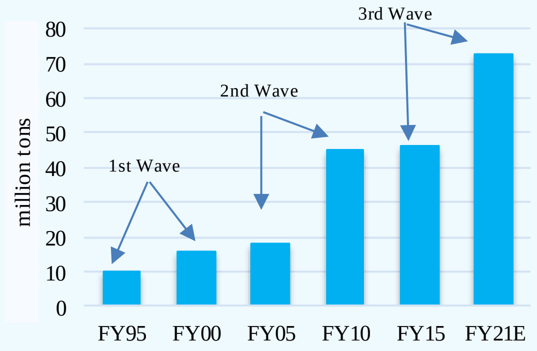
Special Section 1: Cement Industry-Current Dynamics and Future Prospects

Sustained expansion in economic activity and investment in various infrastructure projects under PSDP and CPEC, coupled with increased demand from private housing schemes have bolstered construction sector during last few years. This has had a spillover impact on the allied segments of cement and steel as well. Rising demand and healthy margins has also induced cement manufacturers to expand their production capacities aggressively, from 49.4 million tons to 72.8 million tons in the next few years. This capacity may further expand if other small firms also joined the campaign of maintaining market share. In this backdrop, the section analyzes the overall potential of the industry to sustain its growing momentum in the medium to long run.

Overview of the cement industry

The cement industry is important for the economy. Besides making a direct contribution of 7.5 percent to large-scale manufacturing, the industry influences growth in the allied segments (e.g., steel; chemicals, wood etc). At present, there are 24 manufacturing units operating in the country with a total installed annual capacity of 49.4 million tons.[1] The industry operates in two separate zones - North and South - with Northern Zone representing around 80 percent of the total production capacity and sales.[2] The manufacturers in the South Zone have more room for revenue diversification as they can tap a number of export markets (via sea).[3] The export potential for manufacturers in the Northern Zone, however, is limited to Afghanistan and India only.[4]

Figure S1.1: Production Capacity



E: Expected
Data Source: APCMA and Companies Financials

Large capacity expansion is underway

The cement industry is

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[1] Source: All Pakistan Cement manufacturers Association (APCMA).

[2] Punjab, KPK, AJK, GB are part of North Zone (with 19 players) while South Zone (with 5 players) includes Sindh and Balochistan.

[3] However, the key export markets for South Zone players (Nigeria, Tanzania, Mozambique, Iraq, Ethiopia and DR Congo) are undergoing local capacity expansion, their reliance on imports may reduce thereby affecting dispatches, going forward.

[4] Even exports to Afghanistan are under pressure due to worsening relations with the country, and slowdown in construction activities along with influx of cheaper Iranian cement.

currently undergoing a major transformation, as a number of players are planning capacity expansions (**Figure S1.1** & **Table 1**). Specifically, almost half of the players in the industry have so far announced capacity expansion (more than 3.0 million tons capacity has already been added during FY18). In cumulative terms, this would add 23.4 million tons towards the production facility – a staggering increase of about 50 percent in next few years – to reach around 72.8 million tons. The expected expansion may be even higher if other firms (with 8.1 million tons in pipeline) also join this campaign.

Table S1:Expansionary plans

Company	Expansion mln tons	US$ mln	Completion
Lucky Cement Ltd	2.3	200	FY18-FY21
Attock Cement Pakistan Ltd	1.1	120	FY18-FY19
Cherat Cement Company Ltd	4.6	315	FY17-FY19
D G Khan Cement Company Ltd	2.6	200	FY18-FY21
Fecto Cement Ltd	1.0	100	FY18-FY20
Gharibwal Cement Ltd	2.4	200	FY18-FY21
Bestway Cement Pakistan	1.7	190	FY19-FY20
Pioneer Cement Ltd	2.3	225	FY19
Power Cement Ltd	2.1	235	FY18-FY19
Maple Leaf Cement Ltd	2.3	225	FY19
Kohat Cement Company Ltd	1.0	110	FY19-FY21
Total	**23.4**	**2120**	

Data source: Companies' Financials/PSX notices

The factors behind this extraordinary expansionary drive in cement industry mainly include:

