added sole distributorship rights for Japanese Konan MKB breakers and Ozkanlar Vibrotory sheet piler to its portfolio.

Nowadays, the company offers heavy and light construction equipment, such as crushers, breakers and excavators from brands like JCB, Okada, Konan, Hyundai Construction Equipment, Akita RCI, MKB, Daemo, and Vibro Hammers. In total, it represents 18 brands with products ranging from demolition equipment to hydraulic breakers and crushers and drilling machines. Its customers are mainly construction companies with operations in Singapore.

In addition, it offers used equipment from various brands, such as Hyundai, Kobelco, Hitachi, Komatsu, Kubota, Yanmar, Volvo, Doosan, Caterpillar, JCB, Sumitomo, Bobcat, Liugong, Sany, Toku, Fukurawa, NPK, Daemo, Everdigm, Powerking, and Krupp.

8. **Teesin Machinery Pte Ltd**

11 Senoko Avenue
Singapore 758301

Tel: +65 67581211

Website: www.teesin.com.sg



ABOUT TEESIN MACHINERY PTE LTD

Established in 1981, Teesin Machinery is one of the leading suppliers and manufacturers of construction equipment in Singapore. The company’s headquarters and production facilities occupy 68,000 square feet and 41,000 square feet built up area. The company focuses on distribution and manufacturing of construction equipment. At present, it represents more than 10 different brands of construction equipment in Singapore, including manufacturers from Japan, the US, Italy, Switzerland, Netherlands, the UK, Australia, Germany, and others. Among known brands, it distributes the products of Cimar, Shibuya, Mikasa, Robin, Diamond, Collomix, Eilon Engineering, and others. Its product categories for equipment include material handling, floor preparation, coring and cutting, road repair, construction, and concrete repair products as well as various related accessories.



Figure 3: Brands Represented by Teesin

Source: Teesin Machinery Pte Ltd

9. Huasing Construction & Trading Pte Ltd

No. 9 Sungei Kadut Street 4
 Singapore 729039
 Tel: +65 6463 6698
 Fax: +65 6362 1217
 Website: www.huasing.com.sg

ABOUT HUASING CONSTRUCTION & TRADING PTE LTD



Huasing Construction & Trading Pte Ltd is a diversified equipment and project services company. The company operates throughout Singapore and Malaysia, providing solutions for construction projects. Huasing started out in 1994 as a transport company with the focus on heavy material transportation. Over the years, it has expanded to a company that supplies all types of equipment for construction earthmoving, material handling and transportation. Among its product categories, it offers excavators, crushers, cranes, forklifts, skid loaders and piling foundation equipment. The company has its own capacities for providing heavy machinery re-conditioning and servicing, and it also provides machinery trading and rental services.

The company is the authorised dealer for Doosan, Ammann, RubbleMaster, UMS and Powerscreen equipment, machinery and products.

10. ICE Far East Pte Ltd

13, Pioneer Sector 2
Singapore 628374

Tel: +65 6861 3733
Website: www.icefe.com

ABOUT ICE FAR EAST PTE LTD

ICE Far East Pte Ltd. (ICEFE) was established in 1988 to serve the Asian construction industry. Since then, ICEFE have set up subsidiary offices in Malaysia, Hong Kong, Thailand, India, Australia, the Philippines, Indonesia and China. Throughout the years, it has earned the recognition of providing high performance products to its customers. Its wide network of offices, dealers and partners in the Asian region enables it to serve and respond to its customers quickly. Nowadays, ICEFE Group is one of the leading suppliers of various types of foundation equipment in Asia. Representing International Construction Equipment Inc. USA, BSP International Foundations Ltd (UK) and Dawson Construction Plant Ltd (UK) in Asia, the company offers sales and rental facilities, technical advice and engineering support, full maintenance and repair, spare parts service and engineering design services. Currently, ICEFE Group has the largest rental fleet of hydraulic vibratory hammers and substantial units of hydraulic drill rigs, hydraulic impact hammers, crawler drills, casing oscillators and rotators in the Asian region. In addition, it offers earth boring machines, mud pumps and cleaning systems, oil and gas drill rigs, specialty trenches, heavy duty rock excavation products, geothermal drilling products, surface miners, road miners, portable crushing machines, screening and shredding plants and conveyors, hydraulic crawler drills and earth pressure



balance machines. It also provides refurbishment, maintenance, repair, technical and engineering support, commissioning and deployment and collections services.

The company primarily services infrastructure, energy, and oil and gas industries. ICE Far East operates as a subsidiary of the THL Foundation Equipment Pte Ltd.

11. STM Construction Equipment

18 Boon Lay Way
#04-115 Tradehub 21
Singapore 609966

Tel: +65 8318 3139
Fax: +65 3125 7422
Website: <http://www.stm-ce.com/>

ABOUT STM CONSTRUCTION EQUIPMENT

STM Construction Equipment is based in Singapore and specialises in providing innovative construction equipment for construction and mining sectors in South and South East Asia. The company was founded in 2010. After several years in the construction sector in Asia, the company introduced various equipment from Europe, Japan and the US to end-users in Singapore. Currently, it offers Hycon hydraulic tools, Yamamoto ultra-large rock splitters, Darda rock splitters, Xcentric Ripper and TEI Rock Drills. Its network of local dealers across the region provides training, quick troubleshooting and stocks the most important spare parts close to customers. The company has established subsidiary offices in India, Indonesia, and Thailand.

12. INA Engineering & Construction Pte Ltd (INA)

No. 2, Tuas Avenue 9
Singapore 639169

Tel: +65 6862 3887
Fax: +65 6862 1963
Website: www.ina.com.sg

ABOUT INA ENGINEERING & CONSTRUCTION PTE LTD

INA Corporation Pte Ltd is a heavy construction equipment, heavy machinery and engineering company providing sale, rental and leasing services in Singapore. The company was



incorporated in 1988 and since then it has grown steadily to become one of the reputable and well-known companies for the rental of construction machinery in the country. Apart from providing trusted heavy machinery rental in Singapore, it has also engaged in handling projects ranging from residential, commercial, oil and gas to shipyard developments. The company specialises in heavy equipment rental in Singapore, buying & selling of used heavy equipment and construction materials, earthworks and civil engineering works, import, export and general trading, as well as acting as agent and distributor for hydraulic breakers and crushers. Its portfolio includes used excavators, bulldozers, cranes, loaders, graders, forklifts, track shovels, hydraulic breakers, crushers, vibrating compactors, dump trucks, compressors, generators and construction materials. Some of the brands it promotes include Hitachi, Caterpillar, and Bobcat. The company operates via two subsidiaries, namey, INA Heavy Machinery & Equipment Pte Ltd. and INA Engineering & Construction Pte Ltd.



Section 2: Singapore Buyer Profiles

1. Samwoh Corporation Pte Ltd/ SamGreen Pte Ltd

25E Sungei Kadut Street 1
Singapore 729333

Tel: +65 6269 7288

Fax: +65 6368 2886

Website: www.samwoh.com.sg

ABOUT SAMWOH CORPORATION PTE LTD/ SAMGREEN PTE LTD

Since its establishment in 1975, Samwoh has morphed into a leading integrated construction company which provides a full suite of engineering services, supply of building materials and precast concrete components, recycling of construction and industrial wastes, research and development as well as pavement consultancy services. Today, it synergises the strengths of its 18 companies, including an overseas subsidiary based in Indonesia, and has become one of the region's most recognised companies of its kind.

Over the years, it has earned the trust of high profile clients, including the Housing and Development Board (HDB), Singapore's Land Transport Authority (LTA), Jurong Town Corp, Defence Science and Technology Agency, Changi Airport Group, Public Utilities Board, PSA Corp, and Maritime and Port Authority of Singapore, along with other major developers in Singapore. Samwoh has become a top maintenance contractor for Singapore's various roads and expressways, and the runways and taxiways at Changi and Seletar airports. It has engaged in many areas of civil engineering and infrastructure construction projects for the public and private sectors. The company has led the construction of some of Singapore's key expressways, arterial roads, flyovers, underpasses, runways and building infrastructures, such as substations and sewage pumping stations.

Apart from civil engineering, Samwoh offers a comprehensive portfolio of explosives and controlled blasting systems such as drilling and blasting for underground work and utilities, tunnels and caverns. To ensure consistent supply and production, the company owns and operates three asphalt factories that can produce up to 600 tonnes per hour. These factories are complemented by hot mix silos capable of storing and preserving more than 2,500 tonnes of finished products at any time.

Addressing the government's appeal to intensify efforts to reduce, reuse and recycle wastes, Samwoh took it upon itself to develop new ways, technologies and facilities devoted to construction and demolition waste recycling. Today, it converts materials from old buildings, such as bloc housing projects, and recycles them into useable surface for road, aircraft and



seaport pavement. One of Samwoh's asphalt manufacturing plants is designed to produce recycled asphalt premix from reclaimed asphalt pavement. Samwoh has also built two integrated construction waste recovery facilities at the Sarimbun Recycling Park developed by Singapore's National Environmental Agency to boost the city state's waste recycling industry.

Recycling demolished concretes and other wastes from the construction industry, the facilities yield aggregates that are then reused in road construction or made to replace natural aggregates for the manufacturing of concrete. The latest and greatest testament to Samwoh's commitment to sustainability is the Samwoh Eco-Green Park. It is home to an asphalt recycling plant that processes asphalt pavement waste, a ready-mixed concrete plant that produces eco-concrete, and the Samwoh Eco-Green building, which was built using high percentages of recycled content. The building was the first in the region to use 100% recycled ingredients for the concrete aggregate.



Figure 4: SamGreen material Recycling Facilities
Source: Samwoh

Having completed various projects in Singapore, Malaysia and Myanmar, Samwoh is now eyeing Indonesia, Brunei and other Asia-Pacific markets as well as Middle East for further expansion.

2. Huatong Global Limited

9 Benoi Crescent, Singapore 629972

Tel: +65 6366 5005

Fax: +65 6368 1391

Website: <http://huatong.listedcompany.com/>



ABOUT HUATIONG GLOBAL / HUATIONG CONTRACTOR

Established in 1983, Huatong Global is a civil engineering company engaged in the provision of a full range of civil engineering services and inland logistics support as well as the sale of construction materials, including the manufacture and supply of Liquefied Soil Stabiliser (LSS) and Recycled Concrete Aggregate (RCA). The company is headquartered in Benoi Crescent, Singapore, and it has three subsidiaries, namely, Huatong® Contractor Pte Ltd., Soil Engineering Pte Ltd., and HT Equipment Pte Ltd.

Over the last 30 years, the Group has been involved in civil engineering works for numerous large infrastructural construction projects in Singapore, including certain stations of the Downtown Line MRT and Circle Line MRT, the Kallang-Paya Lebar Expressway, the Marina Coastal Expressway, and Waterfront Mixed Development Project. Having developed and commercialised the LSS product as an alternative for the backfilling of basements and other MRT construction projects, it completed some major LSS projects, such as Singapore Marina Bayfront Bridges, Singapore Sports Hub and Marina Bay Sands. Its customers in the civil engineering segment include, among others, the Housing and Development Board (HDB), Land Transport Authority of Singapore (LTA) and Daelim Industrial Co. Ltd. The company has also expanded its operations overseas having completed projects in Indonesia, Myanmar and China.

The company began recycling construction waste and aggregates in 2004 after establishing its Sale of Construction Materials business unit. In 2013, the company relocated its recycling operations to Tuas South Avenue 1, where it now recycles construction waste and aggregates. The recycled concrete aggregates (RCA) are primarily used for the company's own civil engineering activities, although it does, depending on prevailing market conditions and demand, sell its products to third parties. The company currently has two crushers, the Nordberg Primary Lokotrack Mobile Crushing Plant Model LT106 and Nordberg Secondary Lokotrack Mobile Crushing Plant Model LT1100, manufactured by Metso. They are capable of producing fine aggregates, which are used for road construction or trench backfilling, 20 mm aggregates, which are used for ready-mixed concrete, and graded stones, which are used in the construction of road bases. Huatong also owns wheel loaders, excavator breakers and weighbridge systems to support its recycling operations. Its customers in this segment include Alliance Concrete Singapore Pte. Ltd., Star Ready-Mix Pte. Ltd. and Sinmix Pte. Ltd.

The company also manufactures and supplies LSS, which is a self-flowable, self-compacting, self-levelling material consisting primarily of soil and cementitious materials that can be used as a backfill material, replacing conventional compacted fill. LSS consists of soil, water and cementitious materials which have been mixed uniformly. Most of the LSS is used to support Huatong's own civil engineering activities, but it also supplies LSS to third parties. Its customers in this segment include Samsung C&T Corporation, Dragages Singapore Pte. Ltd., Ssangyong Engineering & Construction Co. Ltd., Daelim Industrial CO. Ltd., Penta-Ocean



Construction Company Limited, Bachy Soletanche Singapore Pte Ltd., Singapore Piling & Civil Engineering Pte Ltd., Sembawang Engineers and Constructors Pte Ltd., Nishimatsu Construction Co. Ltd., and Hock Lian Seng Infrastructure Pte Ltd.

3. Hock Chuan Hong Waste Management Pte Ltd

18 Pasir Ris Avenue, Singapore 519685

Tel: +65 6582 7183

Fax: +65 6582 9727

Website: <http://www.hchwaste.com.sg/>

ABOUT HOCK CHUAN HONG WASTE MANAGEMENT PTE LTD

Hock Chuan Waste Management Pte Ltd (HCH) was founded in 1973 by entrepreneurs with backgrounds in construction, logistics and waste management. HCH focuses on providing complete construction waste management solutions by providing total construction and industrial waste collection services, including segregation and recycling, and manufacturing of precast concrete products, such as channel drain, road kerb, and others.

HCH's construction waste recycling plant is set up on Ministry of Environment approved Sarimbun Recycling Park, located at Lot 616PT MK 12 Lim Chun Kang. This integrated recycling plant enhanced HCH's capabilities to provide environment-friendly and cost-effective construction waste management services to construction companies. The company has developed and patented a waste processing process [Patent No. 93923] that is capable of producing recycled aggregates for usage in the construction industry.



Figure 5: Hock Chuan Hong Waste Recycling Plant

Source: Hock Chuan Waste Management



4. Sembcorp Industries Ltd / SembWaste Pte Ltd

4543 Jalan Bukit Merah, Singapore 159470

Tel: +65 6861 1218

Fax: +65 6227 1443

Website: <http://www.sembcorp.com/>

ABOUT SEMBCORP GROUP / SEMBWASTE

Sembcorp is a leading energy, water, marine and urban development group with operations in 70 locations across 14 countries spanning 5 continents worldwide. With facilities of around 11 GW of gross power capacity and close to nine million cubic metres of water per day in operation and under development, Sembcorp is an established provider of essential energy and water solutions to both industrial and municipal customers. It is also a world leader in offshore & marine engineering, as well as an established brand name in urban development. Within its urban development segment, it is a leading Asian developer with a strong track record in transforming raw land into sustainable urban developments. It currently has significant land bank of integrated urban developments, comprising industrial parks as well as business, commercial and residential space in Singapore, Vietnam, China and Indonesia.

In addition to its other business units, Sembcorp is also the leading integrated solid waste management service provider in Singapore. The company has become a major waste management player after its wholly-owned subsidiary, SembCorp Waste Management, acquired in 2000 the SEMAC Pte Ltd. – the largest waste management company in Singapore. The company was later renamed to SembWaste Pte Ltd. and it operates as a subsidiary of Sembcorp Environment Pte Ltd. SembWaste is now the largest solid waste management provider in Singapore serving 5 out of 9 geographical sectors (56% market share).

It offers a comprehensive suite of services to the municipal, industrial and commercial sectors. Its range of solid waste management services includes waste collection as well as post-collection treatment and waste-to-resource (WtR). Within the waste collection service segment, Sembcorp serves over 600,000 households and over 5,000 industrial and commercial customers, government agencies, and healthcare establishments in Singapore, providing municipal waste, industrial and commercial waste, construction and demolition waste, and bio-hazardous waste collection. Through its post-collection treatment and WtR segments, Sembcorp uses advanced waste treatment and resource recovery technologies to recycle materials from municipal as well as construction and demolition waste.



5. Soon Yong Huat Construction Pte Ltd.

601 Lim Chu Kang Road
Singapore 719456

Tel: +65 6453 4387
Fax: +65 6453 4387
Website: <http://soonyonghuat.com/>

ABOUT SOON YONG HUAT CONSTRUCTION PTE LTD.



Figure 6: Soon Yong Huat Recycled Concrete Processing Facilities

Source: Soon Yong Huat Construction

Soon Yong Huat Construction Pte. Ltd. is a Singapore-based company specialising in recycling of construction and demolition waste. Founded in 1990, it started its footprints in the construction industry as a contractor providing excavators, professional excavator drivers and building demolition services. The company specialises in recycling concrete waste into recycled aggregates which are: recycled graded stones, recycled 20mm granite, recycled granite dust, recycled sand and milled asphalt.

The company has since emerged as one of the leading firms, producing quality recycled materials in Singapore. In 2014, Soon Yong Huat Construction was awarded a silver award at the WDA-SMF Productivity & Innovation Awards, for pushing the boundaries of productivity through job redesign process changes and upskilling.



6. LHT Holdings Limited

27 Sungei Kadut Street 1
Singapore 729335

Tel: +65 6269 7890
Fax: +65 6367 4907

Website: www.lht.com.sg

ABOUT LHT HOLDINGS LIMITED

LHT Holdings Limited is a publicly listed company that has been in the timber industry for more than 40 years. Established in 1977, LHT has grown to be a leader in the industry with an annual turnover of more than SGD 30 million. It is also one of the largest manufacturing players of high quality wooden pallets, boxes and crates in Singapore. Sited on a 63,568 square metres land, LHT has over 180 staff involved in areas of administration, manufacturing and warehousing.

As part of its ongoing efforts to reduce waste and to protect timber resources, LHT has established the Singapore's first wood wastes recycling plant equipped with highly automated system from Germany to produce a series of technical wood products. At its waste wood recycling centre, horticulture and waste wood are shredded and crushed into wood chips for biomass.

7. Lum Chang Group

14 Kung Chong Road
#08-01 Lum Chang Building
Singapore 159150

Tel: +65 6273 8888
Fax: +65 6933 6688
Website: www.lumchang.com.sg

ABOUT LUM CHANG GROUP

Lum Chang Group, with a legacy of more than 7 decades, was founded in the 1940s with its origins in construction. Listed on the Singapore Exchange since 1984, the Group today has evolved and grown to include businesses in property development and investment. The Group currently has offices in both Singapore and Malaysia.



Presently, its construction arm, Lum Chang Building Contractors (LCBC) is one of Singapore's leading construction companies, providing fully integrated services in the construction industry. LCBC's portfolio includes mainly commercial and residential projects, from both the government and public sectors. LCBC is ranked consistently by Singapore's Building and Construction Authority as a Grade A1 contractor under the Contractors Registry System and a Class 1 General Builder under the Licensing of Builders. To date, its expansive construction portfolio is valued at more than SGD 9 billion, consisting on projects in every industry sector, from institutional to civil and infrastructure; from commercial to retail to leisure; and from industrial to residential sectors. Among its services, the company offers infrastructure development, design & build, or build only, services, construction management, project management, major upgrading and restoration of properties for conversion.

Lum Chang's property development portfolio includes residential and commercial projects, and hotels and resorts in Singapore and overseas. Some of the notable projects include the Good Class Bungalows in Swettenham Road, Emerald Garden located in Singapore's District 1 and also gated residences in Kuala Lumpur, Malaysia. The company is now developing two Executive Condominium developments in Singapore and continuously exploring development opportunities in overseas markets.

8. Ley Choon Group Holdings Limited

No. 3 Sungei Kadut Drive
Singapore 729556

Tel: +65 6757 0900

Fax: +65 6757 0100

Website: <http://www.leychoon.com/>

ABOUT LEE CHOON GROUP HOLDINGS LIMITED

Ley Choon Group Holdings Limited (Ley Choon), which commenced operations as Ley Choon Constructions and Engineering Pte Ltd in 1990, is an established one-stop Underground Utilities Infrastructure service provider based in Singapore. Its core businesses comprise Pipes and Roads Segment, consisting of underground utilities infrastructure construction and maintenance, sewer pipeline rehabilitation, road and airfield construction and maintenance; and Construction Materials Segment, comprising asphalt premix production and construction waste recycling. Its customers include government bodies, such as Public Utilities Board, Land Transport Authority, Housing and Development Board, Urban Redevelopment Authority, Building & Construction Authority, Jurong Town Corporation and companies such as SingTel, Changi Airport Group and PowerGas.



The company is a BCA L6 registered contractor (the highest grade), which allows it to tender for Singapore public sector contracts of unlimited value in the categories of cable/pipe-laying and road reinstatement, pipes, and other basic construction materials. It is also an A1 registered contractor in the category of civil engineering. As one of the three asphalt premix plant operators in Singapore, it owns two asphalt premix plants, one of which is currently the largest in Singapore in terms of production capacity, capable of producing up to 400 tonnes of asphalt premix per hour.

The company has also expanded overseas to Brunei for the undertaking of civil engineering and road construction waste recycling and the development, production and sale of eco-green construction materials. Headquartered in Singapore with total staff strength of over 1,000, the company is certified ISO 9001, ISO 14001, and OHSAS 18001.

9. Pan-United Corporation Ltd.

7 Temasek Boulevard
#16-01 Suntec Tower One
Singapore 038987

Tel: +65 6305 7373
Fax: +65 6305 7345
Website: <https://www.panunited.com.sg/>

ABOUT PAN-UNITED CORPORATION LTD.

Pan-United first started as a company engaging in serving ships in Singapore in 1958. It ventured from ship repair and shipbuilding services into trading and production of construction materials from neighbouring Indonesia and Malaysia in 1990s. It started supplying ready mixed concrete in Singapore in 1999, before embarking on aggregate quarrying in Malaysia the following year. In 2011 it acquired 80% of equity stake of PT Pacific Granitama, a granite quarry in Riau, Indonesia. It is today one of the largest granite quarry operators in Karimun, with a monthly capacity of 350,000 tonnes.

The company set up its first concrete batching plant in Johor, Malaysia in 2015. In 2017 it completed its first ground granulated blast furnace slag (GGBFS) grinding plant in the state of Johor in Malaysia, effectively integrating upstream into the production of cementitious (recycled) materials. The plant is operated by its fully-owned subsidiaries, Meridian Maplestar. Other than ready mixed concrete Pan-United also offers cement and aggregates. The company offers inter-terminal services and shipping logistics and services focusing on bulk cargo such as gypsum, coal, aggregate and sand in the region.



