

The Vision Corporation [Pvt] Ltd.



A Complete Trade Solution

IRAQ CEMENT MARKET

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Last Update: Friday, March 06, 2009

Domestic Cement Market

It is currently difficult to estimate the total demand for cement in Iraq; production figures are probably reasonably accurate, however the total import figures since the second Gulf War, the consequent occupation and the rehabilitation of infrastructure are very likely to be inaccurate. The borders of Iraq remain extremely porous, and customs statistics, where these are collected are imperfect. The following paragraphs estimate total current demand from counter trading partners and domestic production and other sources as cited.

According to Provincial Reconstruction Team Leader Mr. Paul O' Friel and special correspondent Nigel Atkin the total annual demand of cement in Iraq is 30 Million tons while the domestic industry is producing around 3 Million Ton annually.

Current design capacity for the Iraqi cement industry is estimated at some 16.9 million tonnes per annum, in 2004, with a further 2.6 million tonnes in the Northern region administered by the Kurdish Regional Government (KRG). However actual production in the non-KRG area was estimated at some 2.5 million tonnes in 2004, or less, dependent upon source, and perhaps some 3 million tonnes in 2008.

This domestic supply is supplemented with imports that reached 5 million tonnes in 2005, and will possible exceed that for 2008, when full returns are included in the trade statistics.

Per capita consumption in Iraq is variously estimated by Cembureau for example in 1999 at some 165 Kg falling to some 161 Kg in 2005. This report indicates perhaps some 185 Kg, however this compares, in regional terms with Iran with an estimated consumption of 459 Kg per capita and Egypt with 405 kg per head. Regional countries, which were in a developmental reconstruction stage are the Lebanon with a per capita (all figures 2005, unless otherwise stated) of 930 kg and countries with significant building programs, Kuwait 1,224, Libya 973 and Oman 929.

The overall status of the domestic industry reflects the economic constraints evident in the economy as a whole through two Gulf wars and the long period of imposed sanctions. Whereas as the industry was being developed and expanded through the 1970,s and 1980's, and became a net exporter, within a decade the industry was effectively destroyed. Issues now concerning the industry are lack of consistent sources of power and fuel, old technology, lack of servicing and maintenance.



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To become a regional force again the industry needs significant investment. This investment is currently being encouraged, in the 15 governorates of Iraq through an ambitious licensing program of the Ministry of Industry and Minerals, promulgated in 2005, to encourage 20 licensees to invest in new cement plants in the country. In addition a private public partnership programs was established to rehabilitate 5 of the most significant cement factories in the country. It is also encouraging to note the involvement of one of the cement majors – Lafarge – in both of these, with a reported total potential investment of USD 350 million for a combined production of some 4 million tpa.

In the Kurdistan regional Government area there is one plant being refurbished and another being built with the significant involvement of Lafarge (Formerly Orascom Construction Industries of Egypt). In addition the recent announcement of a new 2 million tpa plant in Dohuk will bring regional design capacity to 7.1 million tpa.

The total capacities for these new and refurbished plants are set out in table 1.0.

Table 1.0: new and refurbished design capacities for cement manufacture in Iraq.

Refurbishment Iraqi Plants	8.2 Million TPA
New Licenses - Iraq	25.6 Million TPA
KRG Combined	7.2 Million TPA
Total	41.0 Million TPA

If all of this comes on stream, this would give a nominal per capita availability of 1.5 tonnes per head, a volume well suited to industrial and infrastructure reconstruction and development, with the potential for regional exports.

Given the economic resettling of the country subsequent to the management of the current security situation the future is very positive for the cement sector.

Cement Manufacturers

1. The Northern Cement State Company, Musol, Iraq
2. Iraqi Cement State Company, Baghdad
3. Southern Cement State Company near Kufa, Al-Najaf.