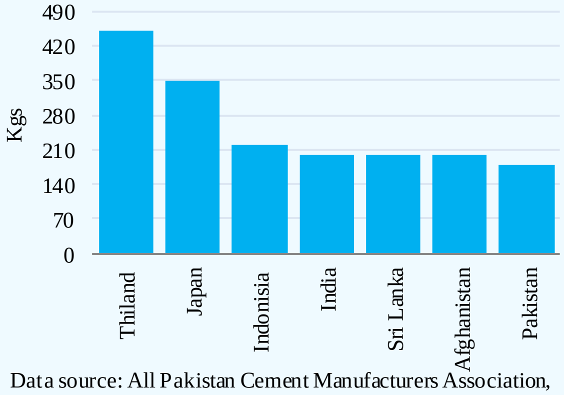
a) ***Continued activity under CPEC related projects:*** The prospect of growing cement demand are stemming from CPEC related project which include construction of an integrated road infrastructure; modernization of railways; and development of Gwadar city, seaport and airport. Moreover, the development of special economic zones across the country may also sustain demand for cement going forward.
b) ***Increased focus on development spending by the government:*** The demand for cement is also likely to remain high as government has a planned numerous mega projects. In this regard, the worth noting mega water and power sector projects include: Dasu, Diamer Bhasha[5] and Bunji multipurpose projects; and major rehabilitation and expansion of Mangla, Tarbela and Warsak power stations. In addition, large highway and motorway projects

[5] The construction of a project of the size of Diamer Bhasha is estimated to create an additional cement demand of about 10 million tons. Likewise, ten nuclear power projects are planned for construction in the country by 2030, while work on two of these projects in Karachi is in progress.

(which are outside the ambit of CPEC) have been initiated by the government;[6]

c) ***Huge construction activities due to housing deficit:*** [7,8] The demand pressures may continue going forward due to persistent housing shortages (bridging this gap would require huge quantity of cement and related construction materials). The room for growth is evident from the fact that per capita cement consumption in Pakistan is the lowest amongst regional economies (**Figure S1.2**).[9]

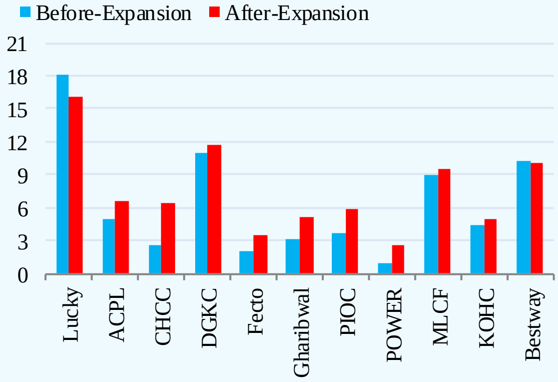
Figure S1.2: Cement Per Capita Consumption (2017)



Data source: All Pakistan Cement Manufacturers Association, Global Cement Magazine

Major players' drive to maintain market share intact: Manufacturers also strive to maintain their market share, which drives up their production capacity. A historical review of the industry suggests that the firms strategize their capacity expansions to uphold position in the market. In some cases, established and strong manufactures even acquire

Figure S1.3: Market share to remain unchanged



Data source: Companies Financials

[6] The government has allocated Rs 2113 billion for development expenditure in FY18, which is more than 26 percent higher than last year. This includes Rs 320 billion for NHA.

[7] The rural-urban mix for the country has shifted from 65:35 in 2005 to 60:40 in 2016 (Economic Survey 2015-16).

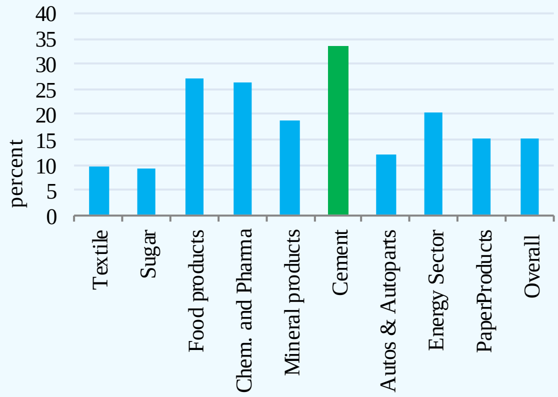
[8] For example, the development work on Bahria Town, DHA City, Fazaia, and ASF Housing Schemes and other private housing projects across the country has been in progress.