10. V8 Environmental

34 Gul Avenue
Singapore 629674

Tel: +65 6569 2300
Website: <http://www.v8.com.sg/>

ABOUT V8 ENVIRONMENTAL

V8 Environmental is one of the leading waste recycling companies in Singapore. It joins the few companies providing multiple waste management services in the country, covering solid and liquid waste management. As a provider of multiple waste management services it supplies equipment such as mobile and static garbage bins and compactors for solid waste, and fleets of vacuum and water tankers for liquid waste. It has over three decades of experience in the waste recycling industry in Singapore.

The company is building a new Material Recovery Facility (MRF), which is expected to be operational by June 2018. The MRF utilises Northern Ireland company M&K's screening, air separation and metal recovery technology, as well as Finnish company ZenRobotics' three-armed recycler unit. V8 Environment will be the first company in South East Asia to utilise ZenRobotics' robotic waste separation technology in an MRF. With its investment in such technology it hopes to advance and revolutionise the waste recycling operation in Singapore.



Appendix 2: MALAYSIA

Section 1: Malaysia Distributor Profiles

1. UMW Equipment Sdn Bhd

JalanPuncak, off Jalan P Ramlee, 50250 Wilayah Persekutuan, Kuala Lumpur, Malaysia

Tel: +60 3 2025 2025

Fax: +60 3 2025 2026

Website: <http://www.umw.com.my/>

ABOUT UMW EQUIPMENT SDN BHD

UMW Equipment Sdn Bhd is part of the UMW Group – a diverse conglomerate with portfolio in automotive, equipment and manufacturing & engineering sectors. UMW Group stands as one of Malaysia’s foremost public-listed companies with businesses in Malaysia, Singapore, Indonesia, Myanmar, Vietnam, Papua New Guinea, China and India.

As one of the key business units of UMW Group, UMW Equipment Sdn Bhd specialises in marketing, sales and service of imported equipment and machinery from known manufacturers, primarily in the fields of logging, construction, industrial, mining, and agricultural sectors as well as material handling and industrial floor cleaning equipment, marine and power products.

Some of the represented heavy and industrial equipment brands include Komatsu, LS Mtron, Rosebauer, Bomag, Holland Dredge Design, Everdigm, Toyota Industrial Equipment, Raymond, Aichi, Tokai, Tennant, Raymong, Aih, GS Yuasa, Elgin, Trelleborg and Mitsubishi Heavy Industries.

In Malaysia, the company is headquartered in Shah Alam and it services northern, southern and eastern regions in Peninsular Malaysia as well as Sarawak and Sabah in east Malaysia via its 16 branch offices in Butterworth, Ipoh, Johor Bahru, Nilai, Melaka, Kluang, Kuantan, Kuching, Sib, Bintulu, Miri, Kota Kinabalu, Sandakan, Tawau, Keningau and Lahad Datu,

Within the heavy equipment business segment, UMW imports, distributes, repairs, maintains and services heavy and industrial equipment in Malaysia, Singapore, Brunei, Papua New Guinea, Myanmar, Vietnam and China.



2. TecGates IP&T Sdn Bhd

No 13, Japan TP 3/3 Tmn Perindustrian SIME UEP
47620 Subang Jaya, Petaling Jaya
Selangor Darul Ehsan, Malaysia

Tel: +60 3 2721 4980

Fax: +60 3 8081 8230

Website: <http://tecgates.com.my>

ABOUT TECGATES IP&T SDN BHD

Established in 1989, TecGates IP&T Sdn Bhd – part of the TecGates Group – is an established bulk material handling, engineering and technology marketing company. It specialises in representing global recognised bulk material handling companies in Malaysia and around the region. Its core expertise is in process and bulk material handling technology and the company provides products and solutions in this field to all process industries, including cement, limestone, steel, power, mining, fertiliser, paper and port. Today, TecGates Group is headquartered in Malaysia and has offices in China, India and Indonesia.

Over the years, the company has grown into a leading supplier of material handling technology for process industries in Malaysia, with its products present in cement plants, fertiliser plants, steel plants, power plants and shipping ports. Within the mining industry, it services clients by providing conveying, crushing and screening equipment.

Among its technology partners are Aumund Group (Germany), Silotechnik (China), Depreux (France), Envirocare (USA), Hasler (Germany), KHD Humboldt Wedag (Germany), Eirich (Germany), and Howden (UK). TecGates helps these partners to distribute their industrial equipment and applications in Malaysian, and wider South East Asian market.

3. SCH Group Berhad

Lot 35, Jalan CJ 1/1,
Kawasan Perusahaan Cheras Jaya,
43200 Cheras. Selangor, Malaysia

Tel: +60 3 9082 2481

Fax: +60 3 9082 9691

Website: <http://www.schgroup.com.my/>



ABOUT SCH GROUP BERHAD

The SCG Group is a specialist supplier and distributor of industrial quarry products, machinery and equipment for different stages of quarrying processes, such as drilling and blasting, crushing and screening. It offers a wide range of quarry-based products, ranging from quarry products, machinery and equipment to reconditioned quarry machinery and its related spare parts as well as quarry grills that are widely used by quarry operators and plants.

The SCH Group began its operations in 1983 as a distributor and supplier of general industrial products for various industries. During that period, the majority of trading companies offered only certain range of quarry industrial products. To better compete and differentiate the company from other trading firms, it decided to focus on solely supplying quarry industrial products that are used in the quarry industry. Timely and efficient services to end-user customers in the quarry industry while saving time, costs and resources have led the Group to expand its distribution network around Malaysia and subsequently Singapore, which is principally involved in the distribution in all kinds of quarry industrial products in the South East Asian region, mainly Singapore and Indonesia.

Established more than 35 years ago, the company now supplies quarry-related products, equipment and machinery as well as spare parts to Malaysian market as well as wider South East Asian region. It currently counts more than 500 customers located in Malaysia, Singapore, Indonesia, Thailand, Myanmar and Cambodia. The company has a market share of approximately 17.2% of the quarry equipment and machinery market in Malaysia. It maintains its regional coverage via six distribution centres in Malaysia and one in Singapore. Domestically, its six distribution centres cover northern, central, southern and eastern regions of Peninsular Malaysia as well as Sabah and Sarawak in east Malaysia. Its regional office in Singapore covers the wider South East Asian region. The Group's distribution network strategy is based on direct distribution method where it focuses on marketing and selling its products directly to customers. Each of its branches consists of a sales person supported by its team of administrative and support staff.



Figure 7: Junjin CSM Hydraulic Crawler Drill, Distributed by SCH Group

Source: SCH Group Berhad



Most of the company's products are imported from Japan, Korea, China, the US and Australia. Among its major suppliers are 2 Rivers Enterprises Development Co., Ltd (China), Tiantai Yonglo Import & Export Co., Ltd (China), Contitech (Tianjin) Conveyor Belt Ltd (China), Junjin CSM (Korea), Seishin Corporation (Japan), Dyteco Co., Ltd (Korea), C & Oh Corporation (Korea), North Malaya Engineers Trading Company Sdn Bhd (Malaysia), RCI Wire Sdn Bhd (Malaysia) and Light Metals Industries Sdn Bhd (Malaysia) as well as Sumitomo Corporation (Japan), Enfico Enterprise Sdn Bhd (Malaysia), Qingdao Chow Washeng (China). Among other products, the company distributes conveyor belts, impact springs, conveyor rollers, belt fasteners, jaw plates, Mitsubishi Rock tools, duaplates, bucket teeth/ adaptor/repainter, shaft mouth reducers, rock tyres, packing compounds, cone-back epoxy backing system, and ammonium nitrate as well as Nakayama's cone crushers, jaw crushers and SR Series Gyropactor, Junjin CSM's hydraulic crawler drill and power hydraulic drifter, and AlphaPlus' hydraulic breaker. The Group typically makes purchases from its approved list of suppliers and prefers to maintain long-term business relationships with its suppliers.

Among its major customers are Honest Sam Development Sdn Bhd, Aras Kuasa Sdn Bhd, Hap Seng Building Material Sdn Bhd, Goltra Sdn Bhd, Weng Lee Granite Quarry Sdn Bhd, Toong Yoon Engineering Works Sdn Bhd, LCS Enterprise Sdn Bhd, STM Maju (M) Sdn Bhd, YY Engineering Sdn Bhd and Batu Tiga Quarry Sdn Bhd, Ronseng Enterprise, Advancecon Machinery Sdn Bhd, Lufong Construction Sdn Bhd, Zhan Chang Granite Quarry, ACME Engineering Construction Sdn Bhd, and Harapan Ramai Sdn Bhd. It is not dependent on any single customer as none of its customers contribute more than 10% of its total revenue. Many of its customers, which include suppliers and distributors of quarry products, contractors and quarry/mining operators, are repeat customers which have been with the company for a number of years.

In addition to quarrying industry, the company has also penetrated the mining industry in 2011, and it currently supplies its quarry industrial products and machinery to iron ore and gold mines. Most recently, the SCH Group reported that it will be seeking to diversify its sources of purchase for its quarry industrial products and raw materials for the manufacturing of its quarry grills by seeking local partners.

Among its future plants, the company aims to grow its presence in both domestic and overseas markets. Within domestic market, it plans to increase its market share by offering a wider range of equipment, machinery and products, especially by expanding its portfolio of reconditioned machinery. For overseas expansion, it plans to focus on the markets of Indonesia, Thailand, Vietnam, Myanmar and Cambodia.



4. Sunway Enterprise (1988) Sdn Bhd

Lot 753, Jalan Subang 3
Taman Perindustrian Subang
47610 Subang Jaya, Selangor, Malaysia

Tel: +60 3 5633 1909
Fax: +60 3 5633 1908
Website: <http://www.sunwayenterprise1988.com/>

ABOUT SUNWAY ENTERPRISE (1988) SDN BHD

Established in 1980, the Sunway Enterprise – a subsidiary of the Sunway Group – is an established equipment supplier to construction, quarry, industrial, and plantation sectors as well as rental industry. In the construction industry, Sunway Enterprise has been the market leader in supplying concrete pumping equipment, crawler drill equipment for quarrying and mining application, as well as compressors and gen-sets to all sectors. In particular, the company specialises in importing and trading of new hydraulic and pneumatic crawler drill and heavy equipment for quarry, construction, engineering usage and development market. It also provides repairing and rental services as well as spare parts and service backup solutions to Malaysian customers. With more than 30 years of experience in the distribution of a host of heavy equipment and provision of after-sales service support throughout Malaysia, the company now represents brands, such as CASE, Furukawa, Airman, Sany, Lonking, UNIC and Utiform. The company operates via its seven branches in different parts of Malaysia. The company registered revenues of RM 236.7 million in 2014. It is listed in the main board of Kuala Lumpur Stock Exchange.

5. Ming Tak Heavy Machinery Sdn Bhd

JBB 11 Batu 7 ½ (Muar Ke-Yong Peng)
Jalan Bakri, 84200 Muar Johor, Malaysia

Tel: +60 6 986 6629
Fax: +60 6 986 8210
Website: <http://www.mingtakmachinery.myinfo.my>

ABOUT MING TAK HEAVY MACHINERY SDN BHD

Established in 1983, Ming Tak Heavy Machinery Sdn Bhd is an established heavy equipment dealer and supplier in Malaysia. It is known for supplying high-quality refurbished machineries for the agricultural and industrial needs. The company mainly imports and distributes



refurbished Japanese construction equipment such as crushers, excavators, cranes, wheel loaders, bulldozers, road rollers, moto graders, forklifts and other construction machinery. Brands it carries include Komatsu, Mitsubishi, Hitachi, Kobelco, Sumitomo, Sakai, Toyota, TCM, and others. The company purchases and sells used construction machinery primarily for the local and regional market.

6. IB Equipment Sdn Bhd

4 Taman Pegawai, Jalan Lumut,
32000 Sitiawan, Perak, Malaysia

Tel: +60 5 691 9575

Fax: +60 5 691 6663

Website: www.ibe.com.my

ABOUT IB EQUIPMENT SDN BHD

IB Equipment started its operations in 1987 as marine equipment and its parts supplier. During 1997 South East Asia's Economic Crisis, the company saw the opportunity to export surplus construction equipment from Indonesia, Malaysia and Thailand to Africa, Europe, North America and Middle East. During this stage, IB Equipment started diversifying its portfolio and venturing into mining and construction equipment areas. As the shortage of used construction equipment in Malaysia and Indonesia became prevalent in 1999, the company started importing it from Japan. The company now specialises in the import of used Japanese construction equipment into Malaysian and Indonesian markets. Its distribution partner in Malaysia is Sinmal Machinery Pte Ltd while its distribution partner in Indonesia is PT Transindo Mitra Perkasa. The company also maintains equipment stockpiles in Kuching, Sarawak and East Malaysia.

IB Equipment offers air compressors, asphalt finishers, backhoe loaders, bulldozers, compactors, excavators, generators for rent or sale, motor-graders, portable light towers, road equipment, skylifts, terrain forklifts, tractor heads, trucks, welder machines and wheel-loaders. Among the other brands, it offers equipment from AIRMAN, Ingersoll-Rand, Mitsubishi, NIIGATA, JCB, John Deere, Caterpillar, Komatsu, Bomag, Doosan, Hitachi, Hyundai, Volvo, Almand Bros, Magnum, Terex, Sakai, Aichi, Sumitomo, HINO, Nissan, Lincoln, Miller, Kawasaki and TCM.



7. Miroc Equipment Sdn Bhd

6 Jalan Apollo, U5/190 Bandar Pinggiran Subang,
Shah Alam 40150, Malaysia

Tel: +60 3 7842 2233

Fax: +60 3 7728 3278

Website: N.A.

ABOUT MIROC EQUIPMENT SDN BHD

Founded in 2001, Miroc Equipment Sdn Bhd is a small size manufacturer and distributor of heavy construction equipment in Malaysia. The company markets its products to bridge and highway construction companies as well as quarry operators throughout Malaysia. Among other products it manufactures grinders and crushers as well as distributes and assembles crushing and auxiliary equipment, including control and automation systems, conveyor systems and supplies, feeders & breakers, liners, mills, crushers and grinders as well as pumps, valves, compressors, pyrometallurgical processing and screening systems. The company serves domestic Malaysian market. Miroc Equipment is currently acting as the local representative contact of Metso's products in Malaysia.

8. Dai Lieng Machinery Sdn Bhd

Lot 2541, Lorong 8, Jalan Manettia, Pujut, Jalan
Pasar Lutong, 98000 Miri, Sarawak, Malaysia

Tel: +60 85 655 855

Website: <http://www.dailieng.com.my/>

ABOUT DAI LIENG MACHINERY SDN BHD

Established in 1984, Dai Lieng Machinery Sdn Bhd specialises in the sale and distribution of brand new construction & forestry machineries, material handling and land transportation equipment, and other industrial equipment as well as provision of spare parts and after sales service. The company services the Sarawak state via 4 branch and sales offices as well as Sabah state via two branch and sales offices.

Having over 30 years of experience, the company has acquired a diverse product portfolio. Today, it is an authorised deal of many known brands, including Kobelco, Renault, Perkins, Komatsu, Volvo, Donaldson, ZF, HAMM, Multilift, Noah, Sinopec, Kioti and Hiab.



9. QTop Enterprise Sdn Bhd

Sub-Lot 21, Of Parent Lot 32, 128 & 180, E-Park
Light Weight Industrial Park, Jalan Batu Kitang,
93250 Sarawak, Malaysia

Tel: +60 82 626 569

Fax: +60 82 627 569

Website: <http://csrpower.com.my>

ABOUT QTOP ENTERPRISE SDN BHD

QTop Enterprise Sdn Bhd deals with sales and services of quarry crushers, screens and crawler drills. The company also supplies various brands of crusher parts. Its business focuses on quarry crushing and rock blasting operations. In addition to its general distributorship business, QTop Enterprise Sdn Bhd has also set up a related company, CSR Power Sdn Bhd, which has become a sole distributor of Terex Powerscreen mobile tracked crushers, screens, and genuine Pegson & Kue Ken spares.

10. G. Stone Machinery

Unit 302, Level 3, Lot 4250
Blk 16, Wisma Satria BDC
Kuching, Sarawak 93350, Malaysia

Tel: +6012 224 2324

Website: NA

ABOUT G. STONE MACHINERY

G. Stone Machinery is the authorised dealer for Europe-based leading mining and construction machinery manufacturer for the region of Sarawak. With its office based in Kuching, the company provides total mining and construction solution for its clients in Sarawak by offering machinery sales and after-sales support. The company is currently responsible for distribution of Sandvik's mining and construction equipment and technology in Sarawak region.



11. Metatech Sdn Bhd

Lot 9, Jalan Gudang 16/9, Section 16
Shah Alam 40200, Selangor DE, Malaysia

Tel: +60 3 5519 9633

Fax: +60 3 5519 9636

Website: www.metatech.com.my

ABOUT METATECH SDN BHD

Established in 1983, Metatech provides high-tech materials engineering solutions, high quality materials and services via its international partners and supply network. The company focuses on surface technologies, green technologies, control technologies, and welding technologies. It currently distributes products from brands, such as Oerlikon Metko, Exxon, Krom, Metco, Soudax, Betasanhe, and Steinert. Some of the available machineries include induction sorter, magnetic drum, suspension magnets, NES Eddy Current Separator, KSS Combination Sorter, Unisort PR and Unisort Flake from Steinert as well as Metso's range of shredders, among other product categories.

12. Sime Darby Industrial Sdn Bhd

Tractors Engineering Complex, 1, Jalan Puchong
Taman Perindustrian Puchong Utama,
47100 Puchong, Selangor, Malaysia

Tel: +60 3 8068 8000

Fax: +60 3 8068 8008

Website: <http://www.simedarbyindustrial.com>

ABOUT SIME DARBY INDUSTRIAL SDN BHD

Sime Darby Industrial is the leading distributor of premium heavy equipment in the Asia Pacific region, offering a comprehensive variety of equipment, product support services, and solutions in primary markets, such as plantation, property, mining, marine, forestry, construction, ports and for power generation. It is the world's third largest Cat® dealer, with Caterpillar dealerships across more than 140 branches in 10 countries throughout the Asia Pacific region. Sime Darby Industrial has the oldest Caterpillar dealership in Asia, with a partnership that began in 1929. It also offers a comprehensive range of other heavy equipment products and services through a range of allied brands.





Figure 8: Brands Offered by Sime Darby Industrial via Allied Brands
 Source: Sime Darby Industrial

In Malaysia, Sime Darby Industrial Sdn Bhd is the leading distributor of premium heavy equipment, ranging from the sale of new machines, engines or used equipment to rental through its chain of Cat Rental Stores nationwide. It is also involved in equipment manufacture under license and after sales support. Other brands represented by Sime Darby Industrial in Malaysia include Case New Holland and Kubota Agricultural Tractors, Terberg Terminal Tractors, Jacobsen Turfcare Equipment, GE PII Pipeline Solutions, Perkin Generator Sets, Omega Empty Container Handler, and SEM Tractors.



13. TCIM Sdn Bhd

Lot 9, Jalan Delima 1/1, Subang Hi-Tech Industrial Park, 40000 Shah Alam, Selangor DE, Malaysia

Tel: +60 3 5636 4786

Fax: +60 3 5636 4799

Website: <http://www.tcim.com.my/>

ABOUT TCIM SDN BHD

TCIM was incorporated in 1983 and deals primarily in material handling equipment, construction machinery, agriculture tractors and used forklifts. Serving mainly plantations, mining and construction companies, it has 16 branches in all over Malaysia, including four branches in each Sabah and Sarawak. Its headquarters is located in Shah Alam. The company is the sole authorised distributor in Malaysia for Unicarriers forklift, John Deere agriculture tractor, SDLG Wheel Loader, Terex Backhoe Loader and Sumitomo excavator. Aside from these brands it also distributes few other brands of equipment from China, Japan and Italy including Tonly (dump truck), Takeuchi (mini excavator), Sakai (soil compactor), V. Mariotti (forklift), Dulevo (sweepers), Sullair (air compressor) and Powertech (power generator). TCIM also distributes a wide range of high quality parts and accessories for its equipment. It also provides rental service through its sister company Jentrakel Sdn Bhd. Other than that it offers maintenance checking and operation training programs to its customers.



Section 2: Malaysia Buyer Profiles

1. Thanam Industry Sdn Bhd

Sub Lot 631C, Jalan 5, Off Jalan Chan Sow Lin
Kuala Lumpur 55200

Tel: +60 3 9222 4279

Website: <http://www.thanam.com.my/>

ABOUT THANAM INDUSTRY SDN BHD

Thanam Industry is a licensed provider of waste management and recycling solutions. The company started operating almost three and a half decades ago as a scrap metals collector. Since then, it has made huge progress and it is now providing total solutions for scrap and recycling undertakings. The company recycles both ferrous and non-ferrous metals, high temperature alloy, precious metals and electronic wastes. It recovers, collects, sources, weighs, processes and recycles these materials through a process which is compliant with all environmental standards and local regulations.

Thanam Industry recycles around 300-500 metric tonnes of wastes per month. To process the waste, the company applies different sets of processing or recycling cycles for various scraps and e-wastes, including segregation, compression, packing, crushing, drying and burning, pressing and storage. The company works with a variety of customers, ranging from individuals to tradesmen to large corporate companies.

2. Sri Aman Recycle Sdn Bhd

Lot 57897, Jalan Bukit Kemuning
Batu 6, Seksyen 34, Shah Alam 40470, Selangor
Darul Ehsan, Malaysia

Tel: +60 3 5162 7988

Fax: +60 3 5162 3881

Website: <http://serialam.com/>

ABOUT SRI AMAN RECYCLE SDN BHD

Sri Aman Recycle was established in 1998 and has quickly developed into a major player in the recycling industry with more than 200 employees. In 2004, it has successfully received ISO



14001 certification. As a total waste management company, it focuses on recycling and recovery of materials from waste. Its recycling-centric management solutions help clients to identify and segregate the recyclable materials in their daily disposal. Sri Aman Recycle currently has 5-acre materials recycling facility in Shah Alam and a 3-acre warehouse in Seremban. Its recycling centre is equipped with a 60-tonne weighbridge, a sorting line, a heavy duty baling system line, a fully automated plastic material washing system, industrial heavy-duty shredder and granulator, high speed on-site organic composting system, and fleets of vehicles with over 100 roll-off containers.

The company is serving more than 30 companies, including multi-national companies, in Malaysia to manage their daily wastes disposal. Some of the notable clients include Asian NDK Crystal Sdn Bhd, Fujikura (Malaysia) Sdn Bhd, Hitachi Air Conditioning Products (M) Sdn Bhd, Kawaguchi Manufacturing Sdn Bhd, Karihura (M) Sdn Bhd, Nippon Pigment (M) Sdn Bhd, OYL Manufacturing Co. Sdn Bhd, Panasonic Compressor & Motor Sdn Bhd, Panasonic HA-Air Conditioning (M) Sdn Bhd, Panasonic Industrial Co (M) Sdn Bhd, Panasonic Manufacturing Malaysia Berhad, Samsung Electronic Display (M) Sdn Bhd, Samsung SDI (M) Bhd, Sharp Electronic (M) Sdn Bhd, Tencate Geosynthetics Asia Sdn Bhd, Union Sangyo (Malaysia) Sdn Bhd, Dutch Lady Milk Industries Malaysia, and Haco Asia Pacific Sdn Bhd.