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Company	Nominal Capacity (cement)	Actual Production (cement)	Nominal Capacity (clinker)	Actual Production (clinker)
Iraqi Cement State Company	4794	585	4600	597
Contact details: Mr. Salam Abdellah IBRAHIM, General Manager IRAQI CEMENT STATE COMPANY P.O Box: 2050 - Alwiyah , Baghdad, Iraq Email: mekteb_cement@yahoo.com T: (+964 1) 7736071 + 7739301 F: (+964 1) 7736076 + 7733625				
Northern Cement State Company	3725	682	3617	747
Contact details: Mr. Husain Mohsen Obaid, General Manager THE NORTHERN PUBLIC CORPORATION FOR CEMENT P.O. Box 13 Mousel Iraq website: www.ncsc-iraq.com email: nccomm@ncsc-iraq.com T: (+964 60) 780280 F: (+964 60) 780300 + 780283				
Southern Cement State Company	6190	2048	5465	2001
Contact details: Eng. Naser I. M. El-Madani, General Manager SOUTHERN CEMENT STATE COMPANY P.O. Box 9 Kufah Iraq website: www.southern-cement.com email: gen.dir.office@southern-cement.com T: (+964 780) 1013371 F: (+964 1) 8168476				

Cement Production

Estimates of Iraqi cement production are crude and vary widely. Table (a) shows International Monetary Fund data, for 2001-2004. Both Portland and white cement are hydraulic; sulfur-resistant cement is non-hydraulic. These data show cement production falling to a very low level, a mere 461 thousand tons, in 2004. It is recognized that this is a level of production lower than domestically reported figures, and the USGS figures reported below.



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Table (a) recent estimated Iraqi cement production. Tonnes

Type	2001	2002	2003	2004
White cement	157,619	174,868	54,110	14,789
Normal cement	3,760,686	4,897,521	1,250,517	352,619
Total hydraulic	3,918,365	5,052,389	1,304,627	367,408
Sulfur resistant	1,549,435	2,098,604	523,352	93,981
Total	5,467,740	7,170,993	1,827,979	461,389

Table (b) presents production data from the U.S. Geological Survey (USGS), for OPC and white cement. The two sources show different estimates for total production, however, they concur in the low volumes of production against sector design capacity. This is set out in table (c).

Table (b) USGS estimates of Iraq cement production. '000 tonnes

Type	2000	2001	2002	2003	2004	2005
Portland cement	6,000	6,000	6,834	1,901	2,500	3,000
White cement	175	158	175	54	15	15
Total	6,175	6,158	7,009	1,955	2,515	3,015

Table (c). USGS estimates of operating versus design capacity for 2004.



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Operating Companies	Process type and location of main facilities	2004 operating capacity	Annual design capacity
Iraq Cement company			
Al Tamim Cement Plant	2 dry process at Kirkuk	150,000	2,000,000
Kubaisa cement plant	2 dry process at Kubaisa	150,000	2,000,000
Al Qaim cement plant	1 dry process at Al Qaim	90,000	1,000,000
Fallujah White cement plant	3 dry process lines at Fallujah	50,000	300,000
Fallujah cement plant	2 wet process lines at Fallujah	Neg.	200,000
Northern Cement co			
Sinjar Cement Plant	2 dry process lines at Mosul	290,000	1,200,000
Badoosh III Cement Plant	1 dry process line at Mosul	250,000	1,000,000
Badoosh II Cement Plant	2 wt process lines at Mosul	130,000	700,000
Hammam Al Alil II Cement Plant	1 wet process line at Mosul	15,000	450,000
Hammam Al Alil I Cement Plant	2 wet process line at Mosul	Neg.	200,000
Badoosh 1 Cement Plant	Ditto	Neg	190,000
Southern cement Company			
Kerbala cement Plant	2 dry process at kerbala	90,000	2,000,000
Muthana Cement Plant	2 dry process lines in Muthana	220,000	2,000,000
Al Najaf Al Ashref Cement Plant	4 wet process lines at Kufa	420,000	1,800,000
Um Qasr	1 dry process line at Um Qasr	60,000	500,000
Al Jinoob Cement Plant	1 wet process line at Samawa	25,000	450,000
Samawa cement Plant	Ditto	Neg.	400,000
Kufa 1 Cement Plant	1 wet process line at Kufa	145,000	200,000
Al Sadaa cement Plant	2 wet process lines near Sadat Al Hindia	72,000	150,000
Tasluja cement plant (KRG)	2 dry process lines near Suleimaniyah	300,000	2,300,000
United cement Co (KRG)	2 wet process at Sarchinar	100,000	250,000
Total		2,557,000	19,290,000

Notes: Neg = negligible or no production. KRG = Kurdistan Regional Government.

Constraints on Production

Power

There are normally considered two power system requirements for a cement plant. The first of these provides the motive and life-support power for the plant the second provides the heat for the calcining process, including pre-heaters and the main kiln. The first of these is normally provided by electricity, the second may be provided by a variety of fuels.