[9] According to estimates, the housing shortage in the country stood at 10 million units in 2017 (source: The World Bank - Pakistan Housing Finance Project- Report No: 114473, March 2017). Bridging this gap would require huge quantity of cement and related construction materials.

smaller firms.[10] As a result, the overall market share of large firms undergoes only a minor change following an expansionary phase (**Figure S1.3**).

***Industry's high profit margin*:** Healthy profit margin is another important factor that helps the industry to undergo capacity expansion (**Figure S1.4**). Specifically, the gross profit to sales ratio has averaged around 33 percent for the last five years – more than double the manufacturing sector's overall average.[11] The industry benefited from a slump in global market for raw material (e.g., POL and coal) and historic low domestic interest rates. The margins for the industry strengthened when, instead of passing on the benefit to consumers, firms increased the local retail prices.

Figure S1.4: Gross profit to sales ratio (last 5 year average)



Data source: FSA 2010-2015, SBP and Companies financials

Industry's diversification plans: Further gains to industry were achieved due to the economies of scale, improvement in cost efficiency (**Box S1.1**), and a decline in the debt-to-equity ratio.[12] This has led to a number of firms diversifying their operations towards other sectors of the economy as well.

Box S1.1 Cost efficiency in Cement Industry with Alternative Energy

Several factors are contributing to lower overall cost efficiencies in the industry. Size of plant and technology are of great significance, which determine economies of scale, energy efficiency[13] and simple operation and maintenance, thus keeping the overall cost structure competitive. The sector has proactively pursued captive power generation to meet their energy needs.

[10] It is expected that large manufacturers that have not yet announced their capacity expansion plans would acquire small firms (Thatta Cement, Dandot Cement, Dewan cement etc). In fact, Dewan Cement is already up for sale with three local firms (Lucky cement, Kohat cement, and Bestway cement) and one Chinese player competing to acquire the plant.

[11] The interest shown by one of the foreign firms in local manufacturing indicates that the prevailing margins in the industry are quite attractive.

[12] The debt-to-equity ratio fell from 143 percent in 2010 to less than 60 percent in 2017.

[13] Investment in Refuse Derived Fuel (RDF) provides the solution for affordable and efficient fuel alternatives, which is modern technology using the municipal waste to produce energy. Fauji Cement has successfully adopted this technology, blending RDF with coal, and others are currently implementing similar projects, providing economical fuel besides other advantages.

Particularly, they have installed waste heat recovery (WHR) units that utilize existing plants heat to generate power. While coal prices in the global market have been falling in tandem with oil prices since December 2014, these together have brought down energy costs.

On the efficiency and cost fronts, since most firms have installed Waste Heat Recovery units that help them reducing dependence on fuels, major changes in energy costs and a recovery in oil and coal prices will not affect them hard. Therefore, the margins of industry are expected to persevere at the current level **(Table S1.1**).

Table S1.1:Cement industry energy projects

Company	WHR	Coal Power Plant
Fauji	12-MW	-
Lucky	10-MW	660-MW
ACPL	6-MW	40-MW
CHCC	6-MW	-
DGKC	12-MW	30-MW
PIOC	12-MW	-
MLCF	6-MW	40-MW
Dewan	6-MW	-
Bestway	27-MW	-
KOHC	15-MW	-

Data source: Companies Financials/ PSX notices

Financing requirements

Industry needs FX to finance machinery imports: According to information collected from firms and PSX notices, the additional capacity would result in the imports of machinery of around US$ 1.5 billion (near Rs 178 billion) over next few years. In the cement industry, cost of machinery imports comes around 70 percent of total cost of the unit/project. This means, the overall estimated cost of expansion would be around Rs 254 billion (**Table 2**).