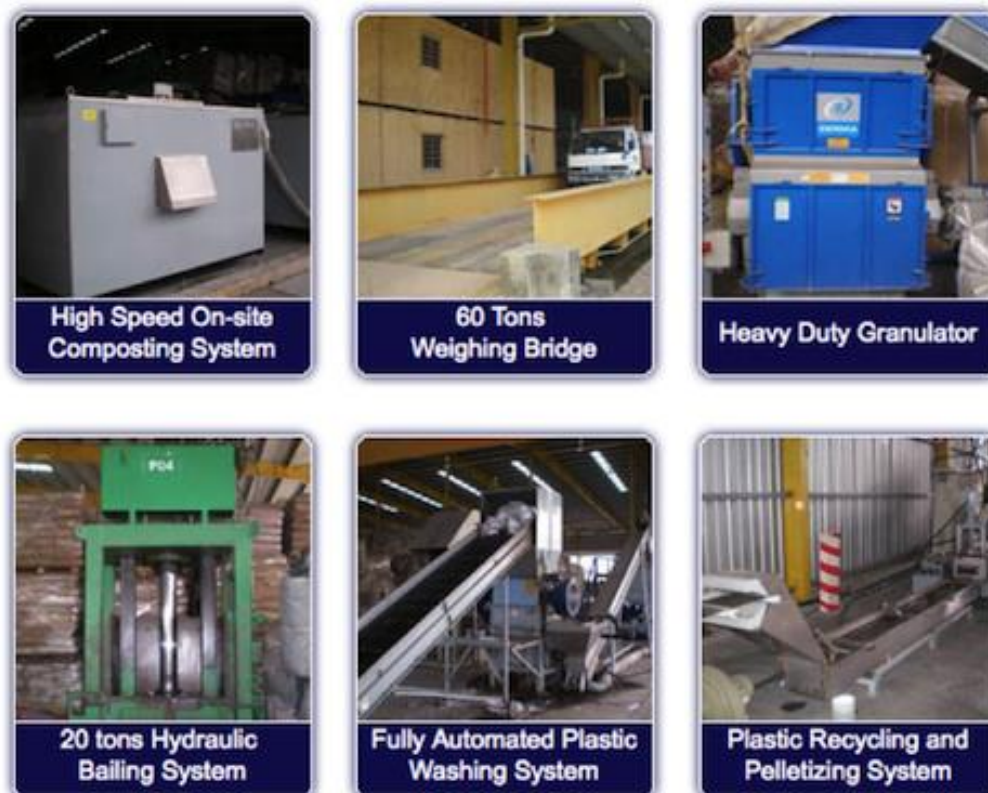


Figure 9: Some of the Existing Sri Aman Recycle Equipment

Source: Sri Aman Recycle Sdn Bhd



3. Meriahtek (M) Sdn Bhd

No. 1, Jalan TTC 30,
Taman Teknologi Cheng,
75250 Melaka, Malaysia

Tel: +60 6 336 5211
Fax: +60 6 336 5201
Website: <http://meriahtek.com.my>

ABOUT MERIAHTEK (M) SDN BHD

Meriahtek was incorporated in 2003 as a licensed electronic waste recycling company. Based in Melaka, the company owns a recovery facility with a land area measuring about 420,000 sq. ft. It has a reputation of successful provider of fully integrated, cost competitive, high quality and reliable waste management, e-waste recovery, base metal recycling, precious metal refining, environmental consulting and eco management services to SMEs and MNCs in Malaysia. Other than that Meriahtek specialises in providing one-stop solutions in demolition and dismantling plant facilities, data security and intellectual property destruction, and on site waste management and recycling supply chain services.

Meriahtek is considered a leading waste recycling company in Malaysia which bags a number of national awards related to its recycling capabilities. It uses advanced technologies to deliver its services, including online monitoring system, computerised control process and highly skilled technician team, apart from experienced management personnel. Among the technologies it owns are mechanical processing plant, chemical plant, laboratory analysis facilities, waste water treatment plant and fume scrubber system. Its mechanical processing plant has the segregation, dismantling, crushing, destruction, shredding, magnetic separation and decontamination components which are typical processes used in e-waste recovery.

4. Aras Kuasa Sdn Bhd (AKSB)

D600, 2nd Floor, Jalan Haji Junid
25200 Kuantan, Pahang, Malaysia

Tel: +60 9 515 0889
Website: www.araskuasa.com

ABOUT ARAS KUASA SDN BHD (AKSB)



Aras Kuasa Sdn Bhd (AKSB) is a mid-sized company, specialising in ore mining operations in Malaysia, primarily for export-oriented purposes to countries such as China. The company was founded in 2004 and it is based in Kuantan, Malaysia. It owns six iron-ore mines and has exported more than 1.5 million tonnes of ore since 2005. In addition to iron-ore mining, the company also focuses on extracting manganese, gold and bauxite.



Figure 10: Aras Kuasa's Operations in Malaysia

Source: Aras Kuasa Sdn Bhd

5. The Lion Group

Level 11 – 15, Lion Office Tower
No. 1 Jalan Nagasari
Kuala Lumpur 50200, Malaysia

Tel: +60 3 2142 0155
Fax: +60 3 2148 1036
Website: www.liongroup.com.my

ABOUT THE LION GROUP

One of Malaysia's largest conglomerates, the Lion Group was established in the 1930s and currently operates in retail and trading, property development, mining, steel production, agriculture, and IT services sectors. The company employs over 21,700 people across its offices in Malaysia, China, Indonesia, Hong Kong, Cambodia, Vietnam, Myanmar, the US and Mexico. With five listed companies in Bursa Malaysia, two in Singapore and one in Hong Kong, the Lion Group generates approximately RM 18.8 billion (USD 5 billion) annual group turnover.

In the mining sector, the group is involved in tin mining and production as well as trading of iron ore and coal. It actively explores iron ore in Malaysia, Cambodia and Indonesia for its iron and steel making requirements to produce high quality steel products. The group also has a footprint in Australia having invested in Mindax Ltd., which is an Australian company engaged in mining of iron ore, copper and gold.



6. Malaysia Smelting Corporation Berhad (MSC)

Lot 6, 8 and 9, Jalan Perigi Nanas 6/1
Pulau Indah Industrial Park
West Port, Port Klang, Pulau Indah
42920, Selangor, Malaysia

Tel: +60 3 3102 3083
Fax: +60 3 3102 3080
Website: www.msmelt.com

ABOUT MALAYSIA SMELTING CORPORATION BERHAD (MSC)

MSC Group is the largest quarrying company in Malaysia, which is primarily involved in tin mining. Via its subsidiaries it is also focusing on geological and exploratory works, open pit alluvial mining, tin smelting and refining, downstream manufacturing, and global marketing of tin and tin-based products. The main activity of the company, however, is tin smelting and trading, as well as metal and tin production.

The company is a subsidiary of the Straits Trading Company Limited of Singapore. As a large-size company with a number of subsidiaries, the company has footprints across the globe, quarrying and selling tin products through the leading metal markets, such as the Kuala Lumpur Tin Market and the London Metal Exchange, as well as directly to tin traders and industrial users.

7. Thang Kiang Nam Trading Sdn Bhd (TKN Group)

1676, Batu 3, Jalan Tuanku Abdul Rahman
(Formally known as Jalan Kuala Kangsar), 30100
Ipoh, Perak, Malaysia

Tel: +60 5 506 0971
Fax: +60 5 506 3282
Website: www.tkn.com.my

ABOUT THANG KIANG NAM TRADING SDN BHD (TKN GROUP)

The TKN Group consists of 4 companies, which are engaged in mining and quarrying sectors, real estate & property development, and manufacture of ultra-fine ground calcium products in Malaysia. Thang Klang Nam Trading Sdn Bhd owns and operates several quarries and sand mines in Malaysia. Its products include high quality aggregates suitable for calcium carbonate



powder production, crusher run stones for industrial and road construction, and washed mining sand for building materials. Another company, the TKN Pulaui Quarry Sdn Bhd, specialises in quarry mining, sand mining and produce of limestone for quicklime. It mainly produces limestone for quicklime, which serves the steel industry and for plastering purposes. TKN Properties Sdn Bhd is further engaged in real estate and property & housing development, while TKN Calcium Industries (M) Sdn Bhd manufactures ultra-fine ground calcium carbonate in its 14-acre plant in Batu Gajah Industrial Park. The TKN Group typically operates independently and sells to end users directly in the states of Perak and Penang in Malaysia.

8. LCS Group of Companies

25, Jalan Industri 1/1
28400 Mentakab, Pahang Darul Makmur, Malaysia

Tel: +60 9 278 3930
Fax: +60 9 278 2930
Website: <http://lcs.com.my>

ABOUT LCS GROUP OF COMPANIES

The LCS Group of Companies is one of the leading construction related companies in Malaysia. Today, LCS consists of a number of companies under LCS's flagship, involved in construction, quarrying and trading businesses. The main activities of the LCS Group of Companies are in the operation of ready-mix concrete, asphalt, precast, trading, quarrying, construction and logistic services. The company is located in the state of Penang and has a strong base in its home state as well as in Terengganu, supplying mostly to construction projects in the area. It has factories and plants located in Pahang and Johor to serve Malaysian market. Over the years, it has also completed a number of high profile construction projects, ranging from residential and commercial buildings to civil engineering and industrial constructions.

9. GCCP Resources Limited

D21-1, Menara Mitraland
No. 13A, Jalan PJU, Kota Damansara
47810, Petaling Jaya, Selangor, Malaysia

Tel: +60 3 76100823
Website: www.gccpresources.com



ABOUT GCCP RESOURCES LIMITED

GCCP Resources is engaged in quarrying and the processing of calcium carbonate by crushing the quarried calcium carbonate into varying particle sizes. Its business operations are principally located in Simpang Pulai, Ipoh and Perak in Malaysia. Through its GCCP Gridland Quarry, the company produces crushed calcium carbonate of varying particle sizes of up to 90mm that are sold to clients, who typically require crushed calcium carbonate for the manufacture of PCC. The GCCP Gridland Quarry has a production capacity of up to 40,000 tonnes of crushed calcium carbonate per month. The company is also in the process of undertaking the preparatory work for the Hyper Act Quarry operations, namely, by constructing a crushing plant and calcium carbonate production plant. The group intends to produce crushed Calcium Carbonate of varying particle sizes of up to 100mm and GCC grade powder, both of which will be sold to customers to produce GCC.

10. Sunway Berhad

Bandar Sunway, 47500 Subang Jaya, Selangor, Malaysia

Tel: +60 3 5639 8889

Website: www.sunway.com.my

ABOUT SUNWAY BERHAD

Established in 1974, Sunway Group is one of Malaysia's largest conglomerates with core interests in property, construction, education and healthcare. With a 15,000-strong team operating in 50 locations worldwide, it operates through 12 business divisions – property, construction, retail, hospitality, leisure, healthcare, education, commercial, trading and manufacturing, building materials, quarrying and Real Estate Investment Trust (REIT). Among its flagship development projects are the Sunway City in Selangor, Sunway City in Ipoh and Sunway City in Johor, which span 5,000 acres. Its three public-listed companies – Sunway Berhad, Sunway Construction and Sunway REIT, with a combined market capitalisation of RM 17 billion – form the company's real-estate value chain. In 2017, the company announced its plans to enter Sabah's pavement market through the acquisition of concrete block manufacturer Telipok Concrete Sdn Bhd.



11. UEM Group

17-2 Mercu UEM, Jalan Stesen Sentral 5
Kuala Lumpur Sentral
50470 Kuala Lumpur, Malaysia

Tel: +60 3 2727 6868
Fax: +60 3 2727 2222
Website: www.uem.com.my

ABOUT UEM GROUP

One of the largest construction companies in Malaysia, UEM Group consists of more than 20 operating companies, with three of them listed in local and international bourses. Often associated with large-scale infrastructure projects, the leading engineering-based infrastructure and services conglomerate operates via four key businesses, namely, Expressways, Township & Property Development, Engineering & Construction, and Asset & Facility Management. The company has built expressways that traverse the nation, properties and townships for communities, as well as bridges, railways, urban transits, airports, stadiums and hospitals across the country. The company has completed a total of USD 8.4 billion worth of projects since its inception in 1988. The company has total assets of USD 6.7 billion as of December 2014, with shareholders' funds valued at USD 2.2 billion. With headquarters and its core geographic market in Malaysia, it also has significant footprint in India, Indonesia, Singapore, Australia, New Zealand, Canada, the United Kingdom, and the Middle East. UEM Group is a wholly owned subsidiary of Khazanah Nasional Berhad, the strategic investment fund of the Government of Malaysia. The company itself has several subsidiaries, such as PLUS Malaysia Berhad, UEM Sunrise Berhad, UEM Builders Berhad, CIMA Berhad, OPUS, and UEM Edgenta Berhad.

12. WCT Holdings Berhad

B-30-01, The Ascent, Paradigm No. 1
Jalan SS7/26A, Kelana Jaya
47301 Petaling Jaya
Selangor Darul Ehsan, Malaysia

Tel: +60 3 7806 6688
Fax: +60 3 7806 6633
Website: www.wct.com.my



ABOUT WCT HOLDINGS BERHAD

Founded in 1981 to cater to earthwork and building projects in the country, WCT today is recognised as one of the most active construction companies in Malaysia. Its main activities include civil engineering and construction, property development and property investment. It employs over 2,000 employees and is active in 6 countries in Asia and the Middle East (Malaysia, Qatar, UAE, Bahrain, India and Vietnam). The company reported a market capitalisation of approximately USD 468 million. WCT's property and investment & management portfolio includes townships, luxury homes, high-rise residences, industrial properties, offices, integrated commercial developments, concessions, hotels and shopping malls. It currently has a land bank of approximately 924 acres in Malaysia. The company also owns Premiere Hotel, Klang and the newly-opened New World Petaling Jaya Hotel as well as 4 shopping malls.

13. Malaysian Resources Corporation Berhad (MRCB)

Level 30, Menara Allianz Sentral
No. 203 Jalan Tun Sambanthan
Kuala Lumpur Sentral, 50470 Kuala Lumpur
Malaysia

Tel: +60 3 2786 8080
Fax: +60 3 2780 7988
Website: www.mrcb.com.my

ABOUT MALAYSIAN RESOURCES CORPORATION BERHAD (MRCB)

MRCB was established in 1969 and it is a leading infrastructure developer in Malaysia. Its main activities focus on property development, engineering and construction, infrastructure, concession and environment. Its market capitalisation is valued at USD 661 million and the company has presence throughout the Asian region. Within its Property Development & Investment arm, MRCB has a large portfolio of successful integrated commercial and residential developments anchored around transportation hubs. The company currently owns an urban development land bank of 393 acres, with an estimated gross development value of RM 55 billion. Its Engineering, Construction & Environment unit has an impressive track record in transportation infrastructure, Engineering, Procurement and Construction (EPC) of high voltage power transmission projects, and rehabilitation and flood mitigation of rivers and coastal areas. Its Engineering, Construction & Environment division has an external order book of RM 6.2 billion. Within its Infrastructure & Concession division, the company has a 30-year highway concession in Malaysia.



14. IJM Corporation Berhad

Wisma IJM, Jalan Yong Shook Lin
46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia

Tel: +60 3 79858288
Fax: +60 3 79529388
Website: www.ijm.com

ABOUT IJM CORPORATION BERHAD

Formed in 1983 as a result of three medium-sized local construction companies – IGB Construction Sdn Bhd, Juratama Sdn Bhd and Mudajaya Sdn Bhd - IJM is now recognised as one of the top conglomerates in Malaysia, with main activities in construction, property development, mining, quarrying, and manufacturing, plantations and infrastructure concessions. Headquartered in Selangor, Malaysia, IJM's regional aspirations have seen it establish a growing presence in neighboring markets with operations presently spanning 10 countries, including its key markets of Malaysia, India, United Arab Emirates, China and Indonesia. Currently, IJM has 15 subsidiaries under its Construction business unit, 35 under Property, 22 under Industries, 25 under Plantations, and 22 under Infrastructure divisions. The company is active in Asia and the Middle East, with a market value of USD 2.8 billion. Majority of the company's revenues are derived from Malaysia.

15. Gamuda Berhad

Menara Gamuda, D-16-01, Block D, PJ Trade Centre
No. 8 Jalan PJU8/8A, Bandar Damansara, Perdana
47820 Petaling Jaya, Selangor Darul Ehsan, Malaysia

Tel: +60 3 7491 8288
Fax: +60 3 7728 9811
Website: www.gamuda.com.my

ABOUT GAMUDA BERHAD

Gamuda Berhad is an engineering, property and infrastructure development company, located in Malaysia. It is one of the largest Malaysian infrastructure companies, which has undertaken various projects, both locally and overseas, including the construction of Klang Valley MRT Lines, highways, airport runways, railways, tunnels, water treatment plants, dams, infrastructure concessions and the development of new townships. The company was



incorporated in 1976 and was listed on the main board of Bursa Malaysia in 1992. Gamuda operates through Engineering and Construction, Property Development and Club Operations, and Water and Expressway Concessions segments. In addition to its construction and engineering operations, the company also operates quarries and manufactures precast, precast and building systems.

16. IOI Properties Group Berhad

IOI City Tower 2, Lebuhraya IRC, IOI Resort City
62502 Putrajaya, Malaysia

Tel: +60 3 8947 8888

Fax: +60 3 8947 8800

Website: www.ioiproperties.com.my

ABOUT IOI PROPERTIES GROUP BERHAD

IOI Properties Group Berhad is among the largest property development corporations in Malaysia. Founded in 1984, the company began its venture into property development by acquiring Bukit Kelang Development Sdn Bhd, Rapat Jaya Sdn Bhd and Eng Hup Industries Sdn Bhd. Today, it engages in property development and investment, leisure, hospitality, and other businesses in Malaysia, Singapore and China. It develops residential commercial and industrial properties, invests in shopping malls, office complexes, manages and operates hotels, resorts, golf courses, cultivates plantations, and provides property management, landscaping, building maintenance, and car park management services.

17. SP Setia Berhad

12, Persiaran Setia Dagang
Setia Alam, Seksyen U13
40170 Shah Alam
Selangor Darul Ehsan, Malaysia

Tel: +65

Fax: +65

Website: www.spsetia.com.my

ABOUT SP SETIA BERHAD

SP Setia Berhad is a Malaysian property, infrastructure and business company, which engages in property development, construction, infrastructure and wood-based manufacturing



businesses in Malaysia, Vietnam, Singapore, Australia, China and the United Kingdom. The company operates through three business segments: Property Development, Construction, and Other Segments. Its property portfolio includes townships, eco sanctuaries, luxury enclaves, and high-rise residencies, as well as commercial, retail and integrated mixed developments. It is also involved in the building and infrastructure construction activities, including prefabricated residential units, such as government apartments. The company was founded in 1974 and is headquartered in Shah Alam, Malaysia. It currently operates as a subsidiary of Permodalan Nasional Berhad.

18. Eco World Development Group Berhad

Suite 52, 59 & 21 Setia Avenue
No. 2, Jalan Setia Prima S U13/S
Setia Alam, Seksyen U13
40170 Shah Alam, Selangor Darul Ehsan
Malaysia

Tel: +60 3 3344 2552
Website: www.ecoworld.my

ABOUT ECO WORLD DEVELOPMENT GROUP BERHAD

Eco World Development Group Berhad engages in property development activities, primarily in Malaysia. Its property portfolio comprises townships, integrated commercial developments, luxury high-rise apartments, and green business parks. The company has a land bank of approximately 8,052.7 acres. It is also involved in the supply of building materials, manufacture and trade of prefabricated and precast components, and promotion, marketing and other activities related to property management. The company was formerly known as Focal Aims Holdings Berhad and changed its name to Eco World Development Group Berhad in December 2013. The company is based in Shah Alam, Malaysia.

19. Mah Sing Group Berhad

Wisma Mah Sing, Penthouse Suite 1
No. 163, Jalan Sungai Besi
57100 Kuala Lumpur, Malaysia

Tel: +60 3 9221 8888
Fax: +60 3 9232 6990
Website: www.mahsing.com.my



ABOUT MAH SING GROUP BERHAD

The company is one of the leading property and lifestyle developers in Malaysia. It has a proven track record of developing and completing prime residential and commercial projects strategically located across Malaysia's top property hotspots. The company has operations in Malaysia, Indonesia, Singapore, China, Taiwan, and also maintains presence in other international locations. It was founded in 1965 and is headquartered in Kuala Lumpur, Malaysia. In 2016, the Group launched its largest township by acreage, Meridin East in Skandar Malaysia, Johor, spanning 1,313 acres.

20. United Malaysian Land Berhad (UML)

Suasana Bukit Ceylon
No.2, Persiaran Raja Chulan
50200 Kuala Lumpur, Malaysia

Tel: +60 3 2036 8188
Fax: +60 3 2036 8000
Website: www.umland.com.my

ABOUT UNITED MALAYSIAN LAND BERHAD (UML)

UML is an established property developer in Malaysia. The company engages in the development of residential and commercial properties in Malaysia, and it is involved in the property investment activities. UML operates two development divisions, namely, the Township and Niche Divisions, as well as a construction and building materials divisions, called U Land Build. The company has over 1,800 acres of undeveloped land in both Township and Niche Divisions.

21. TBTC Construction & Engineering Sdn Bhd

No.1, 1-1 & 1-2, Jalan Melaka Raya 30
Taman Melaka Raya
75000 Melaka, Malaysia

Tel: +60 6 286 1545
Fax: +60 6 286 1546
Website: www.tbtc.com.my

ABOUT TBTC CONSTRUCTION & ENGINEERING SDN BHD



TBTC was established in 1985 in Malaysia. The main activities of TBTC are civil engineering and building construction, and infrastructure works. Since the company began its operations, it has completed a number of projects, including projects for road and pavement construction, earthwork and site clearance, bridge construction, water retaining structures, tunneling and underpinning, irrigation and floor control systems, slope protection systems, concrete repairs, landscaping, drainage and sewerage works, general civil engineering works, steel framed buildings and industrial plants, restoration and conservation, general building and maintenance, waterproofing installations and roofing. Apart from its in-country presence, it also has a subsidiary in Vietnam. It operates successfully in Malaysia and Vietnam alongside major Malaysian construction companies.