The CPA study highlighted the lack of electricity as a major constraint, with a total design power requirement for the Iraqi (non-KRG) sector of 394 MW, with a total available power of 107MW.



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One of the key aspects of the motive power requirement of the cement plant is the requirement to maintain the rotation of the kiln during heating up, running at operating temperature and during cooling. If this is not done the kiln (a long rotating steel cylinder) will 'sag' and becomes unstable on its mountings and will render the plant inoperable. Therefore the power situation as it exists in Iraq is crucial to the maintenance of the operation of the cement industry.

The second source of power in the sector is for the calcining process. A number of fuels may be used here, usually selected and dependent on availability in the domestic economy. For example, coal (usually pulverized and injected), natural gas, fuel oils (including heavy fuel oil) and indeed combinations. It is not unusual to design a multi-fuel fired kiln.

The kiln fuel for the established Iraqi plants is reported as Fuel Oil. A Cembureau estimate for a modern plant is for the use of 60-130 Kg of fuel oil per ton of cement and about 105KWh of electricity.

White cement requires higher energy expenditure, being heated at a higher temperature and ground to a finer powder, demand is also smaller, due to its higher cost. It is usually thus made in smaller dedicated lines.

Capital Intensity

The cost of new plant, or refurbishing/reconditioning old plant is high in the cement sector. Cembureau estimates that the capital cost is some €150 (USD 195) for each ton per year of output. Thus for a typical plant of some 2 million tpa clinker output a capital cost on around €300 million (USD 390 million) could be anticipated.

Investment Risk

Investment in cement manufacture carries risks related to the nature of the industry; cement is a low margin business, therefore volumes have to be high to return a reasonable profit, therefore manufacturing plants are large, and in turn expensive. The low margin thus also means that the payback period of a plant is extensive during which time the market environment may change significantly, e.g., competitors, pricing, etc. Cement plants have a very low scrap value, which means the residual value is extremely low.



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Demand for cement is relatively unstable over the business, or investment cycle, i.e., to maintain the profitability over time for a successful investment cement demand must be at or above a given level. If a period of expansion in the industry is followed by a decline in demand for cement, for example, after a construction spree, plants will financially fail, or be mothballed.

Production Technology and Plant Modernisation

Many of the plants in Iraq are old and use a wet process technology, are comparatively small, and are now outdated, and where plants have been idle, or are dysfunctional for a variety of reasons their rehabilitation is going to be difficult, and expensive. Of particular concern in this matter is their energy efficiency. Modern kilns use a dry process, are more energy efficient, and comply with current environmental legislation. It is a matter for the new investors and operators to determine whether abandonment of the old kiln and building a whole new line is actually more cost effective.

Pricing and Security of Supply

The domestic demand for cement has risen with the rehabilitation of the country. However the domestic supply has not kept pace with the increases in demand and the price of cement has therefore been elastic with prices in 2003 quoted at USD 20 per ton and reportedly rising to USD 120.00 per ton in 2005. However, the quoted price for October 2006 was USD 46.00, bagged. Currently it is standing at USD 120 – 125.



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Estimated Cement Demand

Total current demand in Iraq can be estimated, and forecasted on the basis of total current supply, comprising domestic production and imports. However, with the current situation in Iraq forecasts based on these figures are likely to underestimate both the current actual position and significantly more the likely future demand as the country settles down. Orascom Construction Industries, currently operating one, and building a second plant in the Kurdistan region of Iraq report an estimated 8.3 million tonnes of production and an import figure of 7 million tonnes, giving a total current demand figure of 15 million tonnes, or a (nominal) per capita consumption of 385 kg per head. The Ministry of Industry and Minerals (MIM) is reported as suggesting that domestic demand could reach 30 million tonnes, i.e., a nominal per capita demand of 1,111 Kg per head, i.e., matching the consumption rate of Kuwait in 1999 and Spain in 2008. Significantly with a rebuilding and reconstruction program in place, to match that of Qatar, would require another 600 kg per head, and in the light of the massive building and redevelopment program within the UAE (Dubai in particular) an additional 1,400 kg per head. This would be equivalent to an additional 16.2 and 37.8 million tonnes on top of the 30 million tonnes.

Domestic Supply

Introduction – Cement Industry in Iraq

The main determinant of international competitiveness in cement is the availability of local raw materials. Iraq has an abundance of all of cement's main ingredients: limestone, gypsum, and oil for fuel.