Table S2: Investment and Financing

Total estimated projects cost (billion USD)[1]	**2.2**
in billion Rs (@ Rs115.6 per US$)	254
Machinery and equipment (billion USD)[2]	1.5
in billion Rs (@ Rs115.6 per US$)	178
Financing Requirements (billion Rs)	
Equity component	
@30 percent equity	76
@40 percent equity	102
@50 percent equity	127
@60 percent equity	153
Borrowing	
@70 percent bank finance	178
@60 percent bank finance	153
@50 percent bank finance	127
@40 percent bank finance	102

[1] Expansion plans announced so far

[2] Assuming machinery is 70 percent of the project cost

Data source: Companies Financials/ PSX notices

Despite healthy cash position, industry's borrowing needs will increase: Given the healthy cash position of the leading players who have undertaken capacity expansions, the equity component has dominated the financing requirements[14]. However, if smaller players also join the campaign aggressively, in such case the financing pattern would change in favor of bank financing.[15] While the prevailing

[14] Cement Sector has availed Rs 34 billion for fixed investment purposes during July 2016 till March 2018.

[15] Even if 30 percent is assumed as equity component, this leaves significant financing burden on banking sources

low interest rates would encourage firms to borrow more from the banking system, the commercial banks would also be willing to take exposure on the industry due to a decline in infected loan ratio, and healthy balance sheets of cement manufacturing firms.[16]

Table S3 : Demand Needed to Absorb Production Capacity
million tons

	Total sales	Exports	Domestic sales	Growth in Domestic Sales (percent)
		Actual		
FY13	33.4	8.4	25.1	
FY14	34.2	8.1	26.1	4.2
FY15	35.4	7.2	28.2	8.0
FY16	38.9	5.9	33.0	17.0
FY17	40.3	4.6	35.7	8.2
FY18[E]	46.5	4.4	42.1	18.0
@11.1 percent growth in total sales (last five year average growth)				
FY19	51.2	4.4	46.8	11.1
FY20	56.4	4.4	52.0	11.1
FY21	62.2	4.4	57.8	11.1

Assumptions
1. The absorption of this production would require continuity of last five year growth rate (11.1 percent) in domestic sales; it will help the industry to operate at 86 percent capacity utilization;
2. Despite the decline trending, we assumed stagnant exports for our analysis;
3. The burden for absorbing higher cement production would therefore fall on domestic sales.
Data source: APCMA

Future prospects

Current expansion phase is skewed towards domestic market: In the current scenario, the absorption of announced capacities would require the industry to maintain its last five years' CAGR in cement sales over the next 3-4 years (**Table 3**). Moreover, domestic sales of cement indeed recorded a strong average growth of 12.6 percent during FY16-FY17. This trend also continued in FY18, where Jul-Apr growth stands at 17.5 percent on the back of strong domestic demand.

High PSDP and CPEC related spending still remain crucial to keep cement demand high: Even normalized local dispatches growth of 7-9 percent in next 3-4 years would be sufficient to keep industry's capacity utilization above 70 percent post expansions. Factors like; (i) growing income levels; (ii) real estate boom and housing backlog of 10 million units;[17] (iii) demand emanating from CPEC projects; (iv) higher PSDP spending; and (v) increased focus of banking sector towards housing finance would be vital in keeping domestic demand at this level.

Capacity expansion is also beneficial for economies of scale and export of cement: On the export front, with influx of cheap Iranian cement in Afghanistan and imposition of anti-dumping duties on Pakistani cements in South Africa (the two main export destinations), exports may remain a challenge. For a sound market share in export market, the cement manufacturers will have to compete

[16] The infected loan ratio fell from 18.5 percent in December 2010 to 5.9 percent in December 2017.
[17] Apart from the needs, people in Pakistan rank real estate (plots, houses and buildings) investment amongst the safest avenues, resulting in improved demand (source: The World Bank - Pakistan Housing Finance Project- Report No: 114473, March 2017).

with Iranian and Chinese cement manufacturers through improvement in cost efficiencies. With current expansion plans, the industry might be able to exploit economies of scale and gain competitive advantage. While there is a need to explore new markets to utilize their excess capacities post expansion, efforts in this regard could also increase export earnings in coming years.