Appendix 3: INDONESIA

Section 1: Indonesia Distributor Profiles

1. PT United Tractors Tdk

Jl Raya Bekasi Km 22, Cakung
Jakarta 13910, Indonesia

Tel: +62 21 2457 9999

Website: www.unitedtractors.com

ABOUT UNITED TRACTORS (UT)

United Tractors (UT) is the leading and the largest distributor of heavy equipment in Indonesia, providing products from world-renowned brands, such as Komatsu, UD Trucks, Scania, Bomag, Tadano, and Komatsu Forest. Established in 1972, the company reached an important milestone in 1989 by listing its shares in Jakarta and Surabaya Stock Exchange as PT United Tractors Tbk. Today, its vast distribution network includes 19 branch offices, 22 site support offices and 11 representative offices in 22 provinces across the country. While being the largest distributor of heavy equipment in Indonesia, the company also plays an active role in the field of mining contracting and has recently ventured into coal mining business. Today, UT conducts its business through three business units, known as Construction Machinery, Mining Contracting and Mining.

Within its Construction Machinery business unit, UT is the leading and largest distributor of heavy equipment in Indonesia. It offers heavy equipment products to cover works in mining, plantation, construction and forestry sectors, as well as for material handling and transportation. In Mining Contracting business unit, UT supports coal companies by providing mining services through PT Pamapersada Nusantara (PAMA), which the company established back in 1989. PAMA helps mine owners by providing mine design, exploration, extracting, hauling, barging and transporting commodities. Under its Mining business unit, UT has established a subsidiary, PT Buah Turangga Agung (TTA), which is the holding unit of mining business. It holds ownership over a number of coal mine concessions with estimated total coal reserves of 400 million tonnes (combined reserve) and coal quality that is ranging from medium up to high.



2. PT Airindo Sakti

Jl. Raya Tanjung Barat
No. 85 Kel Tanjung Barat, Kec. Jagakarsa
Jakarta 12530, Indonesia

Tel: +62 21 789 0908

Website: <https://www.airindosakti.co.id>

ABOUT PT AIRINDO SAKTI

Established in 1982, PR Airindo Sakti is a second generation, family-oriented premium heavy equipment distributor, headquartered in Jakarta, Indonesia. The company is recognised as a reliable source of quality brand name equipment, product support and long-term customer service. It offers a one stop solution for equipment needs in mining, construction, industry, agriculture, oil & gas, and power generation sectors. It started its business by distributing Atlas Copco products in Indonesia, which have become the market leader in Indonesia. Over the years, Airindo Sakti has signed various distribution agreements with international companies. Currently, it represents Atlas Copco, Samsung, Brokk, Benford (Terex), Aveling Barford, Schaeff & Fuschs, Soosan, Clark, Kobelco, Case IH, Wieland, Hognas Bjuif Refractories, Bricking Solutions, Haulotte Group, Cool Power, Abem, Tonly, and JCB. The company works through several business divisions, namely, Mining, Construction & Heavy Equipment, Material Handling & Industrial, Power Generating, and JCB.

3. PT Fajar Mas Murni (FMM)

Jln. Raya Narogong No. 214 Rawalumbu
Kota Bekasi Jawa Barat, PO Box 295
Bekasi 17001 West Java, Indonesia

Tel: +62 21 820 3989

Fax: +62 21 820 3993

Website: <http://www.fajarmasmurni.com/>

ABOUT PT FAJAR MAS MURNI (FMM)

Fajar Mas Murni is a company engaged in trading, distribution and contracting services for various business sectors. Established in 1978, it currently has 10 branches and 4 representative offices throughout Indonesia. Within a relatively short period of time, FMM's sphere of work has steadily grown and it is now well established as a major supplier of various types of



essential equipment used to support development in almost all sectors. The company's main activities are focused on representing national and international manufacturers as their exclusive distributor for Indonesia. Its solutions cover a wide range of fields, from construction to mining to education to healthcare, just to name a few.

Within its business areas for stone quarries, construction and material handling industry, it offers jaw crushers, cone crushers, screens, portable air compressors, generator sets, pneumatic crawler drills, hydraulic crawler drills, paving and hydraulic breakers, Jumbo drills, excavators and light towers. It also represents various material handling tools.

The company distributes construction and mining equipment in Indonesia for companies, such as Airman, Allmand, Metso, NFLG, LUKFIN, WACKER, Ingersoll Rand, CONICA, Flexenergy, Dresser-Rand.

Via its offices in Indonesia, the company is serving more than 50 clients. Within its mining, construction, infrastructure and cement industries, some of its clients are: PT Freeport Indonesia, Beau Coal, Bukit Asam, Vale, PT Newmont Nusa Tenggara, MNK, Antram, KPC, Adhimix Precast Indonesia, Dahana, Pama, PP Construction & Investment, THIESS Indonesia, Tripatra, Wika, Adhi, Holcim, Indocement, Semen Indonesia, Pindad, and Semen Garuda.

4. PT Gaya Makmur Tractors (GM Tractors)

Jl. Lingkar Luar Barat No. 3
Rawa Buaya-Cengkareng
Jakarta Barat, Indonesia 11740

Tel: +62 21 581 6899
Fax: +62 21 5830 1788
Website: <http://gmtractors.net>

ABOUT PT GAYA MAKMUR TRACTORS (GM TRACTORS)

Established in 2005, GM Tractors is a wholesale supplier of heavy equipment for road construction, plantation, forestry, mining, and other sectors. The company is a sole distributor of Wirtgen Group (Wirtgen, Voge, HAMM) of Germany, RM of Austria, as well as Yamaguchi and Takeuchi of Japan. Furthermore, GM Tractors is also a sole distributor of some heavy equipment manufacturers from China, including Shantui Construction Machinery (Shantui) with their wide range of bulldozers and wheel loaders, Xuzhou Construction Machinery Group (XCMG), which produces a variety of cranes, motor graders, wheel loaders, rotary drilling rig, horizontal directional drillers, and off-highway trucks. Besides these brands, GM Tractors also offers compact crushers and screening plants, tractors and excavators from other brands, and



provides after sales service, attachment and component making, heavy equipment reconditioning, rentals and used heavy equipment sales.

Distributions are made directly to local consumers via its 10 offices stationed throughout Indonesia. Its head office is based in Jakarta and the remaining 9 offices are situated in Makassar, Kendari, Banjarmasin, Balikpapan, Batam, Medan, Surabaya, Palembang, and Pekanbaru.

5. PT Universal Tekno Reksajaya

Jl. Raya Bekasi Km. 22, Cakung
Jakarta 13910, Indonesia

Tel: +62 21 2457 6818

Fax: +62 21 4682 2748

Website: <http://www.utr.co.id>

ABOUT PT UNIVERSAL TEKNO REKSAJAYA (UTR)

PT Universal Tekno Reksajaya, a subsidiary of United Tractors, is a market leader in old, or worn-out, heavy equipment remanufacturing. Founded in 2011 with Maintenance, Repair and Overhaul (MRO) of heavy equipment as its core business, UTR has grown impressively to have Indonesian-wide presence of MRO business, value added services provider and reputable equipment distributor. UTR was formerly a service division of PT United Tractors Tbk. While going through restructuring processes, the company became UTR in 2011, and it now serves as a remanufacturing company. The products offered by the UTR include, among others, engine, power-train, hydraulic system, hydraulic cylinder, and electric component remanufacturing as well as fabrication. To support its clients, the company operates plants in Jakarta, Pekanbaru, Balikpapan, Sangatta, Banjarmasin, Adaro and Timika. The company's 7 plants and 6 support sites are certified with ISO 9001:2008 Standard. Some of its clients include PT Pama Persada Nusantara, PT Bukit Makmur Mandiri, PT Sapta Indera Sejati, PT Madhani Talatah Nusantara, PT Guning Bayan, PT Kaltim Prima Coal, PT Thiess Contracting, PT Freeport Indonesia, PT London Sumatera, Indocement, and Perusahaan Listrik Negara, among others.

As part of UTR strategic commitment in providing total support for its customers in Mining and Construction sectors, UTR entered crusher business in 2015 and has been officially appointed as Indonesia's Powerscreen distributor in 2017. In the same year, the company has secured sole distributor rights of MB Crusher products as well.



6. PT Power Drilindo

Komp. Plaza Ciputat Mas
Blok B No D Jl. Ir. H. Juanda No. 5A
Tangerang Selatan 15412, Indonesia

Tel: +62 21 743 2241
Fax: +62 21 747 09776
Website: <http://powerdrilindo.com/>

ABOUT POWER DRILINDO

Power Drilindo, a mining and drilling contractor, is one of Indonesia's leading providers of high quality equipment and solutions for construction and mineral surface mining sector. The company was established in 2009 as a reseller of PT Sandvik Mining & Construction Indonesia for Rock Tools. Having established its association with Sandvik, the company has later signed distribution agreement with Mitsubishi Materials Trading Corporation to supply Indonesian market with its rock tools and parts. In 2014, it has been officially selected as distributor for Sandvik (Finland) in Indonesia and the company has taken additional steps for expansion in 2016 by engaging as distributor for YUAN PCR 200 and Samyoung Crusher.

The company currently offers surface rock drills, stone crushers, drilling accessories and additional products for mining and construction industries. Power Drilindo primarily services cement, infrastructure, mining and outsourcing customers, some of which include Wika Beton, UTSG, Semen Merah Putih, Pipit Mutiara Jaya, Pindad, Pertamina, Pama Mining, Lotus SG Letari, J Resources, Indocement, Dahana, and Alektodril.

7. PT Sinem Global

Sampoerna Strategic Square, South Tower
Level 30, Jl. Jend. Sudirman, Kav. 45-46
Jakarta 12930, Indonesia

Tel: +62 21 2993 0712
Fax: +62 21 2993 0888
Website: www.sinemglobal.com

ABOUT PT SINEM GLOBAL

Established in 2012, PT Sinem Global is an Indonesian distributor of tools and equipment for construction, mining, industrial and other business segments. The company is an authorised



distributor of Sandvik’s quarrying, tunnelling, demolition, dimensional stone, recycling and civil engineering tools and machineries in Indonesia. It distributes Sandvik’s mobile crushers and screens, breakers and demolition tools, rock tools, spare parts and wear parts, stationary crushers and screens, surface drill rigs, and tunnelling equipment. In addition, Sinem Global offers rock drilling parts from other recognised manufacturers, such as Atlas Copco, Furukawa, and Ingersoll Rand.

8. PT Tata Sukses Mandiri

Jalan Tampak Siring
 Blok KJB No.5 Daan Mogot Baru
 Jakarta 11840, Indonesia

Tel: +62 21 5437 7958
 Fax: +62 21 5437 7963
 Website: <https://www.tatasuksesmandiri.net>

ABOUT PT TATA SUKSES MANDIRI

Established in 2000, PT Tata Sukses Mandiri has been serving Indonesia for almost two decades as a provider of heavy machineries in various industries, such as road and building constructions, as well as agribusiness and mining industries. The company is now appointed as an authorised distributor for various heavy machineries and drilling accessories. It maintains a wide-reaching distribution network with around 22 distribution channels across the country.



Figure 11: PT Tata Sukses Mandiri Distribution Network in Indonesia

Source: PT Tata Sukses Mandiri

Among other products, it currently distributes motor graders, road rollers, wheel loaders, backhoe loaders from Changlin, UG dump trucks, UG loaders, UG utility vehicles and UG



flameproof vehicles from Anchises Technology Co. Ltd., drilling accessories from Brunner & Lay, as well as feeders, jaw crushers, cone crushers, impact crushers, vertical impact crushers, movable crushing and screening plants, vibration screens, sand washing machines, ball mills, spiral classifiers, belt conveyors, and hammer crushers from Shaorui Heavy Industries Co. Ltd. (part of Metso Group).

9. PT Marton Teknindo Abadi

Jl Kelapa Gading Boulevard, Blok PA 11/15 Kelapa Gading Permai, Jakarta, Indonesia

Tel: +62 21 450 2130

Website: www.marton.co.id

ABOUT MARTON TEKNINDO ABADI

PT Marton Teknindo Adabi (Marton) is an Indonesian leading provider of products and solutions for mining and construction sectors. Marton was established in 1986 and has established itself to become Indonesia's leading provider of mining and quarrying equipment. The company offers solutions for drilling, breaking, crushing, pressure washing, underground mining, fan ducting and ventilation systems. It continuously refines its range of products to support the growing needs of Indonesian customers. Among its current offering, it has drills, hammers, crushing & screening equipment, rock tools, drill tools, rotary bits and drill pipes, steam cleaners and pressure washers, transport systems for heavy mining, LHDs & dump trucks.

With more than 30 years of niche experience, Marton has been handling high quality equipment as exclusive distributor in Indonesia for many international brands. Its product line-up and strong after sales support have had direct contribution to government programmes aimed at enhancing the infrastructure and mining industry. It is particularly active in several industries, such as coal, gold, copper and nickel mining, limestone, aggregate and sand quarrying, and also construction. Some of the represented brands include Junjin, Shanbao, Revathi Limited Equipment, NPK, Robit Rocktools, Volgaburnmash, Aramine, SIOUX, Jensen Ventilation, ECE Cogemacoustic, GHH Fahrzeuge, Mine Master, and EmiControls.



10. PT Probesco Disatama

KEM Tower 15th Floor, Jl. Landasan Pacu Barat,
Blok B10 Kav.2 Kemayoran,
Jakarta Pusat, Indonesia

Tel: +62 21 6570 4111

Fax: +62 21 6570 4110

Website: www.probesco.com

ABOUT PROBESCO DISATAMA

Probesco Disatama was founded in 1994. The company's line of business includes the wholesale distribution of industrial machinery and equipment. It offers sales of heavy equipment for forestry & agriculture, mining & construction, and material handling sectors as well as spare parts for, and rental of, various heavy equipment and industrial machinery. Over the years, the company has expanded its network to 21 locations across the country and plans to add additional 10 locations in the upcoming years.

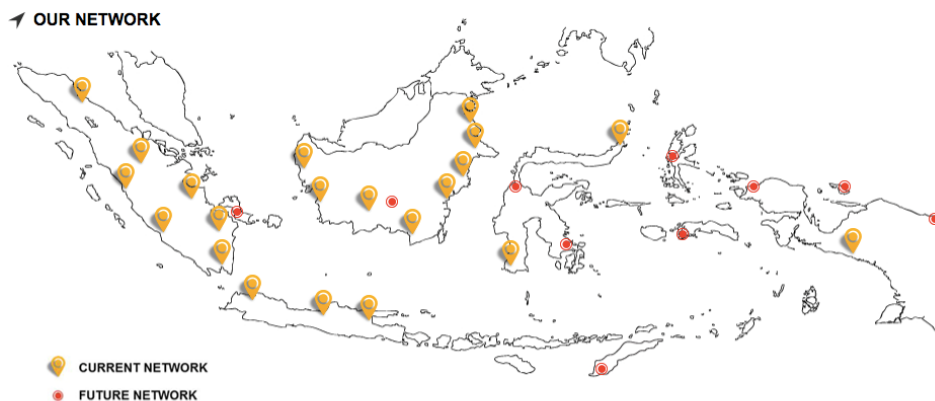


Figure 12: Probesco Disatama Distribution Network in Indonesia

Source: PT Probesco Disatama

Among its current offering, the company represents a diverse range of brands, including CASE Construction, LS Tractor, Elgi, Fessco, Pyton Hydraulic System, and other brands.



11. PT. Hexindo Adiperkasa Tbk

Pulo Gadung Industrial Estate
Jl. Pulo Kambing II Kav. I-II No. 33
East Jakarta 13930, Indonesia

Tel: +62 21 461 1688
Website: <https://www.hexindo-tbk.co.id/>

ABOUT PT. HEXINDO ADIPERKASA TBK

Founded in 1988, Hexindo Adiperkasa (Hexindo) engages in the distribution, sale, and rental services of heavy equipment and related spare parts in Indonesia. As an integrated services provider, Hexindo offers various kinds of heavy equipment solutions that meet customer requirements, including equipment sales, remanufacturing, welding, e-service and training. Hexindo distributes articulated dump trucks, applications and attachments, backhoe loaders, crawler dozers, excavators, feller bunchers, forwarders, harvesters, log skidders, motor graders, rigid dump trucks, skid steer loaders, and wheel loaders that are used in digging, loading, carrying, breaking, grabbing, cutting, crushing, and screening applications. It also provides various parts, such as lubricants, filters, undercarriages, O-ring kits for control valves, ground engaging tools, seal kits, and Hitachi remanufactured components. The company offers heavy equipment from well-known brands, such as Hitachi, John Deere, Krupp, and Bell. It serves the construction, forestry and mining sectors. The dealer has 22 branches across the country and 10 representative offices. In addition, it maintains 1 training centre and 13 mining projects. Hexindo is headquartered in East Jakarta and operates as a subsidiary of Hitachi Construction Machinery Co. Ltd. It has nearly 1,500 employees.

12. PT Mitra Traktor Cakrabuana (MITRACO)

Jl. P. Jayakarta 135 Blok A No. 5
Jakarta Pusat, Indonesia

Tel: +62 21 624 6788
Fax: +62 21 625 8178
Website: www.mitratraktor.com

ABOUT PT MITRA TRAKTOR CAKRABUANA (MITRACO)

PT Mitra Traktor Cakrabuana (MITRACO), which is also known as PT Intraco Multipenta is a well-established distributor of known heavy equipment products in Indonesia. Founded in



1980, the company initially started its business in heavy equipment spare parts. Since then it has grown consistently over the years and it has expanded its core business vertically to heavy equipment sales, parts, services and rental. The company is marketing successfully various heavy equipment to customers coming from sectors, such as oil & gas, infrastructure, construction works, coal mining, logging, wood industries, forest and palm oil plantations, agribusiness sector, pulp & paper, cement industries, chemical & steel plants, food factories, and many other industries. The company has four offices strategically located in Jakarta, Medan, Pekanbaru and Jambi. It is currently distributing products from various brands, among which are Duferdofin, Komatsu, Caterpillar, Cummins, Donaldson, Grapple, Indexator, TBM, Undercarriage and Dunlop.

13. PT Intraco Penta Tbk

Jl. Cakung Cilincing KM 3.5
Jakarta 14130, Indonesia

Tel: +62 21 4401408

Website: www.intracopenta.com

ABOUT PT INTRACO PENTA

Founded in 1975 and headquartered in Jakarta, PT Intraco Penta engages in the trading and rental of heavy equipment and spare parts in Indonesia. The company operates through several business units, such as Sale of Heavy Equipment and Spare Parts; Maintenance, Mining and Rental Service; Manufacturing; Financing; and Other segments. The company offers transportation and construction, and heavy equipment. It also provides mining contracting solutions, which include application and maintenance of mining equipment, and financing services for new and used heavy equipment, as well as repair and maintenance services. In addition, it is involved in the provision of manufacturing solutions for heavy equipment components, such as hard chrome plating services, and fabrication of heavy equipment, including truck body.

With more than 4 decades of experience in the heavy machineries, distribution and services, the company has won the trust of many international brands, including heavy equipment manufacturers VOLVO, SDLG, Bobcat, Sany, Doosan, Mahindra Tractors and Sinotruk.



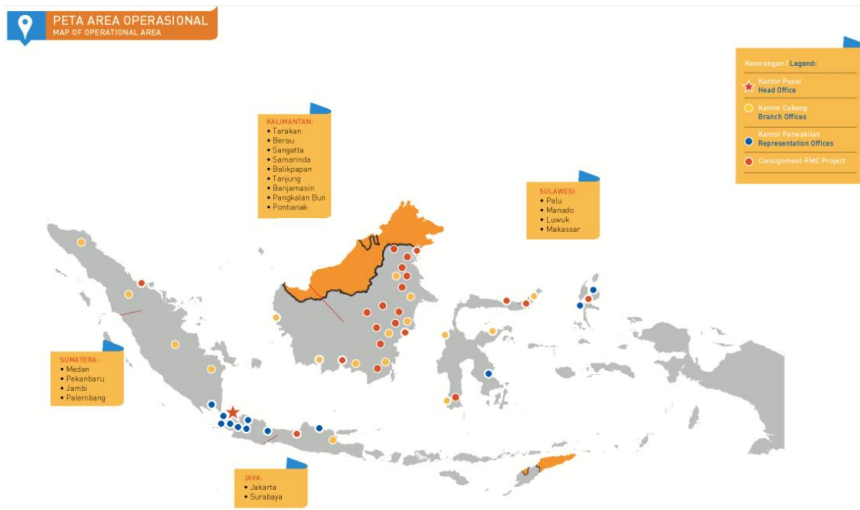


Figure 13: Intraco Operational Areas

Source: PT Intraco Penta

Intraco Penta maintains 44 distribution networks and support offices spread from Sumatra to Papua to ensure a good responsiveness upon customer’s need, better control over leased equipment and high quality of after sales service. The company serves clients in mining, construction/ infrastructure, forestry, agro, oil and gas, and general industries.



Section 2: Indonesia Buyer Profiles

1. PT Indocement Tunggal Prakarsa Tbk

Kompleks Pabrik Citeureup, Jl. Mayor Oking
Jayaatmaja, Citeureup, Bogor 16810, Indonesia

Tel: +62 21 875 2812 ext 3808

Fax: +62 21 251 0066

Website: www.indocement.co.id

ABOUT PT INDOCEMENT TUNGGAL PRAKARSA TBK

PT Indocement Tunggal Prakarsa Tbk (Indocement) is an Indonesia-based company primarily engaged in the cement industry. It is considered as the second largest cement producer in the country. The company's major business activities are classified into three segments, namely, cement, ready-mix concrete and aggregates.

Its cement segment includes the manufacture and trading of different types of cement under the brand Tiga Roda. Its ready-mix concrete segment, operated by its subsidiaries PT Indomix Perkasa and PT Pionirbeton Industri, comprises the production and distribution of ready-mix concrete products. Via its subsidiaries PT Mandiri Sentra Sejahtera, PT Tarabatuh Manunggal, PT Terang Prakasa Cipta and PT Sahabat Muliasakti, it also runs its aggregate and trass quarrying business. The company manages three factories, which together host 13 plants with a total annual production capacity of 24.9 million tonnes of cement. Its Cireureup Factory is now one of the largest integrated cement plant complexes in the world.

To support its cement business and distribution network, Indocement also owns eight cement terminals and 43 batching plants. Anticipating higher market demand, the company continues to expand its ready-mix concrete and aggregates businesses. At the moment, it has 4 aggregates plants.