Limestone, the most important ingredient, is found throughout Iraq, in multiple bands, each running in a northwest to southeast direction. The northeastern most band is in the Kurdish region, and the southwestern most band runs from the western desert to the Persian Gulf in the southeast. Moreover, the limestone is of unusually high quality, meaning a high percentage of calcium carbonate. This means more meal is produced per ton of limestone, and with less waste material, is more energy efficient. The limestone also lies near the surface, making for easy and low-cost quarrying.

With the latest technology, Iraq should have a comparative advantage over most other countries in cement. The transport of cement is expensive and constitutes a natural barrier to trade. Iraq should easily be able to meet domestic demand, and export surplus



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production, repeating the success of the latter 1980's, either by road/rail, or by ship in the south.

Present Structure of the Iraqi Industry

Ownership

All cement plants, prior to the second Gulf War were part of state owned enterprises, owned by either the national government (through the Ministry of Industry and Minerals, MIM) or the Kurdistan Regional Government (KRG). The plants are grouped into three companies, one each in the north, central and southern regions, namely The Northern Cement State Company, headquartered in Mosul, the Iraqi Cement State Company in Baghdad, and the Southern Cement State Company near Kufa, Al-Najaf.

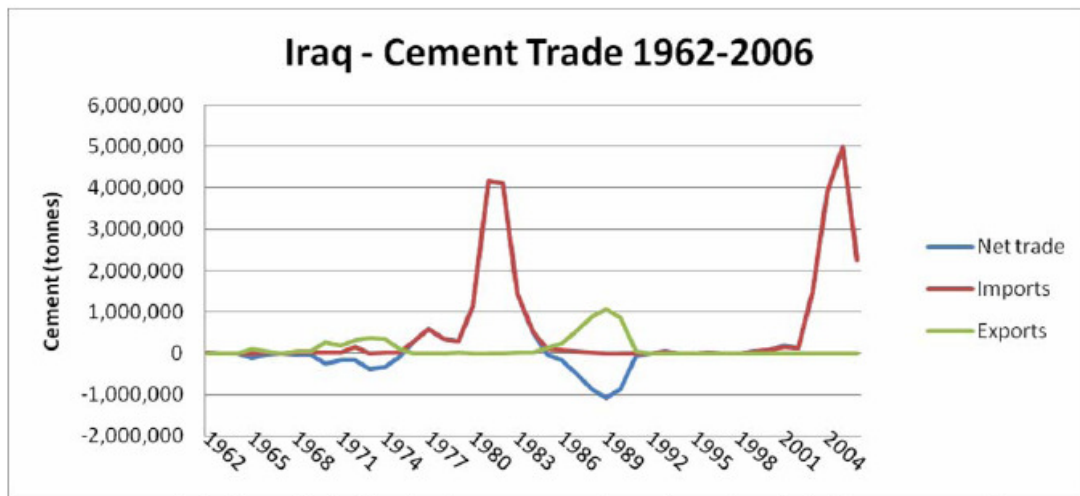


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Cement Imports & Exports

Graph below shows the trade in cement with Iraq from 1962 to 2006. From the graph it may be seen that there have been (and is) significant periods of imports, 1977 to 1984, where imports reached over 4 million tonnes in 1981 and 1982, and the current post-invasion period from 2003 to the current period. As detailed below imports reached 5 million tonnes in 2005. The first of these periods corresponds with large industrial development in Iraq, including the building of new cement manufacturing facilities, and thus in the period 1986 to 1990 we see a rise in exports that achieve one million tonnes in 1989. Subsequent to this latter period is the invasion of Kuwait, the consequential First Gulf War and then the rebuilding of Iraq. The earlier periods are given in table (a) with the corresponding principal trading partners.

(a) Reporting cement trade with Iraq, 1962-2006. Tonnes.



Note: the net trade flow showing an excess of exports over imports is shown as a negative, or outflow, of goods.

Counter-party trades for 2006 had not been completely reported at the time of authorship, and thus the apparent downturn is probably misleading but is included for completeness.