2. PT BUMI Resources Tbk

Bakrie Tower Building, 12th Floor, Komplek Rasuna
Epicentrum, Jalan H. R. Rasuna Said
South Jakarta 12940, Indonesia

Tel: +62 21 5794 2080

Fax: +62 21 5794 2070

Website: www.bumiresources.com



ABOUT PT BUMI RESOURCES TBK

Initially set up as a hospitality and leisure company, BUMI has since switched its core business into coal mining. It is now one of the largest mining companies in Indonesia by volume with nearly 85 million tonnes of coal sales in 2014 and the world's largest thermal coal exporter. The company is primarily engaged in the exploration and exploitation of coal deposits on the islands of Sumatra and Kalimantan. BUMI operates its business through four companies: PT Arutmin Indonesia, PT Kaltim Prima Coal KPC), PT Pendopo Energy Batubara and PT Fajar BUMI Sakti. Operating revenue in 2014 was USD 2.7 billion. BUMI and its subsidiaries operate in Indonesia, the United Kingdom, Japan and Australia. Today, it owns and operates 6 open cut coal mines in the north shore of Pulau Laut and manages a concession area of 8,250.5 hectares located in Loa Ulung and Tabang, East Kalimantan as well as 17,840 hectares concession in Muara Enim and Pali in South Sumatra. In addition to its coal mining operations, the company operates two oil and gas exploration concessions comprising Block R2 that covers an area of 2,139 square kilometres and Block 13, covering an area of 5,563 square kilometres located in the Republic of Yemen. The company was founded in 1973 and is headquartered in South Jakarta, Indonesia.

3. PT Thiess Contractors Indonesia

Gedung Ratu Prabu 2 Building Jl. TB. Simatupang
Kav. 1B, Jakarta 12560, Indonesia

Tel: +62 21 2754 9999

Website: www.thiess.co.id

ABOUT PT THIESS CONTRACTORS INDONESIA

PT Thiess Contractors Indonesia (TCI) is a subsidiary of Thiess Pty Ltd, one of the world's largest mining services provider with expertise spanning across most of the world's commodities including metallurgical and thermal coal, iron ore, copper, nickel, gold, diamonds, oil sands, and others. TCI is also one of Indonesia's largest private contractors working in the resource, process engineering, infrastructure, and power sectors. Services delivered to these industries include contract mining and mine development, multidiscipline engineering, procurement and construction services for facilities and plant construction, mineral processing, along with civil infrastructure works for green or brown field project development.

It constructs social infrastructure and technical industrial projects, as well as owns and operates coal, iron ore, copper and uranium, nickel, gold, silver, lead, zinc, and magnesite mine sites, and caters to the full cycle of mine operations.



The company commenced its operations in Indonesia in 1972, and, over the years, it has delivered more than 200 projects across most of the Indonesian regions. It now has more than 8,000 employees and USD 2.5 billion worth of Work in Hand. The size and experience of the company has seen them deliver some sizeable projects in Indonesia which included bringing project finance, development, management, construction and maintenance services. In addition to servicing Indonesian customers, TCI also works in Australia, New Zealand and India.

4. Sumatra Copper & Gold PLC

PT Dwinad Nusa Sejahtera
International Finance Centre 9th Floor, Jl. Jendral
Sudirman Kav. 22-23, Jakarta 12920 Indonesia

Tel: +62 21 5790 3050
Email: info@scgplc.com
Website: <http://www.sumatracoppergold.com>

ABOUT SUMATRA COPPER & GOLD PLC

Sumatra Copper & Gold Plc is an established gold and silver producer with a suite of highly prospective tenements in Southern Sumatra, Indonesia, within a world-class epithermal gold province with historic gold production in excess of 3 million ounces. The company was established in the United Kingdom in 2006 and listed on the Australian Securities Exchange in 2009. Its flagship Tembang Gold-Silver Mine commenced production ahead of schedule in August 2015. The company is targeting annual production in the range of 40,000 to 50,000 gold equivalent ounces per annum. It has another subsidiary in Indonesia by the name of PT Dwinad Nusa Sejahtera.

5. Adaro Energy Tbk

Menara Karya, 23rd Floor Jalan H.R. Rasuna Said
Block X-5, Kav. 1-2, Jakarta 12950, Indonesia

Tel: +62 21 2553 3000
Website: www.adaro.com

ABOUT ADARO ENERGY TBK

Founded in 1992, Adaro Energy Tbk is a leading Indonesia coal mining company and Indonesia's second-largest producer of thermal coal. Over the years, it has developed into a



vertically integrated organisation, with pit-to-power subsidiaries including mining, barging, ship-loading, dredging, port services, marketing and power generation. The company operates the largest single coal mine in the country (in South Kalimantan) and aims to be the leading integrated coal mining and energy group in South East Asia. In its concession area in South Kalimantan, it has three mines: Tutupan, Wara and Paringin. Coal that is produced in these mines are mostly supplied to blue-chip power utilities in both Indonesia and worldwide. Adaro energy also has mining assets in South Sumatra, Central and East Kalimantan.

As the coal mining industry has been plagued by low coal prices since the late 2000s, Adaro Energy has been also increasingly focusing on power generation through the construction of coal-fired power plants. Given the company's access to large coal reserves and Indonesia's demand for electricity, the power generation business segment is expected to become a valuable asset to the company. Adaro controls approximately 12.8 billion tonnes of coal resources, including 1.1 billion tonnes of coal reserves. In addition to its coal reserves, Adaro has various other assets to support its operations, such as the 75 kilometre-long road connecting the mine location to the crushing facility in Kelanis (Kalimantan) as well as a coal terminal on Pulau Laut.

6. PT Sorikmas Mining

International Financial Centre (IFC), 9th Floor
Jl. Jendral Sudirman Kav. 22 – 23
Jakarta Selatan 12920, DKI Jakarta, Indonesia

Tel: +62 21 5790 3050

Fax: +62 21 5790 3051

Website: <http://www.sorikmas.co.id>

ABOUT PT SORIKMAS MINING

PT Sorikmas Mining is a gold exploration company in Indonesia. The company has been engaged in exploration of gold and other minerals in North Sumatra since 1998. It holds a Work contract with the Indonesian government which allows it to explore minerals in an area of more than 55,000 hectares. Currently, it holds 75% rights in the Contract of Work for the Sihayo Pungkut Gold Project.

The company has numerous prospecting areas, which include Sihayo, North Sihayo, Sihayo West, Julu Hutabargot, Singalancar, Dolok, Mandagang, Rura Balancing, Huta Pungkut, Ubi mine, High mine, Black Mine, Babisik, Air Rotap, Nalanjulu, Nalan Jae, Siandop, Namilas, and Tarutung, among others. Of more than 20 prospecting areas, exploration drilling has been done only in Sihayo and Sambung areas.



7. PT Nusa Raya Cipta (NRC)

Gedung Graha Cipta, Jl. DI. Panjaitan No 40
Jakarta 13350, Indonesia

Tel: +62 21 819 3526

Fax: +62 21 819 3544

Website: www.nusarayacipta.com

ABOUT PT NUSA RAYA CIPTA (NRC)

Established in 1975, PT Nusa Raya Cipta, generally known as NRC, is one of the leading Indonesian construction contractors. The company builds commercial, industrial, residential constructions and engages in civil engineering works. NRC is one of the top 15 construction contractors in the country. Some of the biggest clients include Carefour Indonesia, Astra International Group and Agung Podomoro Group.

8. PT Nusa Konstruksi Enjiniring Tbk

Jalan Sunan Kalijaga No. 64, Jakarta 12160,
Indonesia

Tel: +62 21 722 1003

Fax: +62 21 739 6580

Website: www.nuskonstruksi.com

ABOUT PT NUSA KONSTRUKSI ENJINIRING TBK

Founded in the 1980s, Nusa Konstruksi Enjiniring Tbk is Indonesia's largest non-state-owned contractor, which has completed over 300 infrastructural and building projects since its inception, including roads, irrigation systems, dams, power plants, railways and ports. Its construction projects are spread across the whole Indonesian archipelago. The company operates through its two segments, namely, construction and electricity services.





Figure 14: Operational Locations of Nusa Konstruksi Enjiniring

Source: Nusa Konstruksi Enjiniring Tbk

Some of the flagship projects include Atrium Senen Shopping Centre, Galeria Yogyakarta Shopping Mall, Plaza Mayestik, Amartaputra, Asri Special Hospital, Tanjung Pinang Hospital, Dharmasraya Hospital, Amankila Hotel, Shangri La Hotel Surabaya, Natuna Mosque, Universitas Jambi, Kuok Bridge, Melak Bridge, Hasanuddin Airport, Keru Dam, Semo Dam, Antoka Irrigation, Ambarawa Lingkar Luar Road, and Martable Access Road. The company is also involved in the mining sector. It has 4 offices, which are strategically located to service the Indonesian market.

9. PT Adhi Karya (Persero) Tbk

South Building, Jl. Raya Pasar Minggu, KM. 18,
Jakarta 12510, Indonesia

Tel: +62 21 797 5312
Fax: +62 21 797 5311
Website: www.adhi.co.id

ABOUT PT ADHI KARYA (PERSERO)

PT Adhi Karya (Persero) is one of the largest state-owned construction companies in Indonesia. It is involved in the construction of major national infrastructural projects through construction, engineering, property development, infrastructure investment, and procurement activities. The company operates through five business segments, which include Construction; Engineering, Procurement and Construction (EPC); Real Estate; Property; and Infrastructure Investment. Over the years, it has built roads, buildings, bridges, water works, airports, seaports, landmarks, and many other construction developments.



Adhi operates via its three subsidiaries, namely, Adhi Beton, Adhi Persada Gedung, and Adhi Persada Properti. Adhi Beton was established in 2014 with the vision to be the largest provider of precast concrete in Indonesia. Adhi Persada Gedung operates as a specialist construction arm of Adhi, whereas Adhi Persada Properti develops real estate and manages Adhi properties. Adhi Karya (Persero) is currently involved in 5 large-scale construction projects, encompassing 22 construction activity fields.

10. PT Kaltima Prima Coal

M1 Building Mine Site Sangatta, Kutai Timur,
Kalimantan Timur 75611, Indonesia

Tel: +62 5 4952 1155

Fax: +62 5 4952 1701

Website: www.kpc.co.id

ABOUT PT KALTIMA PRIMA COAL

Incorporated in 1982, PT Kaltima Prima Coal (KPC) is based in Sangatta with representative offices in Jakarta, Samarinda and Balikpapan. As of 2003, the company operates as a subsidiary of BT Bumi Resources Tbk. It engages in the mining and sale of coal, offering high volatility bituminous coal and sub-bituminous coal to both domestic and international customers from various industrial sectors. The company is considered as one of the new generation thermal coal producers. Located in north-eastern Kalimantan, it owns mining concession areas of 90,960 hectares, including the two mining areas of Sangatta and Bengalon. It is estimated that Sangatta mine has a mine-life of up to October 2020. In total, KPC operates six to 12 individual open pits at any time. With its selective mining processes, over 90% of its run-of-mine coal only needs crushing, screening and blending to produce export-quality Prima Coal. For coal crushing, the company currently uses Gundlach roll crushers, and its coal production capacity reaches more than 50 million tonnes per year.

11. PT Semen Indonesia

Gedung Utama Semen Indonesia, Jl. Veteran Gresik
61122, Indonesia

Tel: +62 31 398 1732

Fax: +62 31 398 3209

Website: <http://semenindonesia.com/>



ABOUT PT SEMEN INDONESIA

PT Semen Indonesia, formerly known as the Semen Gresik Group, is an Indonesian building materials manufacturing company and it is the largest cement producing company in Indonesia with an annual cement producing capacity of more than 29 million tonnes. The company has cement plants on the islands of Java, Sumatra and Sulawesi, which are all supported by a distribution network that reaches the whole country. It holds the largest market share (around 40%) in terms of domestic cement sales in Indonesia. It was the first state-owned enterprise that went public on the Jakarta Stock Exchange and Surabaya Stock Exchange (both merged to become the Indonesia Stock Exchange in 2007). Although Semen Indonesia's core business is the production (and distribution) of cement, the company is also involved in industrial real estate, cement bags and mining. The majority of the company's cement production stems from Semen Gresik (East Java), Semen Padang (West Sumatra), and Sement Tonasa (South Sulawesi).

12. PT Holcim Indonesia Tbk

Talavera Suite 17th floor, Talavera Office Park
Jl. TB Simatupang, No. 22-26, Jakarta 12430
Indonesia

Tel: +62 21 823 1260 (Narogong Plant)

Fax: +62 21 823 1254

Website: www.holcim.co.id

ABOUT PT HOLCIM INDONESIA TBK

Founded in 1971, PT Holcim Indonesia Tbk engages in the production and distribution of cement, ready-mixed concrete, and aggregates for Indonesian and international customers. As a fully integrated producer of building materials, it operates via three divisions: Cement; Ready-mix Concrete and Aggregates Quarry; and Other Construction Services. The company offers cement and mortar, as well as coarse, fine and other aggregates. It also provides engineering and construction, and technical support services. It was formerly known as PT Semen Cibinong Tbk and changed its name to PY Holcim Indonesia in 2006. It operates as a subsidiary of Holderfin B.V. Across Indonesia, the company has four production sites, located in Lhoknga – Aceh, Narogong – West Java, Cilacap – Central Java, and Tuban – East Java. Its production activities are supported by a wide network of grinding stations & distribution terminals.



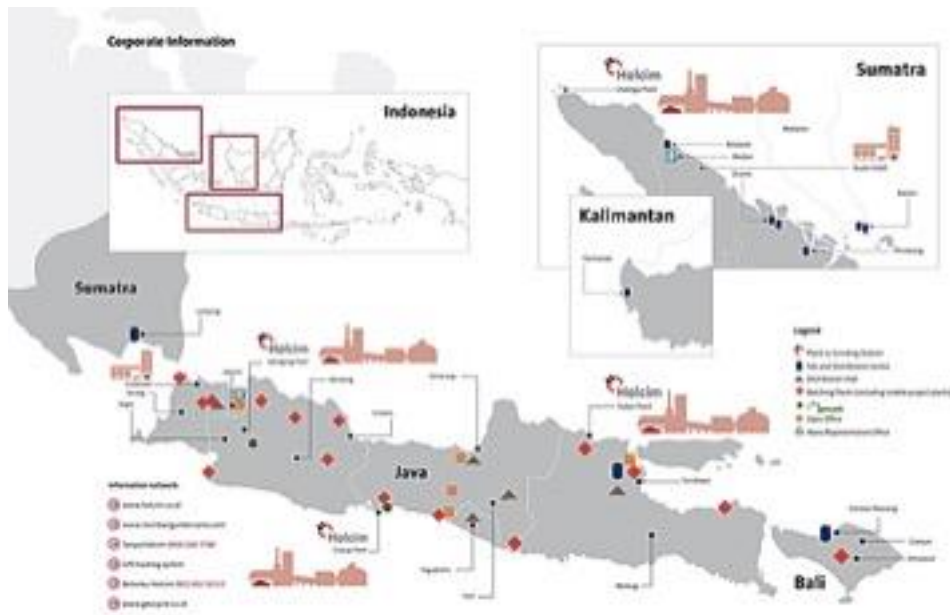


Figure 15: Holcim Indonesia Locations

Source: PT Holcim Indonesia Tbk



Appendix 4: THAILAND

Section 1: Thailand Distributor Profiles

1. Multico Engineering (Thailand) Co. Ltd.

No. 75 Soi 5, Sammakorn Village (Ramkhamhaeng 112), Ramkhamhaeng Road, Sapansung Sub-District, Sapansung District, Bangkok 10240, Thailand

Tel: +66 2 729 8580

Fax: +66 2 729 8583

Website: www.multicoengineeringthailand.com

ABOUT MULTICO ENGINEERING (THAILAND) CO. LTD.

Founded in 1973, Multico is today an established player in the industry with a strong and expanding presence in Asia. Headquartered in Singapore and represented across the region through subsidiaries that work in close collaboration with the parent company to address customer needs, Multico serves customers and suppliers in diverse market sectors, including industrial, agriculture, construction, energy, landscape, marine, mining and oil & gas. The company's wide range of premium products is carried through its distribution network covering Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Taiwan, Thailand and Vietnam. Multico specialises in the distribution of equipment for the Construction, Material Handling, Environment Landscaping and Recycling Industries. Today, the company represents many international brand names such as, Tadano, Perkins, Massey Ferguson, Bobcat, Almig, BOSCH, Sumitomo, HAMM, Doosan, Vogeles, and Wirtgen, among others. In Thailand, the company started its distribution business after incorporating a local subsidiary, Multico Engineering (Thailand) Co Ltd (MET) in 2000.

2. Solids Handling and Process Engineering Co., Ltd (SHAPE)

888/1 Soi Boonmesap, Bangplee Tamru Road, Bangpleeyai, Bangplee, Samutprakarn 10540, Thailand

Tel: +66 2 382 5100

Fax: +66 2 382 5108

Website: www.shape.cc



ABOUT SOLIDS HANDLING AND PROCESS ENGINEERING CO., LTD (SHAPE)

Formed in 1997, SHAPE is a Thai powder handling and process engineering specialist that was set up to service the Asian market. Offering a 'one stop' source of powder handling & processing equipment and process engineering design for industries using powders & dry solids in their manufacturing process, SHAPE utilises a combination of licensed local manufacture and imported technology to provide cost effective solutions for clients. As a supplier of solids and powder handling equipment, which range from conveying to materials handling, the company carries its own brand SHAPE as well as supplies related equipment from brands, such as Kek-Gardner, Process Components, Floveyor, Yorker Engineering and Base Handling Products.

Its customers are primarily local Thai companies. Customer requirements from individual units to complete turn-key plant installations can be accommodated using the expertise that company accumulated from its projects in food, healthcare, chemical, plastics and associated industries. In addition to its home market in Thailand, SHAPE has successfully exported equipment, systems and professional services to Australia, Canada, China, Hong Kong, India, Japan, Malaysia, the Philippines, the UK, the USA, and Vietnam. Its client base includes many 'blue-chip' multi-national companies.

For mineral processing, the company has provided installations of turn-key solutions for numerous projects, including:

- Design, fabrication & installation of specialist materials handling, storage and blending system for the processing of Bentonite Clay.
- Design, fabrication & installation of pneumatic handling, storage and big bad / small bag filling system for Bentonite Clay.
- Design & fabrication of screw conveyor for Bentonite Clay.
- Screw conveyor for ground coal.
- Sampling system, sieving and FIBC filling system for tin.
- LIW feeder & coarse grinding mill & high speed mixed for Bentonite.

3. Sahasin Equipment Co., Ltd

9 Moo 5 Phaholyothin K.M.37.5 Rd.
Tambol Klongnung, Amphur Klongluang
Pathumtanee 12120, Thailand

Tel: +66 2 5168100
Website: www.sahasinequipment.com



ABOUT SAHASIN EQUIPMENT CO., LTD

Sahasin Equipment was founded in 1989 as a specialist in sales and distribution of imported industrial construction and mining equipment and machinery from Japan, USA and UK. The company boasts nearly 30 successful years in business. Examples of products sold by the company include excavators, bulldozers, wheel loaders, compactors, tire rollers, steel rollers, motor graders, asphalt pavers, asphalt finishers, asphalt distributors, chipping spreaders, mobile cranes, mixer trucks, dump trucks, hydraulic breakers, and others. In addition of distributing new equipment, it also sells second-hand equipment for mining and construction clients. Some of the brands in the company's portfolio include Komatsu, Caterpillar, Kubota, Kobelco, Hitachi, Yanmar, TCM, Sakai, Bomag, Dynapac, Kawasaki, Watanabe, Nigata, Sumitomo, Phoenix, Tadano, Kato, Isuzu, Nissan, Hino, Mitsubishi, and Fuso.

4. Rockdril Asia

106/96 M.5 T.Plutalaung, A.Sattahip
Chonburi 20180, Thailand

Tel: +66 38 110 792

Website: www.facebook.com/Rockdril.Intl/

ABOUT ROCKDRIL ASIA

With over 25 years of experience, Rockdril has been working with engineers and contractors world-wide to provide reliable, easy to service quality drilling equipment and accessories at an affordable cost. Besides offering drilling equipment and machinery, the company is a distributor of tricone bits, industrial hoses, drag bits, fluids, reverse circulation equipment, eccentric overburden systems, mud pumps, drifters and rock drilling tools, imported from companies that have been leading the world in the drilling sector for many decades.

Rockdril has established its local subsidiary Rock Dril Asia Co., Ltd to help provide Drilling Solutions in Thailand, Hong Kong, Vietnam and Laos, as well as assist with expansion to other countries in the region. In addition to selling new equipment, it also offers machinery and equipment rental services.



5. Bangkok Machinery Suppliers

Level 29, The Offices at Centralworld 999/9
Rama 1 Road, Kwaeng Pathumwan, Khet
Pathumwan, Bangkok 10330, Thailand

Tel: +66 2 207 2308

Website: www.everymachinery.com/em-bmsthai/bangkok-machinery-suppliers-co-ltd-

ABOUT BANGKOK MACHINERY SUPPLIERS

Founded in 2002, Bangkok Machinery Suppliers is an established supplier of used and new construction machinery. The company is currently offering one of the largest stock of heavy machinery for sale. This stock of heavy machinery includes the company's own stock, stock from local partners, and stock from overseas partners and contracting companies who have finished their projects and are willing to sell their used machineries. Among the types of construction machinery, the company provides excavators, wheel loaders, wheel excavators, dozers, motor graders, road rollers, mini excavators, cranes, and others. It provides equipment from major brands, such as CAT, Hitachi, Kobelco, Komatsu, and Kawasaki. The company has offices in Thailand and in France.

6. MEC Far East International Public Co. Ltd (MEC)

888 MEC Tower, Bangna-Trad Rd., Bangna
Bangkok 10260, Thailand

Tel: +66 2 399 4130

Fax: +66 2 399 4173

Website: www.mec.co.th

ABOUT MEC FAR EAST INTERNATIONAL PUBLIC CO. LTD. (MEC)

Established in 1984, MEC was originally named as Metro Engineering Co. Ltd. The company has grown consistently over the years until it became a public company listed on the Stock Exchange of Thailand and changed its name to the current MEC Far East International Public Co. Ltd. in 1993. The company provides sales and services for new and used reconditioned heavy construction machinery. The products include hydraulic excavators, bulldozers, wheel loaders, rollers, motor graders, truck cranes, crawler cranes, pavers, generator sets, asphalt mixing plants, concrete batching plants, crushing and screening plants, as well as other



compaction and paving products. Besides local distribution, the company also exports the reconditioned used equipment to customers in Middle East, Australia, Europe, USA as well as other Asian countries. MEC is an exclusive sole distributor of Dynapac products line, Parker asphalt mixing plant, Massenza hot oil asphalt heating units and bitumen storage tank, Phoenix road surfacing equipment, Gomaco concrete paving product lines, and SDMO generating sets and mini power plants. It also distributes PM, Italy's leading manufacturer of articulated truck and lorry mounted hydraulic cranes, products in Thailand. In addition to equipment sales, it also offers rental services to Thai customers.

7. Italthai Industrial Company Limited

2013 Italthai House, New Petchburi Road, Bangkapi,
Huay Kwang, Bangkok 10310, Thailand

Tel: +66 2 319 1031

Fax: +66 2 318 2654

Website: www.italthaigroup.com

ABOUT ITALTHAI INDUSTRIAL COMPANY LIMITED



Figure 16: Italthai Locations

Source: *talthai*

Italthai Industrial Company Limited is a company of the Italthai Group. The group is a major Thai conglomerate with more than 5,000 employees in seven countries across Asia Pacific region. As an umbrella company, it has business operations in construction equipment, construction, hospitality, and lifestyle. The company distributes and provides professional after-sales service for world class construction and industrial equipment in Thailand and neighbouring countries through its business unit, known as Italthai Industrial Company Limited. The company is one of the major distributors and providers of construction and



industrial equipment in the region with 14 branches in Thailand and Lao PDR. The company offers construction equipment, mobile cranes, mini cranes and compaction equipment as well as quarrying & mining machinery, including mining dump trucks, mobile crushing, mobile screening, drill rigs and rock drilling machinery. Some of the brands it represents include Power Curbers & Power Pavers, Volvo, SDLG, Tadano, Maeda Mini Crane, Bobcat, PowerScreen, Yutong, Atlas Copco, Dusan, and Robit. The company expects 30-40% revenue growth to BHT 3.8-4 billion in 2018 as the number of construction projects rises. In 2018, the company plans to add two more branches in Thailand and one in Laos, and expand the number of service centres to 30 locations through 2019, covering Thailand, Laos and other Indochina countries.

8. Pacific Rim Rich Group Company Limited (P.Rich)

2 Siri Place, Praditmanuthum Road
Bangkhen, Bangkok 10230, Thailand

Tel: +66 2 943 6080

Fax: +66 2 943 6087

Website: www.prichgroup.com

ABOUT PACIFIC RIM RICH GROUP COMPANY LIMITED (P.RICH)

P.Rich was established in 1990 as a design, engineering and construction company. Having conducted projects in Thailand as well as in most other Asia-Pacific countries, the company specialises in mineral processing, equipment, construction, engineering and project management services provision for construction and mining industries. The company provides services to both private construction projects and government-led construction initiatives.

Since 2007, the company also acts as a distributor for some of the European machinery manufacturers, which have appointed P.Rich to represent their product lines in Thailand and neighbouring countries. Among its technology solutions in material handling section, it specialises in dry mortars, sand preparation plant for foundry, batch plant for glass production, batch plant for refractory, mineral crushing plant, and plaster board production plant. It has a range of machinery, such as mixing technologies, mineral processing technologies, material conveying and handling, grain drying, cleaning and sorting technologies, machines for animal feedmill and aqua feedmill, baghouse and dust filters, computerised weighing controllers, automatic bagging machines. Some of the represented brands include Eirich, Sovema, Rank Roofing Technology, Braun, and Top Star.



9. Paragon Machinery Co., Ltd.

473 Muangthongthani, Bond Street Road
Bangpood Pakkred, Nonthaburi 11120, Thailand

Tel: +66 2 960 2090

Website: www.paragonmach.com

ABOUT PARAGON MACHINERY

Paragon Machinery was founded in 1991 and incorporated in 1992 as a private limited company. Its core business is to supply machinery, mining equipment, and a wide range of replacement parts for heavy equipment and industrial machinery used in the commercial industries, agriculture, building & infrastructure construction, forestry, marine and mining industries. Due to increasing number of infrastructure projects taking place in Thailand and other Indochina countries, the company began to source its products from original equipment manufacturers and reputable replacement parts distributors in the US, Europe, Korea and Japan. With a workforce of 70 employees, coupled with strategic locations of its warehouses and office building in Bangkok, the company has grown to be one of the largest machinery stock holders in Thailand.

Paragon Machineries distributes more than 500,000 items for the agricultural, marine, construction and mining industries, encompassing over 70 renowned brands, such as I-TRAC, ITM, WIX, Fleetguard, KMP (Europe), Chaz, ITR, Max, Caterpillar, Komatsu, Kobelco, Mitsubishi, Hitachi, Liebherr, Kato, Volvo, Samsung, and others.

10. Promech Resources Co. Ltd

B2 Floor A3, KPN Tower, 719 Rama 9 Road
Bangkapi, Huay Kwang, Bangkok 10320, Thailand

Tel: +66 2 717 1406

Fax: +66 2 717 1408

Website: www.promechresources.com

ABOUT PROMECH RESOURCES CO. LTD.

Established in 1999, Promech Resources is a specialised sales and rental provider of material handling, lifting, warehousing and powered access equipment, representing world class brands.



It is a solution focused business offering full service, technical support and after sales service across the full range of related products and services. The company serves its clients via its base in Bangkok, a network of independent resellers throughout Thailand, and new distribution channels in Laos and Myanmar. Active in construction, industrial, offshore, mining, logistics and agribusiness sectors, Promech offers solutions to lifting and material handling projects.

Promech's equipment portfolio includes telescopic handlers and attachments, rough terrain forklift trucks, semi-industrial forklift trucks, industrial forklifts, heavy duty forklifts, aerial work platforms, warehousing equipment, skid steer loaders, track loaders, articulated loaders, asphalt pavers, compact equipment attachments, heavy tower cranes, building and construction tower cranes, construction elevators.

The company is the sole distributor of Maintou BF (France), GEHL (USA), EDGE (USA), Kroll Cranes A/S (Denmark), Raimondi Cranes Spa (Italy), Shanghai BAODA (China), and SOCMA (China) in Thailand, Myanmar and Laos.

11. Siam Intertech Machine Ltd, Part

74 Moo.9 T. Nong Irun A.Banbueng
Chonburi Thailand 20220

Tel: +66 38 195 005

Fax: +66 38 195 004

Website: www.siam-itm.co.th

ABOUT SIAM INTERTECH MACHINE LTD, PART

Siam Intertech Machine Ltd, Part is a business selling construction equipment, and it is also a provider of parts offering after-sales services. Its current products include dry cement spreader with milling, dry cement spreader with truck, slurry mixer, hot in place recycling facility, roller compactor, asphalt paver, asphalt plant, road milling machine, stehr, and other machinery. The brands distributed by the company include Wirtgen, CMI Roadbuilding, Bomag, Sumitomo, Parker, Voge, HAMM, and others. Products sold focus around the Cement and Asphalt industries.



12. Leadway

Km.48 64/11 Moo 19, Bangpakong, Bangpakong,
Chachoengsao 24130 Chachoengsao 24130,
Thailand

Tel: +66 38 086 731

Fax: +66 38 086 730

Website: www.leadwayheavy.com

ABOUT LEADWAY

Founded in 1996 to export construction machinery from Thailand to Myanmar, Leadway specialises in the distribution of construction equipment sourced from Japan and Scotland. Today, the company maintains headquarters in Thailand and has active operations in Myanmar. It is also recognised as a leader in the distribution of excavators and pavers in both Thailand and Myanmar. Among other brands, Leadway has secured official distributorship from Sumitomo Construction Machinery Co. Ltd and Terex Equipment Limited.

13. Track Equipment Co., Ltd & Yonthavi Motor Co., Ltd

49-52 Rongmuang Rd, Soi Rama 6 Soi 7 Phatumwan
Bangkok 10330, Thailand

Tel: +66 2 214 4614

Website: www.trackequipment.co.th

ABOUT TRACK EQUIPMENT CO., LTD. & YONTHAVI MOTOR CO., LTD.

Track Equipment Co. Ltd & Yonthavi Motor Co. Ltd, are among Thailand's leading importers and distributors of spare parts for earth-moving and heavy-duty construction machinery. The first company was established in 1947 as Yonthavi Motor Co. Ltd with a focus on spare parts for the automotive markets of American Jeeps and trucks. Track Equipment Co. Ltd. was later founded in 1976 to focus on tractor and construction machinery. The two companies target Thailand and neighbouring countries. With extensive experience and continual improvement in distribution performance, the companies have been appointed as an authorised distributor and exclusive dealer of many of the world's renowned spare parts manufacturers. Today, they are one of the largest suppliers of spare parts of earth-moving and heavy-duty construction machinery in Thailand, offering high quality spare parts to over 1,000 dealers and end-users around the country as well as in neighbouring countries. The products covered include such



brands as Komatsu, Caterpillar, Timken, FP Diesel, BCA Bearings, Link-Belt, ITR, World Gasket, Sudo, NDC, Kawasa, Nanei, Garret, Mitsubishi, Schwitzer, Borg Warner, Hidurax, FMC, Fleetguard, Cummins, Hi-Track, and others.

14. Tiamtin Co. Ltd

733 Taosura Road, Tambon Nai Muang, Amphur Muang, Nakhon Rachasima 30000, Thailand

Tel: +66 44 255 607

Website: www.tiamtin.com/

ABOUT TIAMTIN CO. LTD.

Tiamtin Co. Ltd is the official dealer of Komatsu Heavy Equipment and Forklift in Nakhonrachasima province. The company was established in 1998 and has grown into one of the respected names in heavy equipment trade, with a large inventory of major brands of used heavy equipment. Starting from large construction business that owned equipment of many major brands, Tiamtin moved into the management and maintenance of heavy equipment.

The company offers excavators, motor graders, bulldozer tractors, wheel loaders, backhoe loaders, compactors, rollers, forklifts, cranes, wood chippers, and others, representing a portfolio of brands, including Komatsu, Kobelco, Caterpillar, Hitashi, Toyota, TCM, Mitsubishi, John Deere, Dunapac, Sakai, Bomag. It is also providing sales services, maintenance and repair services, as well as rental services.

15. Uawithya Machinery Co. Ltd

53 Sivatel, 11th Floor, Wireless Road Lumpini, Bangkok 10330, Thailand

Tel: +66 2 253 1170

Fax: +66 2 253 1187

Website: www.uawithya.com/





Figure 17: Locations of Uawithya Branches and Quarry Shops in Thailand

Source: Uawithya Machinery Co. Ltd

ABOUT UAWITHYA MACHINERY CO. LTD.

Uawithya Machinery is the leading supplier of high quality Quarry Equipment and Commercial Explosives in Thailand. Established in 1968, the company developed a network of 11 service branches, including 3 Quarry Shops Service Hubs in Saraburi, Tungsong and Chonburi. Uawithya is the sole distributor for renowned manufacturers, such as Furukawa, Metso Minerals, Liebherr, Rammer, and Pewag, and also distributes products of other brands, such as Pro-tech, Terex and Wasagchemie. The company is also the owner of Chai Explosive – a full range explosive manufacturer, located in Pak Ching, Thailand. The company’s knowledge of quarry and mining sectors stems from its experience in owning and operating a Quarry in the Saraburi area. It now works closely with the Mineral Resource Department and the Quarry Association, and has over 270 staff team, including sales, mechanical engineering, technical, licensing, logistics and services professionals, and the BlastPro engineers.



Section 2: Thailand Buyer Profiles

1. Singh Group of Companies (SGC)

210/5, Khu Bon 24, Khanna Yao,
Bangkok 10230, Thailand

Tel: +66 2 943 3517

Fax: +66 2 943 3074

Website: www.singhgroup.net

ABOUT SINGH GROUP OF COMPANIES (SGC)

SGC is a leading global supply chain management company and processor of mines and mineral raw materials for industrial supply. It operates an integrated supply chain for Thailand natural dolomite, limestones, gypsum, and iron ores, as well as Indonesian coal in India, Japan, Thailand, Cambodia, Indonesia and other Asian countries. In addition, it is engaging in marketing and business development of Timplates and Patanjali Herbal Products in Thailand. Today, the company has a diversified portfolio with business units engaged in mining and global mineral sourcing, export-import, transportation, logistics, ship chartering, barging and stevedoring, marketing and business development. Despite its broad spectrum of activities, its main focus has remained the same since its establishment – mining and mineral complex. Over the years, it has taken advantage of adjacent opportunities in the industrial mineral trading and has evolved from a single-product, single-country company, to a multi-product, multi-national, integrated supply chain management company. SGC is based in Thailand and India and has associates and value chain partners in different Asian countries.



Figure 18: Inthai Crushing Plant

Source: Singh Group of Companies



Inthai Mining Limited is one of the SGC's subsidiaries and one of the leading quality and low silica natural dolomite and gypsum producer and supplier with over 30 years of experience in the mining industry. The company has an annual turnover of THB 600 million. The company is a sourcing partner for high quality dolomite to steel industries in several Asian countries, especially in Indian sub-continent. The annual production of dolomite, in different sizes, is around 2 million Mt.

Singh Group Co., Ltd. is another important subsidiary of SGC. It is focused on low silica SMS grade limestone sourcing from Thailand for Indian steel companies. In a very short period of time, Singh Group Co. Ltd has established itself as a preferred global sourcing partner for many companies in North and South Asian countries. The company sources low silica limestones from its mines in Southern Thailand.

2. P.T.K Mining Company Limited

51/3 Vibhavadi Tower
17th Floor, Suite 4, Ngamwongwan Road
Ladyao, Chatuchak, Bangkok 10900, Thailand

Tel: +66 2 941 4094
Fax: +66 2 941 4095
Website: www.ptkmining.com

ABOUT P.T.K MINING



Figure 19: Location of Phu Ang Mine

Source: P.T.K Mining

P.T.K. Mining was founded in Thailand in June 2004, as a specialised iron ore extraction business. It is an authorised representative of Siam Iron and Steel Co. Ltd. After being authorised in 2005, the company has been given mining rights by the Thai authorities to



conduct its mining operations till 2030. Given its mining rights to explore Phu Ang deposit – the largest known iron ore reserve with mining concessions in Thailand – P.T.K.'s iron mining business is expected to remain stable over the medium term. Currently, its production plant can produce up to 1,000 metric tonnes of iron per day. The reserves at the Phu Ang Mine were estimated to be 10.9 Mt; the rated capacity was 720,000 t/yr, and the ore grade averaged about 65.9% iron.

3. Asian Mineral Resources Co., Ltd

19th Floor, Panjathani Tower
127/24 Nonsee Road, Chongnonsee
Yannawa, Bangkok 10120, Thailand

Tel: +66 2 681 1600

Fax: +66 2 681 1609

Website: www.asianmineral.com

ABOUT ASIAN MINERAL RESOURCES

Asian Mineral Resources Co., Ltd. was established in 1984 with promotional support from the Board of Investment of Thailand. Its key business activities are the mining and processing of industrial minerals. The company has established mineral deposits supplying barytes, talc, dolomite and calcium carbonate, and processes these various minerals at its main factory complex in Saraburi province, north of Bangkok. The company sources the key raw materials from a number of mines, located mainly in Thailand, but also from neighboring countries. For instance, for barytes supply the company draws material from up to 7 different mines, depending on grade and volumes required. Its processing complex in Saraburi province has a plant area of 60,000 square metre and incorporates: raw material storage, crude washing, screening & sorting, crushing, milling and classification, package and finished goods storage facilities, as well as quality management and development laboratories. The plant predominantly handles what are defined as soft materials and utilises roller mills to process products. Its annual sales are about USD 7-8 million.



4. Asia Mineral Processing Company Co., Ltd (AMPC)

4th Floor, PT Building,
3388 New Petchburi Rd., Bangkapi Huaykhong
Bangkok 10320, Thailand

Tel: +66 2 718 2347

Fax: +66 2 718 2351

Website: <http://asiamineral.co.th>

ABOUT ASIA MINERAL PROCESSING COMPANY (AMPC)

With more than 25 years of operating experience, AMPC is currently one of the largest companies in South East Asia for feldspar production. It produces a variety of high quality sodium and potassium feldspar as well as a mix of both. As one of the main suppliers of potassium feldspar for ceramic industries in Thailand, it is also an important exporter in the region. Its export partners include ASEAN countries as well as Bangladesh and India. The company's ore deposits and processing facilities are located in southern Thailand. Having owned seven concession sites in Thailand covering the land of over 400 acres in Nakhonsritammarat and Trang provinces (Amphoe Tha Sala and King Amphoe Nob Phi Tam), the company can produce more than 1,500,000 metric tonnes of mineral ore. AMPC also has varieties of granite which can be used in building, road and ort construction.



Figure 20: AMPC's facilities in Thailand (Example)

Source: AMPC

Occupying the area of over 8 acres, AMPC's processing facilities can crush, grind and mix mineral composition to suit customers' needs with over 60,000 metric tonnes of monthly production capacity. With the area of 6 acres and stock capacity of 200,000 metric tonnes, its storage is capable of handling high volumes of material.



5. Banpu Public Company Limited

27th Floor, Thanapoom Tower
1550 New Petchburi Road, Makkasan
Ratchathewi, Bangkok 10400, Thailand

Tel: +66 2 694 6600
Fax: +66 2 207 0695
Website: www.banpu.co.th

ABOUT BANPU

Banpu is a pioneering Thai energy company, operating business in coal mining, power generation and integrated energy sectors. The company has over 30 years of accumulated experience in domestic and international coal industry. It operates coal and coal-related businesses – ranging from investment and development, to production of both thermal and coking coal. Its expertise lies in open-pit and underground coal mining operations. At present, it has business bases in nine countries, including Thailand, Indonesia, China, Australia, Lao PDR, Mongolia, Singapore, Japan, the US, with coal mining operations in several South East Asian countries and power generation operations in Thailand and China. The company is also investing in the Hong Sa Lignite mine and power plant project in Laos.

In 2015, Banpu sold a total of 28.4 million tonnes of coal produced in Indonesia, with India being the top buyer. Sales to India comprised 19% of the total sales volume, followed by Japan and China, which accounted for 18% and 16%, respectively. The company began selling more coal to India to offset the falling sales to China because of the reduction of coal import. It has also expanded into Bangladesh, which is one of the company's emerging markets.

Banpu is currently one of the largest mining players in Thailand, but it had to close down its coal mining operations in Thailand in 2008 due to coal depletion of its Lampang and Chang Muan mines. The mines are now in rehabilitation with only the Electricity Generating Authority of Thailand (EGAT) being a significant producer of coal via its Mae Moh Coal mine.

On the other hand, the company announced in 2017 its plans to increase annual coal production from around 30 to 60 million tonnes by 2020 via its operations in other countries. In particular, Banpu plans to raise coal production from existing mines in China, Indonesia and Australia, and it is also considering options to buy more assets if they are not far from existing mining infrastructure.



6. Tipco Asphalt Public Company Limited

24th Floor, Tipco Tower, 118/1 Rama 6 Road
Samsen Nai, Phavathai District
Bangkok 10400, Thailand

Tel: +66 2 273 6000

Fax: +66 2 271 1601

Website: www.tipcoasphalt.com

ABOUT TIPCO ASPHALT PUBLIC COMPANY LIMITED

Founded in 1979, Tipco Asphalt, together with its subsidiaries, manufactures and distributes asphalt and petroleum products, servicing road construction, maintenance and paving industries in Thailand, and internationally. The company offers asphalt cement, cutback asphalt, asphalt emulsions, modified asphalt emulsion, and premium grade asphalt products as well as special products, such as premixes, joint sealers, joint primers, jet fuel resistant joint sealants and binders for tropical bridges.

Tipco Asphalt has manufacturing facilities and asphalt terminals located in the centre of every region in Thailand with close proximity to its customers. With these facilities strategically covering all regions, the company can promptly deliver asphalt products to domestic customers in Thailand, as well as to neighbouring countries via its own fleet of 300 trucks. Its logistics capability is core to Tipco Asphalt's dominance of the domestic market. Building on this capability, the company also owns and operates ten oceangoing asphalt vessels which significantly expand its presence in the export market. These vessels also import asphalt into Thailand in the event of shortage of domestic asphalt supply. Tipco Asphalt also operates a refinery in Kemaman through its subsidiary, Kemaman Bitumen Company Sdn Bhd (KBC). KBC, located on 26 acres of land in the Telok Kalong Industrial Estate, has a nameplate refining capacity of 30,000 barrels of heavy crude oil per day. In 2016, KBC processed 9.7 million barrels of crude oil or 1.5 million tonnes of asphalt and non-asphalt products.



7. Akara Resources Public Company Limited

92/54-55, Sathornthani Building II, 19th Floor
North Sathorn Road, Kwaeng Silom Khet Bangrak
Bangkok 10500, Thailand

Tel: +66 2 233 9469

Fax: +66 2 236 5512

Website: www.akararesources.com

ABOUT AKARA RESOURCES PUBLIC COMPANY LIMITED

Incorporated in 1993, Akara Resources Public Company Limited is Thailand's leading gold producer, and the owner and operator of the Chatree Mining Complex in Thailand, the largest gold mine in the country in terms of ore and gold production. The company engages in the exploration, mining and production of gold and silver materials.

The Chatree Mining Complex, located in central Thailand and approximately 280 km north of Bangkok, is comprised of the Chatree South ore field, which began commercial operation in 2001, and the Chatree North ore field, which started operation in 2008. The Complex also includes the Chatree Processing Plants. The Chatree Mining Complex currently operates at the total nameplate processing capacity of 6.2 million tonnes per annum. Between 2001 and 2013, the company has produced 1.3 million ounces of gold and nearly 6 million ounces of silver. The gold mine is expected to be depleted by around 2020. Akara is currently waiting for approval for other licenses for its gold mining expansion. However, environmental concerns over the mine are persuading Thai authorities to be hesitant in approving further licenses. The company is a subsidiary of Kingsgate Consolidated Limited – an Australian Securities Exchange ("ASX") listed company. The company was formerly known as Akara Mining Limited and changed its name to Akara Resources Public Company Limited in 2013.



Figure 21: Location of the Chatree Mining Complex

Source: Akara Resources



8. Tongkah Harbour Public Company Limited

7th Floor, Muang Thai-Phatra Complex Tower 1,
252/11 Ratchadapisek Road, Huay Khwang,
Bangkok 10310, Thailand

Tel: +66 2 695 4912

Fax: +66 2 694 4420

Website: www.tongkahharbour.com

ABOUT TONGKAK HARBOUR PUBLIC COMPANY LIMITED

Founded in 1906, Tongkah Harbour is a mining company and property developer in Thailand. The company was listed on the Stock Exchange of Thailand in 1993. Its principal activities include tin mining, gold mining, igneous rock (andesite) quarrying, and property development. The company operates via its subsidiaries, which comprise Tungcum Limited, engaged in gold mining business; Cholsin Limited, operating in crushing andesite business; Sky Cliff Limited, engaged in building rental and service residences; and Sea Minerals Limited, focusing on tin mining business. Within its mining business segment, the company handles tin mining in Phuket province, andesite mining in Saraburi province, and gold exploration and mining in Loei province. The company has also secured a tin mine in Myanmar, which was expected to start production in March 2017. Current products include: primary rock, railway ballast, well grade rock, course dust, fine dust, and road base rock.