Imports of cement started to take off in 1980 with over 1 million tonnes imported. 250,000 tonnes from Kuwait, 180,000 from Greece and Japan led the field with 480,000 tonnes. In 1981 imports rose to approximately 4.2 million tonnes, with the major contributors being Turkey with 2 million tonnes. Kuwait with over 900,000 tonnes, Japan with 678,000 and Spain with 407,000 tonnes. In 1982 Turkey exported 1.3 million tonnes, Kuwait 965,000 tonnes, Spain 701,000 and Japan 614,000. Imports dropped



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dramatically the following year to 1.45 million tonnes, with Kuwait exporting 795,000 tonnes, Turkey 212,000, Japan 210,000 and Germany 126,000 tonnes.

This pattern of imports was reversed by 1989, with overall exports of cement above 1 million tonnes with Kuwait taking 754,000 tonnes and Turkey 229,000 tonnes.

Table (b) shows the principal trading partners since 2002. As the demand for cement grows the level of imports has increased substantially as would be expected, as this demand cannot be met from the current domestic sector.

Table (b) Reported exports of cement to Iraq 2002-2006 Tonnes.

Year	2002	2003	2004	2005	2006 ²⁷
Total	Neg.	1,487,887.1	3,884,881.9	4,968,063.6	2,248,343.6
Turkey		690,711.0 (46.4%)	2,086,757.4 (53.7%)	2,645,142.8 (53.2%)	1,727,451.9 (76.8%)
Lebanon		476,148.3 (32.0%)	1,160,995.9 (29.9%)		
Iran		177,579.4 (11.9%)	306,598.2 (7.8%)	1,018,119.9 (20.5%)	
Jordan		100,048.4 (6.7%)	292,848.6 (7.5%)	118,856.2 (2.4%)	20,293.0(0.9%)
India				974,242.1 (19.6%)	
Pakistan				207,635.0 (4.2%)	325,830.0 (14.5%)
China					156,200.0 (6.9%)

Notes: neg = negligible, data for Lebanon (05/06), Iran (06), India (06) were not reported at the time of writing

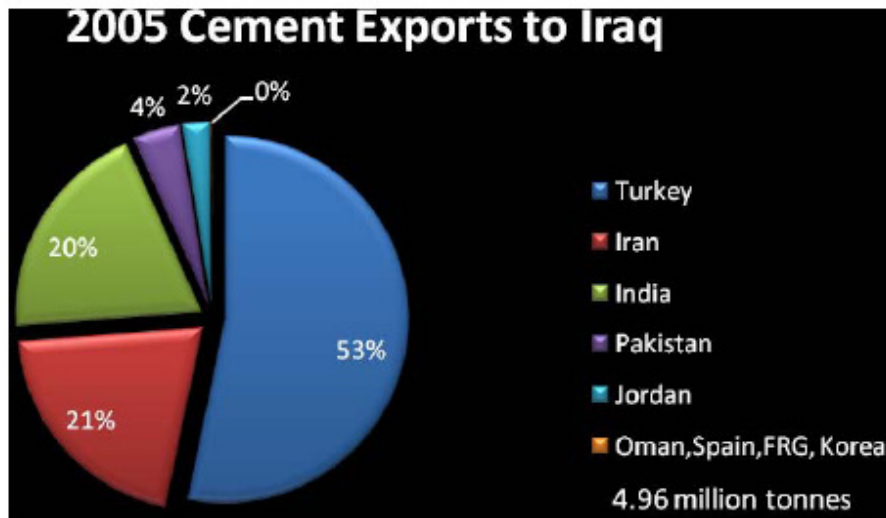
Table (c) gives the Iraqi collated data is from 1999-2002 inclusive and then for 2005.

Table (c) Iraq reported COSIT import figures for cement. Tonnes.

Year	1999	2000	2001	2002	2005 ²⁸
Total	318.5	2,426.2	503.9	2,567.5	7,025,601.8



Graph (b) Cement exports to Iraq by principal exporter



CONCLUSIONS

The Iraqi cement industry has enormous potential. As a net exporter in the late 1980's, a trend that was interrupted through circumstances unrelated to the industry, the industry was showing great promise.

However there are significant impediments to its current development, outside of physical security. These mainly relate to the age of the industry, and its degree of development, and the security of fuel supply. With regard to the former, if the number of tenders made for the MIM redevelopment or PPP contracts for the large cement plants are reliable indicators, there are investors with significant funds wishing to move in the sector. This is certainly evidenced in the KRG region where there are reported the two Orascom and consortia developments, and in addition the recently reported investment in Dohuk.

The process for investment in new and refurbished capacity deserves observing closely over the coming period as it will show how favourable the current institutional environment is to industrial investments undertaken by the private sector.