Figure 22: Tongkah Harbour activities for andesite extraction are concentrated in the Saraburi province

Source: tongkahharbour.com

Within this business area, Tongkah Harbour serves clients such as the State Railway of Thailand, the Department of Highways, the Expressway Authority of Thailand, Provincial and Sub-District Administrative Organisations, and various contractors.



9. General Mining and Trading

Head Office: 1/16 Taladmai Rd., T. Talad, Muang
Suratthani, 84000, Thailand

Tel: +66 77 210 400

Fax: +66 77 210 401

Website: www.gmtthailand.com

ABOUT GENERAL MINING AND TRADING

Established in 1989, General Mining and Trading (MGT) is a mine owner, exporter and one of the leading producers of Gypsum and Anhydrate Gypsum. The company was initially set up as Mongkoi Mining Co., Ltd. (MK), but later changed its name to the current General Mining and Trading. Its mining operations primarily produce high-quality Gypsum and Anhydrate Gypsum products, which are exported to many countries in Asian region. South Korea and Taiwan are its major export partners; however, the company is currently exploring new market opportunities. GMT has two mines in Suratthani province, which are able to produce around 90,000 metric tonnes of gypsum and around 60,000 metric tonnes of anhydrate gypsum per month.

The company is headquartered in Suratthani, close to its mining operations, but it also has an additional office in Bangkok to service its clients. In total, it employs approximately 70 employees. Its clients usually form longstanding partnerships with GMT, to whom it has supplied gypsum products for over 20 years.

10. Siam Cement Public Company Limited (SCG)

1 Siam Cement Road, Bangsue
Bangkok 10800, Thailand

Tel: +66 2 586 4444

Website: www.scg.com

ABOUT SIAM CEMENT PUBLIC COMPANY LIMITED (SCG)

Since its establishment more than 100 years ago, Siam Cement Public Company Limited (SCG) has grown into largest cement company in Thailand and South East Asia. SCG is composed of over 100 companies across five business groups, employing approximately 24,000 employees, and handling more than 64,000 product items. As a leading ASEAN business conglomerate with



regional focus, the company operates via three core business segments, namely, SCG Cement-Building Materials, SCG Chemicals and SCG Packaging.

The products are marketed domestically and exported to all regions of the world. Most companies in the group have been accredited with ISO 9002 certification for quality management, ISO 14001 certification for environmental management, and TIS 18001 certification for occupational health and safety management, often the first in their respective industries. SCG has also received national and international awards in various areas. The company announced in 2013 its plans to build additional cement plants in Indonesia to further consolidate its market positioning in regional cement industry.

Its SCG Cement-Building Materials segment focuses on the manufacture and sale of grey cement, ready-mixed concrete, white cement, dry mortar, roof tiles, concrete paving blocks, ceramic tiles, sanitary wares and sanitary fitting. SCG chemicals segment focuses on the manufacture and sale of olefins, polyolefins, and other chemical products, whereas its SCG packaging segment focuses on manufacture and sale of pulp, printing and writing paper, gypsum linerboard, corrugated boxes and securities document. The company also has an investment business segment, which is the joint investment with other companies in agricultural machines, automotive parts and components, as well as other services.

11. Siam City Cement Public Company Limited

Column Tower, 3rd, 10th – 12th Floor
199 Ratchadapisek Road, Klongtoey
Bangkok 10110, Thailand

Tel: +66 2 797 7000

Fax: +66 2 797 7001

Website: www.siamcitycement.com/en/home

ABOUT SIAM CITY CEMENT PUBLIC COMPANY LIMITED

Siam City Public Company Limited is one of the leading cement manufacturers in Thailand. Established in 1969 with the aim of becoming an innovative supplier of cement and concrete products and solutions, the company today offers a wide range of cement solutions. It has been supporting Thailand's development for more than 47 years and it is the second-largest cement producer in Thailand as well as the first Thai cement producer certified for Green Industry level 5, awarded by Ministry of Industry for all its three plants. Through its subsidiaries, such as Siam City Concrete Co. Ltd., Conwood Co. Ltd., INSEE Superblock Co. Ltd., INSEE Ecocycle Co. Ltd., Siam City Power Co. Ltd, and INSEE Digital Co. Ltd., it is engaged in cement-based building materials, wood replacement products, light-weight concrete blocks,



environmental caring solutions, power generation from the cement production process, and information technology services. The company has also partnered with Globe Cement Company Limited – the cement manufacturer/ distributor under Globe brand – and has expanded the business to Bangladesh under the name of Siam City Cement (Bangladesh) Limited. As of today, Siam City Cement has three cement plants with six kilns in Kang Koi District, Saraburi Province.

12. TPI Polene Public Company Limited

26/55, Chan Tat Mai Road, Tungmahamek Sathorn
Bangkok 10120, Thailand

Tel: +66 2 285 5090

Fax: +66 2 213 1035

Website: www.tpipolene.co.th

ABOUT TPI POLENE PUBLIC COMPANY LIMITED

TPI Polene Public Company Limited (TPIPL) is Thailand's third largest cement manufacturer, which also manufactures petrochemicals, such as low-density polyethylene and ethylene-vinyl acetate copolymer. Founded in 1987 and headquartered in Bangkok, Thailand, it operates in the cement, construction materials and plastic industries in Thailand, China, Bangladesh, and internationally. Currently, it is capturing approximately 20% of the domestic cement market share.

The company operates through four segments, namely, the Construction Materials, Petrochemical & Chemicals, Energy & Utilities, and Agriculture. It manufactures and distributes cement products comprising Portland, mixed, masonry, and oil well cement; dry mortar; melt sheets, nitric acids and ammonium nitrate, and organic fertilisers; and ready mixed concrete, including normal, pumping, bore pile, fast-setting, shrinkage controlled, self-compacting, post-tensioning, high-strength, waterproof, shotcrete, freezing and thawing resisting, and low-heat concrete. It also offers roof, floor and wall tiles, fiber cement and digital printing boards, laminates and decorative wall/floor products, roofing accessories, cement blocks, and fiber cement wood products. It is also Thailand's sole producer of low-density polyethylene which is marketed under Polene brand name. Through joint venture, it additionally produces frit which is raw material in ceramic industry.

As one of the major manufacturers and distributors of cement products and mortar cement under the brand name "TPIPL", TPI Polene was the first manufacturer in Thailand to be awarded ISO 9002 Certification from the International Standards Institute for surpassing industrial and environmental protection standards. It was also the first cement manufacturer



to be awarded the Carbon Fuel for both Portland cement and the mortar cement products. Currently, all of the company's cement products meet the ISO/TIS certifications of industrial standards, ASTM Industrial Standards and the EU Industrial Standards.

The company currently operates four cement production plants with total production capacity of 13.5 MTPA (Cement line 4 became commercially operational in early 2016), using technologically advanced machinery, and is strategically located adjacent to both a limestone quarry and an efficient transportation distribution network. In addition, TPI Polene Group operates Waste Heat Recovery Power Plants, which generate electricity from waste heat emitted from TPI Polene's 4 cement production plants and/or uses Refuse Derived Fuel as fuel to generate electricity in its RDF-fired power plants. As a result, TPI Polene has recently become a power plant operator in Thailand, with the largest waste-to-energy power plant operations in the country.

TPI Concrete Co. Ltd. Manufacture, a subsidiary of TPI Polene, is the second largest manufacturer and distributor of ready-mixed concrete with a market share of 13% of ready-mixed concrete demand in the country. The major competitors of TPI Concrete Co., Ltd Manufacture are Concrete Product and Aggregate Co., Ltd (CPAC), Siam City Concrete Co., Ltd and Asia Concrete Products Co., Ltd.



Appendix 5: PHILIPPINES

Section 1: Philippine Distributor Profiles

1. Asia Industries Materials Handling Equipment Corporation

124 Domestic Road
Pasay City, Metro Manila
Philippines

Tel: +63 2 851 4778
Fax: +63 2 851 4697
Website: <http://www.aimhec.com/>

ABOUT ASIA INDUSTRIES MATERIALS HANDLING EQUIPMENT CORPORATION

Established in 1992, Asia Industries Material Handling Equipment Corporation (AIMHEC) is a distributor of various construction heavy equipment, such as excavators, loaders, cranes, pavers, crushers, conveyors, plants, light equipment and other related products. The company represents products of companies from the US, Japan, Australia, the UK and Germany. It has expanded from providing huge equipment, like concrete batching plants, road pavers, hydraulic excavators, wheel loaders, trucks, power generators and forklifts, to small-to-medium-sized equipment for soil compaction, concreting demolition and utility works. It is also engaged in providing quality wear plates, genuine equipment spare parts, equipment rental and other related services and supplies. Currently, the company represents the following products/brands in the Philippine market:

Company (Brand)	Product(s)
Gomaco	Concrete Pavers
Kawasaki	Wheel Loaders
Sumitomo	Asphalt Pavers, Cranes & Excavators
Linkbelt	Cranes
Elba	Concrete Mixing & Batching Plant
Bell	Cane Loaders, Crushers / Vibratory Feeders Bell
FG Wilson Power	Cumper Generating Set Units, Parts & Service
Mitsubishi, Caterpillar, Toyota, TCM, Komatsu	Forklift Units, Parts & Service
Hu-Lift	Electric Forklift
Braden Wear Resistant Products	Duaplate & Duablock
Wacker Light Construction Equipment	Rammer, Power Trowel, Rollers, Mech & Electric Vibrators, Trash Pumps, Plate Compactors, Screeds, Floor



Company (Brand)	Product(s)
	Saws, Paving Breakers, Demolition Tools, Light Towers
Turbosol	Pumping and Spraying Machine for Common and Special Mortars
Macdonald Air Tools	Scrabblers, Oaving Breakers, Chipping Hammers
FMC Syntron / Link belt	Vibrating Screens, Feeders and Bins
Errut / Bell	Concrete Equipment: Concrete Floor Grinders & Planers

2. Monark Equipment Corporation

13 Economia St., Bagumbayan
Quezon City, Metro Manila 1110, Philippines

Tel: +63 2 635 0901

Fax: +63 2 635 2644

Website: www.monark-cat.com

ABOUT MONARK EQUIPMENT CORPORATION

Established in 1987, Monark Equipment Corporation is a Philippine dealer and importer of heavy equipment and generator sets. The company provides heavy equipment for agricultural, manufacturing, industrial, construction, mining, quarrying, marine and power sectors. It has a network of branches all over the country which provide repair and maintenance service for its heavy equipment. Monarch Equipment Corporation is one of the top 500 non-individual taxpayers in the Philippines. Across the Philippines, Monark’s 13 branches cover parts of Luzon (Quezon City, Caloocan City, Bicol Region, Laguna, and Pampanga), Visayas (Bacolod, Cebu and Iloilo City), and Mindanao (Cagayan De Oro, Davao, El Salvador, General Santos, Surigao, and Zamboanga City). The company is also considered as the “largest footprint in the mining industry”, with its mining sector covering 10 mine site projects, such as Masbate, Taganito, Agata, and Tubay in Ausan prinvince, Siana in Surigao, and other projects located in Leyte, Palawan and Cagayan De Oro City.

Monark Equipment Corporation is the exclusive authorised dealer of Caterpillar products in the Philippines and prominently features the Caterpillar logo as part of its company logo. In addition to Caterpillar products, it also distributes other European and North American brands, including Tadano, Putzmeister, and PowerScreen. With over 300 machines in 19 major categories like backhoe loaders, forestry machines, drills, hydraulic excavators and paving products, it offers new and used equipment for major construction contractors, mining operators and other industry players engaged in material handling and processing sectors.



3. Macro Construction Equipment

73-A Apo Street, Quezon City
Metro Manila, Philippines

Tel: +63 2 740 2019
Fax: +63 2 743 4337
Website: www.macroeqi.com

ABOUT MACRO CONSTRUCTION EQUIPMENT

Macro Construction Equipment began as a trading company engaged in the distribution of various used equipment. As its business expanded, the company expanded and later diversified to what is now regarded as one of the fastest rising construction equipment companies. With over 20 years of experience in the industry, Macro has created itself a niche in marketing the world's top brands for cranes, trucks, mixers, trailers, pavers, batching plants, compaction equipment, excavators, backhoe loaders, wheel loaders, generators, crushing and screening plants, and others.

The company continues to serve the mining, construction, road and bridges, horizontal and vertical construction, infrastructure, environmental-maintenance, urban development, ports and logistics, fire and rescue sectors.

4. Inframachineries Corporation

24 Mindanao Ave Extension, Tandang Sora
Quezon City 1116, Philippines

Tel: +63 2 983 4120
Fax: +63 2 454 138
Website: <http://www.inframachineries.com/>

ABOUT INFRAMACHINERIES CORPORATION

It sources its products from manufacturers in South Korea, China, Norway, and the UK. The company is the exclusive distributor of Doosan Infracore products and Sandvik mobile crushers and screens in the Philippines. It also distributes Zoomlion mobile & tower cranes, Everdigm generators and other branded Attachments. It also offers service centres and parts warehouses across the Philippines in 8 strategic locations: Manila, Laguna, Cebu, Bohol, Davao, Surigao, Zamboaga, and Tawi-Tawi.



5. Process Machinery Company Inc. (PMCI)

G/F Gaston Building No. 30 J. Elizalde St.
BF Homes Commercial Centre
Paranaque City 1700, Philippines

Tel: +63 2 822 9771

Fax: +63 2 822 9774

Website: <http://pmci.com.ph>

ABOUT PROCESS MACHINERY COMPANY INC. (PMCI)

Established in 2002, Process Machinery Inc. (Phils) is a full-service provider to the crusher stone, sand & gravel, and asphalt producers, concrete, rubble & asphalt recycling industries and other minerals processing customers. The company services these customers with construction and mining machinery, providing a single source sale of machine units and systems, after sales service (including wear and spare parts, preventive maintenance and training, maintenance and repair and total maintenance contracts), and engineering design services.



Figure 23: Portable Primary and Secondary Crusher and Screening Plant Delivered for Cavite LGU

Source: Process Machinery Company Inc.

PMCI operates as sole agent in the country of Metso Minerals. In turn, it offers numerous Metso product lines, including Nordberg crushers, crushing plants, screens and feeders, Symons cone crushers, Barmac vertical impact crushers, Trellex wear resistant products, Svedala grinding mills, Vertmill, Sala & Denver vertical and horizontal slurry pumps and flotation machines, Cable belts, and Svedala Pyro equipment, conveying systems, bulk handling



equipment, loading and unloading systems, as well as mobile and stationary waste recycling equipment, including pre-shredders and shredders.

Some of its customers include Makati Development Corp., WT Construction Corp., Leighton Contractors (Phils) Inc., Concrete Aggregate Corp., Cavite LGU, Holcim Philippines Inc., Rapu Rapu Processing Inc., Philippine Gold Processing & Refinery Corporation, Carmen Copper Corp., CM Pancho Construction Corp., Tea Energy Corp., Greenstone Resource Corp., Towkin Construction Corp., and Apex Mining Co., Inc.

6. Maxima Machineries Inc.

908 Quezon Avenue cor. Dr. Garcia St.
Quezon City, Philippines

Tel: +63 2 373 1111

Fax: +63 2 374 5116

Website: www.maxima.com.ph

ABOUT MAXIMA MACHINERIES INC.

Established in 1988, Maxima Machineries Inc. is a subsidiary of Marubeni Corporation in Japan. It provides heavy & industrial equipment from the US, Japan, Germany and the UK as well as value-added services to construction and mining companies. It is the sole distributor of Komatsu Construction and Mining Equipment, Hyundai Truck & Bus, Bomag and Fukurama in the Philippines. Its products portfolio encompasses Komatsu utility mining equipment, generators and forklifts, including hydraulic excavators, bulldozers, off-road articulated & rigid dump trucks, wheel loaders, motor graders, forklift, diesel-powered generators, and backhoe loaders, Hyundai Truck & Bus on-road dump trucks, concrete mixer and tractor heads, Furukama hydraulic breakers, and Bomag compactors and vibratory rollers. In addition to its Corporate Office in Quezon City, and main service facility in Valenzuela, it also maintains regional offices and facilities in Manila, Cebu, Cagayan de Oro, Antique, Butuan, Surigao and Davao. Maxima Machineries Inc. employs around 300 employees.



7. ICON Equipment Solutions Philippines, Inc.

Unit 205, Rufino Pacific Tower,
6784 Ayala Avenue, Makati 1226
Metro Manila, Philippines

Tel: +63 2 556 7576

Fax: +63 2 556 7584

Website: <http://iconequipment.com.ph>

ABOUT ICON EQUIPMENT SOLUTION PHILIPPINES

A subsidiary of Concrete Masters Inc., ICON Equipment Solution Philippines was established in 2013 to handle all the heavy equipment trading business of its parent company. Over the years, it has secured three strategic partnerships which allowed it to carve itself a niche in the Philippine heavy equipment trading market. The company is now the exclusive distributor of JCB, Industrial Vehicles Corp (IVECO), and Fiori Group products in the country. JCB is the third largest construction equipment manufacturer in the world. IVECO is one of the world's largest heavy truck and commercial bus and vans manufacturers, whereas Fiori Group is an Italian concrete equipment manufacturer. With these distributorship partnerships, the company offers backhoe loaders, compactors, compact excavators, skid steer loaders, telescopic handlers, tracked excavators, wheel loading shovels, dump trucks, tractor heads, transit mixers, articulated and rigid dump trucks, minibuses and vans, as well as self-loading mixers. It also offers rental and used equipment sale services. The company has its head office in Metro Manila and a regional office in Luzon.

8. Civic Merchandising Inc.

77 Mindanao Ave., Brgy. Pag-asa, Quezon City,
Metro Manila 1100, Philippines

Tel: +63 2 924 2261

Fax: +63 2 924 2510

Website: <http://civicmdsg.com.ph/>

ABOUT CIVIC MERCHANDISING INC.

Civic Merchandising Inc. is a privately-owned trading company serving the construction, mining and transport industry in the Philippines for more than 40 years. Its clients are leading local and multinational firms operating in the country, involved in a range of projects from land



development to building infrastructure, such as roads and bridges. Established in 1974, the company started as an independent dealer of heavy equipment spare parts. In 1980, it expanded its operations to include sales of used equipment, and a few years later, it began offering brand new machines. Today, Civic Merchandising is the exclusive distributor of leading names in construction and mining equipment, such as Volvo Construction Equipment, Volvo Trucks, UD Trucks, SDLG, Sany, Power Pavers, Doosan, Cummins, Soosan, Bobcat, and JLG.

The company has its head office in Mindanao and regional offices in Davao City, Isabela City, Novaliches, Cebu City, Cagayan De Oro City and Surigao City, in addition to 22 service points across the Philippines.

9. JVF Commercial & Project Development Support Services (JVF Commercial)

JVF-Kanedai Building, Mindanao Avenue
(near corner Congressional Avenue), Brgy. Bahay
Toro, Project 8 Quezon City, Metro Manila,
Philippines

Tel: +63 2 928 3982

Fax: +63 2 928 3988

Website: <http://www.jvfcommercial.com/>

ABOUT JVF COMMERCIAL & PROJECT DEVELOPMENT SUPPORT SERVICES (JVF COMMERCIAL)

JVF Commercial was established in 1996 as a one-man company. In the years following its conception, the company has grown to be awarded exclusive distributorship rights of several well-known and trusted brands, both Japanese and European, in the heavy equipment industry. These brand names now include Mitsubishi, Isuzu, New Holland, Sakai, Nissan, Kobelco, Furukawa, Shinmaywa, Tanaka, and recently, Euromach, Conver and Italdraghe, among others. Today, the company is a one-stop shop for all heavy equipment needs, providing heavy equipment sales, project consultancy, after sales support, as well as repair and maintenance. Some of the products it offers include motor graders, articulated off-highway dump trucks, crawler cranes, bulldozers, wheel loaders, hydraulic excavators, asphalt/concrete batching plants, road rollers, backhoe loaders, skid steer loaders, telescopic handlers, crushing plants, asphalt finishers, hydraulic breakers, and others. The company is headquartered in Quezon City, metro Manila, and has a regional branch in Davao City.



10. C.M. Pancho Construction Inc.

71-A Scout Borromeo Street
Diliman, Quezon City 1101, Philippines

Tel: +63 2 924 2167

Fax: +63 2 924 2442

Website: <http://cmpancho.com/>

ABOUT C.M. PANCHO CONSTRUCTION INC.

C.M. Pancho was founded in 1975 and it is a large-size company engaged in construction and engineering sectors. Its line of business includes civil engineering, construction and mining contracting, real estate development, and equipment sale, rental, and design. Over the years, the company has completed a number of civil engineering projects in areas, such as renewable power generation, metal sheet fabrication, roads and highways pavement, railways, airport horizontal structures and bridges, irrigation and flood control, ports, harbour and offshore engineering, buildings and industrial plants, sewerage and sewage treatment, disposal plants, bridge retrofitting, dams, reservoirs and tunnels, water supply systems and mining. As a real estate developer, it has developed landmarks in almost all regions of the country, with its flagship projects being the construction of a masterpiece golf course, Grand Golf Clubhouse, Residential Community, El Masfino Country Club, Hotel Masfino and Le Regina Executive Village. Within its heavy equipment business unit, C.M. Pancho offers asphalt and batching plants, stationary/ mobile crushers, vibrating screenall, rotary rig bored pile, mobile/ crawler cranes, bulldozers, payloaders, skid loaders, crawler/ wheel loaders, backhoe loaders, hydraulic pavement breakers, road graders, vibratory compactors, mini road rollers, trucks, asphalt pavers and distributors, cold milling machines, concrete pavers, grouting machines, air compressors, generator sets, welding and drilling machines, and portable core drills, and other products.

11. Cleamco Industrial Corporation (CIC)

3rd Floor, G101 Building, Tandar Sora, Mindanao
Avenue, 1116 Metro Manila, Philippines

Tel: +63 2 453 6151

Website: www.cleamco.com.ph

ABOUT CLEAMCO INDUSTRIAL CORPORATION (CLEAMCO)



Established in 2007, Cleamco Industrial Corporation (Cleamco) is a family-owned corporation that specialises in distribution of construction as well as maintenance, utility and sanitation equipment. The company focuses on providing the Philippine market with equipment that maintains cities and municipalities and special equipment that helps improve landscapes. It is the exclusive Philippine distributor for Ammann, Everdigm, Dongyang, Schwarze Industries, Donghae, and Vac-con products and services in the country. It also distributes equipment and machinery for Dulevo International, Bawoo, Optimal-Vertrieb Opitz GmbH, Sangdo, and Mooc.

Among its product lines, it offers Ammann's mixing plants, compaction equipment and asphalt pavers, Everdigm's breakers, drills, rigs and attachments, Dongyang's concrete pumps, Donghae's man-lifts, Schwarze's street sweepers as well as skid loaders, tree spades/ balling machines, and bomm trucks and cranes from other brands. The company has its head office in Quezon City and two branches in Mandaue City and Davao City.

12. TKC Heavy Industries Corporation

17 Bulaco Pardo, Cebu City 6000, Philippines

Tel: +63 32 505 0111

Fax: +63 32 505 0222

Website: <http://www.tkc-hic.com/>

ABOUT TKC HEAVY INDUSTRIES CORPORATION

Founded in 1997, TKC Heavy Industries Corporation is a distributor of brand new, international brands of trucks and heavy equipment, construction equipment, plants and other special equipment as well as agricultural machineries and equipment. Its products come from China, Europe and USA. The company's headquarters are in Cebu and it has additional offices in Manila and Davao.

The company's product line includes Chinese products, such as Steyr/Howo various trucks and street sweepers, Yuchai hydraulic excavators (backhoe), Shantui bulldozers, Changlin graders, payloaders, backhoe loaders and vibratory compactors, Jonyang wheel type excavators, Digsheng Tiangog asphalt pavers and mangle pavers, Yutong shuttle buses and mini buses, Foton Lovol farm tractors, agricultural equipment and vehicles.

Over the years, European and US brands were also added to the product line to meet and better serve the needs of its customers. Brands include Batemag OSMA mobile walking excavators, Venieri backhoe loaders and wheel loaders, Linnhoff asphalt batching plants, Dopstadt mobile shredders and grinders, VANDEL landfill compactors, LWT-MUDCAT dredging machines, and Gehl asphalt pavers and skid loaders.



13. Powerking Industries Corporation

476 Edsa, Caloocan City
Metro Manila, Philippines

Tel: +63 2 364 6092

Fax: +63 2 365 7460

Website: www.powerking.com.ph

ABOUT POWERKING INDUSTRIES CORPORATION

Established in 2002, Powerking Industries Corporation trades in heavy equipment parts and breakers in the Philippines as well as reconditioned construction equipment. The company is the exclusive distributor of Powerking Hydraulic Breakers & Accessories of Powerking Machinery Co., Ltd. and has been one of the distinguished companies in the rock breaking technology in the country. It also sells Japan reconditioned heavy equipment, dump trucks and hydraulic breakers, and distributes MB's breakers, crushers and screens as well as Hidromek backhoe loaders. The company is based in Caloocan City with regional offices and service centres in Cebu, Davao and Cagayan De Oro.

14. Brighton Machinery Corporation (BMC)

4996 Ninoy Aquino Ave., Brgy. San Dionisio, Sucat
Paranaque City, Paranaque 1700 Philippines

Tel: +63 2 553 5227

Website: <http://brightonmachinery.com>

ABOUT BRIGHTON MACHINERY CORPORATION

Brighton Machinery Corporation (BMC), a subsidiary of Kilton Motor Corporation, was established in 2012 as a sales and rental services provider of material handling equipment. Backed by more than 25 years of experience of Kilton Motor Corporation in commercial trucks, generators, warehouses and material handling equipment, and motorsports equipment distribution, the company is quickly becoming a reputable name in the Philippine heavy industrial equipment market. It provides heavy equipment and machinery for mining, construction, forestry, agriculture, roads and rehabilitation industries. BMC is the exclusive dealer of Hitachi construction & mining equipment, Bell equipment, and John Deere construction equipment in the Philippines. Its product portfolio includes Hitachi's excavators, loading shovels, wheel loaders, rigid dump trucks, compaction equipment as well as



attachments and applications; Bell's articulated dump trucks, NPK's hydraulic and pneumatic hammers, primary and secondary crushers, shears, retrofitters, rotary screens, and sheet pile drivers. Presently, the company is headquartered in Paranaque City and it has a branch office in Cebu, with plans to open two additional branches in Davao and Cagayan de Oro soon.

15. Powertrac, Inc.

2015-C Apolonia St. Brgy. Mapulang Lupa,
Valenzuela City, Metro Manila Philippines

Tel: +63 2 332 9064

Fax: +63 2 442 0258

Website: <https://www.powertrac.com.ph/>

ABOUT POWERTRAC, INC.

Powertrac, Inc. was incorporated in 2012, providing heavy equipment, trucks and massive building gears throughout different provinces and municipalities in the Philippines through its network of dealers. For more than a decade the company was able to establish its reputation to be one of the important players in the construction industry. At present Powertrac represents a number of world-renowned brands and manufacturers for various types of trucks, bulldozers, cranes, payloaders, graders, excavators and road loaders among others. The company is also planning to put up its own manufacturing facility for heavy equipment and has already built a functional assembly plant. Powertrac is also expanding into specialised vehicles as it started to import Diesel Tanks, Cement Tanks, Towing Trucks, Refrigerator Van, LPG Trucks, Water Tanks, Closed Vans and Mobile Kitchen Trucks.

16. Good Morning International Corporation (GMIC)

920-922 A Bonifacio Ave. Brgy. Balingasa
Balintawak Quezon City Philippines

Tel: +63 2 362 6929

Fax: +63 2 361 0464

Website: <http://hyundaiheavy.com.ph/1/>

ABOUT GOOD MORNING INTERNATIONAL CORPORATION

Founded in 2007, Good Morning International Corporation (GMIC) is an exclusive dealer of Hyundai Heavy Equipment and Tata Daewoo Trucks in the Philippines. The company specialises



in hydraulics equipment with product lines that include excavators, wheel loaders, backhoe, cargo, dump trucks, tractors and mixers. Having 9 branches, strategically located across the country, GMIC has worked with contractors, construction and real estate developers such as DMCI, CM Pancho Construction Inc., First Balfour Inc., Marra Builders Inc., UKC Builders, Inc., Megawide, DDT Konstract Inc., Delta and Duros. GMIC is partly owned by a Korean national, Mr. Cho Duck Hwan.

17. Guzent Inc.

1237 Epifanio de los Santos Avenue (EDSA) in Quezon City, Metro Manila, Philippines.

Tel: +63 2 362 8251

Fax: +63 2 362 8247

Website: <http://guzent.com/>

ABOUT GUZENT INC.

For over 50 years, Guzent Inc. has been in the business of sales & rental of Aerial Platforms, Air Compressors, Backhoes, Loaders, Boom Trucks, Cranes, Excavators, Forklifts, Generators, Graders, Hydraulic Breakers, Jack Hammers, Light Towers, Wheel Loaders, Manliests, Road Rollers, Vibratory Compactors, Scissor Lifts, Skid Steer Loaders, Telehandlers, Telescopic Clamshells, Trucks, and Welding Machines in the Philippines. The company has a 24,000 square metre facility right in the heart of Metro Manila, Philippines which has been providing technical support, service & parts to its customers. Guzent Inc was established in 1978 and since then have served the sectors of construction, mining and agriculture.

18. Multico Prime Power, Inc. (MPPI)

Lot 11, Blk. 1B, Meridian Ave.,
Meridian Industrial Park, Brgy. Macabling
Sta. Rosa Laguna 4026
Philippines

Tel: +63 49 554 4888

Fax: +63 49 554 4888 ext. 344

Website: <https://multico.com.ph/>

ABOUT MULTICO PRIME POWER INC.



Established in 1988, Multico Prime Power, Inc. (MPPI) is distributor of Generator Sets, Mobile Compact Crusher, Vibratory Screens, Forklift Trucks and other Material Handling Equipment, Heavy Equipment (Wheel Loader, Vibro-Compactor Roller, Excavator, Motor Grader, Paver, Bulldozer), Truck Crane, Spare Parts and Service to support various application and needs for all type of industry.

The past five years of has been a remarkable feat for MPPI as the company was appointed by various brands to be their exclusive distributor. In 2013, Clark, a brand of Forklift Trucks and distributor of the Bishamon and EP brand of Material Handling equipment appointed MPPI to be its exclusive distributor that allowed MPPI to expand its retail and rental business activities on their forklift trucks. In 2016, Rubble Master appointed MPPI as their exclusive distributor of their Mobile and Compact Crusher, Scalper and Screens products. The following year, 2017 Atlas Weycor, manufacturer of Wheel Loader and Vibro-Compactor Rollers heavy equipment and distributor of the Sinomach brand of other heavy equipment also appointed MPPI to be its exclusive distributor, hence enable MPPI to complete its range of products for mining and construction sector.

On power supply front, MPPI offers solution on both standby or prime power needs including the installation, turn-key projects, technical training, after sales and preventive maintenance support.

MPPI is a subsidiary of Multico Infracore Holdings Pte. Ltd. in Singapore. The company is well represented across the region through subsidiaries in Malaysia, Indonesia, Thailand, Taiwan, Thailand, Vietnam, Cambodia, Laos, and Myanmar that work in close collaboration with the parent company to address customer needs.



Section 2: Philippine Buyer Profiles

1. Makati Development Corporation

1/F, Bonifacio Technology Centre
31st Street Corner, 2nd Avenue
Bonifacio Global City, Taguig City, Philippines

Tel: +63 2 717 5500

Fax: +63 2 903 0121

Website: <http://www.mdc.com.ph/>

ABOUT MAKATI DEVELOPMENT CORPORATION

Makati Development Corporation (MDC) engages in real estate development business in the Philippines. It provides engineering, construction, procurement, construction management, production of concrete products, equipment acquisition, building systems and fleet maintenance, landscaping and construction operations services.

The company is a spin-off subsidiary from the Ayala Land Inc., a subsidiary itself of Ayala Corporation – one of the largest business conglomerates in the country. In 1950, MDC was the construction division of Ayala Corporation and it developed Makati into a premier financial and commercial district. It was in 1974, after the transformation of Makati that MDC was formally incorporated and engaged in subdivision development and government's highways construction activities as a separate and independent entity. MDC's track record includes: residential and commercial development, industrial estate development, building and industrial construction, government infrastructure (highways and bridges), water supply and waste water projects, engineering design and related technical services for horizontal development, equipment operations, ready-mixed concrete and precast products. Makati Development Corporation is the first local construction company to receive simultaneously its world class integrated ISO Certification for ISO 9001-2000 for Quality Management System and ISO 14001-1996 for Environmental Management System.

2. EEI Corporation

12 Manggahan Street
Bagumbayan Quezon City 1110, Philippines

Tel: +63 2 635 0843

Fax: +63 2 635 0861

Website: www.eei.com.ph



ABOUT EEI CORPORATION

Founded in 1931 as a distributor of a wide array of industrial equipment, the EEI Corporation has evolved radically over the years and it is now recognised as one of the leading construction companies in the Philippines. The company engages in construction and engineering services, focusing on large-scale heavy and light industrial projects, infrastructure, and property development. Over the years, EEI Corporation has built several power plants, refineries, petrochemical plants, cement plants, mining facilities, industrial plants, buildings, schools, hospitals, roads, bridges, seaports, airports, railways, water distribution stations, flood control systems, steel structures and modular assemblies. It is also involved in the fabrication of light steel and other structural fabrication works as well as general construction and sale of supplies and materials. The company has the following subsidiaries: Equipment Engineers, Inc., EEI Power Corp., EEI Construction and Marine, Inc., EEI Power Corporation, EEI Realty Corporation, and Gulf Asia International Corp.

3. Megaworld Corporation

25th floor, Alliance Global Tower
36th Street corner 11th Avenue
Uptown Bonifacio, Taguig City, Metro Manila 1634

Tel: +63 2 905 2800

Website: www.megaworldcorp.com

ABOUT MEGAWORLD CORPORATION

Megaworld Corporation is one of the country's leading real-estate developers, which is listed on the Philippine Stock Exchange Composite Index. The company develops large-scale, mixed-use, planned communities incorporating residential, commercial, educational and leisure components. In addition, it provides other services such as project design, construction oversight, and property management. To date, the company already has 21 integrated urban township developments across the Philippines. Among its landmark projects is the Forbes Town Centre – a 6-hectare commercial and residential district in Bonifacio Global City, Taguig City, Metro Manila, as well as the 45-storey Petron Megaplaza office skyscraper, which was the tallest building in the country upon its completion in 1998. Its full real estate portfolio includes residential condominium units, subdivision lots and townhouses, condominium-hotel projects as well as office projects and retail spaces. The company has three primary business segments: real estate sales of residential developments; leasing of office space, primarily to BPO enterprises, and retail space; and management of hotel operations. Since its incorporation in 1989, the company and its subsidiaries have launched approximately 560 residential buildings,



office buildings and hotels consisting in aggregate of more than 12 million square metres of floor area.

In 2016, Megaworld announced that it will build two more office towers, 10-storey One Republic Plaza, and six-storey Emperador House, in Davao City, which will provide an additional 30,000 square metres of office spaces for lease. Current property development projects also include mixed-use residential and commercial developments in Metro Manila, Cebu, Iloilo and Davao, including the Eastwood City, McKinley Hill, Newport City, Manhattan Garden City, Cityplace, Uptown Bonifacio, McKinley West, The Mactan Newtown, and Iloilo Business Park.

4. Philippine National Construction Corporation

PNCC Complex KM. 15 East Service Road
Bicutan, Paranaque City 1700, Philippines

Tel: +63 2 846 0209

Website: www.pncc.ph

ABOUT PHILIPPINE NATIONAL CONSTRUCTION CORPORATION

The Philippine National Construction Corporation (PNCC) is a majority government-owned and controlled corporation in the Philippines. It is the largest construction company in the country and in South East Asia. The company is usually tasked with major construction works, especially in the field of infrastructure. The PNCC has extensive operations in the Philippines and has been also involved in projects in other countries, notably, in Saudi Arabia Iraq, Hong Kong, Malaysia and Indonesia.

In the Philippines, it undertakes a range of projects comprising construction of highways, bridges, airport terminals, seaport facilities and marine works, and industrial facilities, as well as even land development. The company offers services in various phases of a project, including feasibility studies, design and detailed engineering, procurement, construction and project management, concrete pre-casting, steel fabrication, materials processing, and equipment rental/leasing. It also provides other support services, such as pre-fabrication, materials processing and equipment rebuilding. Some of its most famous projects include the San Juanico Bridge, the Metro Manila Skyway, North and South Luzon Expressways, the Manila Light Rail Transit System, the Manila-Cavite Expressway and Bay City.



5. Apex Mining Company Inc.

Unit 3304-B West Tower, PSE Centre
Exchange Road, Ortigas Centre
Pasig City 1605, Philippines

Tel: +63 2 706 2805

Fax: +63 2 706 2804

Website: www.apexmines.com

ABOUT APEX MINING COMPANY INC.

Apex Mining Company Inc. (APX) is a Philippine-based mining company, which was incorporated in 1970, primarily to carry on the business of mining, milling, concentrating, converting, smelting, treating, preparing for market, manufacturing, buying, selling, exchanging and otherwise producing and dealing in gold, silver, copper, lead, zinc, brass, iron, steel and all kinds of ores, metals and minerals. The company's operations are situated in the municipalities of Maco and Mabini, Compostela Valley, where the area has epithermal gold and porphyry copper deposits. The company operates the Maco Gold Mine, which produces bullion containing gold and silver. It also holds interests in Monte Oro Resources & Energy Inc. (MORE), which, via its subsidiaries, owns a mineral processing plant in Jose Panganiban, in Camarines Norte, and Bulawan Mineral Resources Corporation. In 2015, it also acquired 100% stake in Itogon-Suyoc Resources, Inc., which owns Sangilo Mine in Itogon and the Suyoc Mine in makayan, both located in Benquet Province, and the Benic Claim in Labo, Camarines Norte.

6. Sagittarius Mines Inc.

Yakal Street corner Talisay Street
Poblacion Tampakan, South Cotabato
Cotabato City 9507, Philippines

Tel: +63 82 221 3003

Website: www.smi.com.ph

ABOUT SAGITTARIUS MINES INC.

Sagittarius Mines Inc. (SMI), a joint venture between global giant Glencore, Indophil Resources and Tampakan Group of Companies, is a contractor of the Philippine Government under the terms of a Financial and Technical Assistance Agreement. The company was founded in 2005 and is based in Cotabato City, with additional offices in Taguig and General Santos. As of August 2015, it operates as a subsidiary of Alcantara Group.



It engages in the development of Tampakan Copper-Gold project in the southern Philippine island of Mindanao. The Tampakan Copper-Gold deposit is one of the largest undeveloped copper-gold deposits in the world. Once developed, it will be the largest copper-gold project in the Philippines and among the largest copper mines in the world, with potential to be a key driver of national and regional growth.

7. Atlas Consolidated Mining and Development Corporation

503-P Pacific Tower, 5F Five E-Com Center
Palm Coast Ave. corner Pacific Drive
Mall of Asia Complex, Pasay City 1300
Philippines

Tel: +63 2 831 8000

Fax: +63 2 802 5948

Website: www.atlasmining.com.ph

ABOUT ATLAS CONSOLIDATED MINING AND DEVELOPMENT CORPORATION

Atlas Consolidated Mining and Development Corporation (Atlas Mining) is a diversified natural resource-based company with significant holdings of mineral resources in the Philippines. Once the country's and Asia's largest copper producer, Atlas Mining is one of the preeminent mining companies in the Philippines. Its major project is the Toledo copper mine in Cebu province, which is operated by Carmen Copper Corporation. The Toledo copper mine commenced production in 1995 and grew to become the third largest copper producer in the world. Other projects are focused on nickel mining, exploration and water. The company has four fully-owned subsidiaries, which operate its four business interests: copper, nickel, mineral exploration and water sources development.

Carmen Copper Corporation has exclusive rights over the in situ mineral resources and ore reserves of Carmen Lutopan and Biga mineral deposits, collectively known as the Toledo copper mine. Berong Nickel Corporation holds the fourth largest nickel laterite-saprolite deposit in the world. The mine has been shipping laterite nickel ore since February 2007. Atlas Exploration Inc. owns and controls considerable hectareage of mineral rights in Cebu and in other parts of the Philippines. Atlas Mining aims to increase and enhance its mineral resource-based assets through a comprehensive exploration programme. Finally, Aquatlas Inc. utilises its 13-million cubic metre water reservoir in Toledo City to generate pump-power storage, hydroelectric power for CCC's mining operation, as well as bulk water supply to Toledo City and/or Metro Cebu.



8. Philex Mining Corporation

Reliance Street, 2nd Floor
Launchpad Cor Sheridan St.
Mandaluyong 1550, Philippines

Tel: +63 2 631 1381

Website: <http://www.philexmining.com.ph/>

ABOUT PHILEX MINING CORPORATION

Philex Mining Corporation is the largest gold and copper producer in the Philippines. Together with its subsidiaries, it engages in the exploration, development, and utilisation of mineral resources in the country. The company holds interests in the Padcal mine that produces copper concentrates containing copper, gold and silver, which is located in Benguet province. It also holds interests in Silangan project covering the Boyongan and Bayugo deposits comprising gold, copper and silver, which is located in Surigao.

The company's mining activities also include the Negros projects in Negros Occidental, the Sibutad project in Zamboanga del Norte, the Lascogon project in Surigao del Norte, as well as Bulawan project in Sipalay, Negros Occidental.

Philex Mining Corporation was incorporated in 1955 and is based in Mandaluyong, Philippines. It was listed on the Philippine Stock Exchange since 1956.

9. Benguet Corporation

6th & 7th Floors, Universal-Re Building,
106 Paseo De Roxas, Makati 1226, Philippines

Tel: +63 2 812 1380

Fax: +63 2 753 0717

Website: <http://www.benguetcorp.com/>

ABOUT BENGUET CORPORATION

Benguet Corporation is a 100-year-old company. Established in 1903, it pioneered modern gold mining operation in the Philippines and ushered the beginning of the Philippine mining industry. It opened its first gold mining operation in 1906 in Antamok, and in 1927 acquired and operated the gold mines in nearby Balatoc and Acupan, all located in the Benguet province, from where it got its corporate name. The company expanded into refractory



chromite operation in 1934 and copper production in 1971. Until the late 1980s, Benguet Corporation was known as the biggest gold mining company in the Philippines and the 16th largest in the world. Similarly, its chromite operation in Masinloc, Zambales, known internationally as “Masinloc Ore”, and its highly profitable Dizon Copper-Gold operation in San Marcelino, Zambales, were the largest in the country.

With gradual expansion over the years, the company today is known as being engaged in gold, nickel and other metallic and non-metallic mineral production, exploration, research and development and natural resource projects. In addition to its mining segment, the company is also engaged in real estate, logistics and other business segments.

At the moment, the company is working on exploration and drilling programmes to upgrade the capacity of Acupan Gold Project (AGP). In addition, its Irisan Lime Project (ILP) in Irisan, Baguio, is engaged in the production and trading of quicklime. ILP produces approximately 7,890 tonnes of quicklime.

10. Republic Cement Corporation

Menarco Tower, 32nd Street, Bonifacio Global City,
Taguig City 1634, Philippines

Tel: +63 2 885 4599

Website: <http://www.republiccement.com/>

ABOUT REPUBLIC CEMENT CORPORATION

Republic Cement Group is composed of Republic Cement & Building Materials, Inc., Republic Cement Iligan, Inc., Republic Cement Mindanao, Inc. and Republic Cement Services, Inc., the makers of one of the country’s reputable cement and building materials under the brands - Republic, Fortune, Rapidset, Kapitbalay, Mindanao, and Wallmaster, manufactured at seven strategically located sites across the Philippines that offer the widest supply footprint to serve the needs of our rapidly developing economy.

Republic is backed by the global expertise of CRH, a leading building materials company with main headquarters in Dublin, Ireland and Aboitiz, a diversified Filipino business group recognised as one of the best managed organisations in the country and in Asia.



11. Holcim Philippines, Inc

7/F Venice Corporate Center #8 Turin Street,
McKinley Town Center, Fort Bonifacio 1634 Taguig
City Philippines

Tel: +63 2 459 3333

Website: <https://www.holcim.ph/>

ABOUT HOLCIM PHILIPPINES, INC.

Holcim is one of the world's leading suppliers of cement and aggregates (crushed stone, gravel and sand) as well as further activities such as ready mix concrete facilities. This publicly listed company offers a wide range of construction solutions that can help home owners to large contractors in their building needs.

Apart from having cement manufacturing facilities in La Union, Bulacan, Misamis Oriental and Davao, its mobile concrete ready-mix facilities and aggregates business are backed by a strong nationwide network of dealers. Holcim Philippines bannered a number of standards of sustainable operations and manufacturing excellence with its plants certified under ISO 14001:2004 (Environmental Management System), ISO 9001:2008 (Quality Management System) and OHSAS 18001:2007 (Occupational Health and Safety Management System).





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www.GrowYourBusiness.org

SINGAPORE

MALAYSIA

INDONESIA

THAILAND

VIETNAM

PHILIPPINES