



**USAID** | **IRAQ**  
FROM THE AMERICAN PEOPLE

# IRAQ PRIVATE SECTOR GROWTH AND EMPLOYMENT GENERATION

25<sup>th</sup> NOVEMBER 2007

## AN OVERVIEW OF THE IRAQ CEMENT INDUSTRY



This publication was produced for review by the United States Agency for International Development. It was prepared by the joint venture partnership of The Louis Berger Group / The Services Group under Contract # 267-C-00-04-00435-00.

# AN OVERVIEW OF THE IRAQI CEMENT INDUSTRY

## **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

The IRAQ IZDIHAR project is funded by the United States Agency for International Development (USAID) and implemented by the joint venture partnership of:

**THE Louis Berger Group, INC.**  
Engineers Planners Scientists Economists



**TSG** THE SERVICES GROUP  
International Economic Consulting

# TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY .....
2.0	WORLD CEMENT INDUSTRY .....
2.1	General overview
2.2	Regional markets and consumption
3.0	IRAQ CEMENT MARKET
3.1	Estimates of demand
3.2	Domestic Supply, Industry, Constraints, and the Environment
3.3	Imports and Overseas Trade
4.0	Iraq Cement Industry – Developments
4.1	Introduction
4.2	Restructuring
4.3	Kurdistan Regional Government Area
5.0	Conclusions

## **1. EXECUTIVE SUMMARY**

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 current production in the non-KRG area is estimated at some 2.5 million tonnes in 2004, or less, dependent upon source, and perhaps some 3 million tonnes in 2005.

This domestic supply is supplemented with imports that reached 5 million tonnes in 2005, and will possible exceed that for 2006, 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 programmes, 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.

To become a regional force again the industry needs significant investment.

This investment is currently being encourage, in the 15 governorates of Iraq through an ambitious licencing programme of the Ministry of Industry and Minerals, promulgated in 2005, to encourage 20 licencees to invest in new cement plants in the country. In addition a private public partnership programme 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 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.

## 2.0 WORLD CEMENT INDUSTRY

### 2.1 GENERAL REMARKS

The world cement industry has two major characteristics, the first is that a limited number of major producing countries dominate the industry, and secondly that the sector is dominated by particular companies.

Table 2.1 gives the top cement production countries producing over 80% of the world's cement<sup>1</sup>. Total world cement production increased by about 5% in 2005 to an estimated 2.3 gigatonnes. China is by far the world's largest producer, producing some 45% of supply. Regionally Asia contributed about 65% of world production, Western Europe, about 9%, North America 7%, the Middle East (including Turkey) about 6% and central and South America 4%, Africa 4%, CIS 3% Eastern Europe 2%.

Table 2.1 (a) Hydraulic cement: World production, by Country, '000 tonnes

	2001	2002	2003	2004	2005
China	661,040	725,000	862,080	970,000	1,038,300
India	105,000	115,000	123,000	130,000	145,000
USA, inc Puerto Rico	90,450	91,266	94,329	99,015	100,903
Japan	76,550	71,828	68,766	67,376	69,629
South Korea	52,046	55,514	59,194	54,330	51,391
Spain, inc Canary Isles	40,512	42,417	44,747	46,593	50,347
Russia	53,300	37,700	41,000	45,700	48,700
Italy	39,804	41,416	43,433	46,045	46,404
Turkey	30,125	32,577	35,077	38,796	42,787
Thailand	27,913	31,679	32,530	35,626	37,872
Indonesia	31,300	34,640	35,500	36,000	37,000
Brazil	38,927	38,027	34,010	34,413	36,673
Mexico	32,110	33,372	33,593	34,992	36,000
Iran	26,640	28,600	30,460	32,198	32,650
Germany	32,118	31,009	32,749	31,854	30,629
Egypt	25,700	28,155	26,639	28,763	29,000
France	19,839	19,437	19,655	20,962	21,277
Taiwan	18,128	19,363	18,474	19,050	19,891
Total	1,401,502	1,477,000	1,635,236	1,771,713	1,874,453
World Total	1,740,000	1,850,000	2,030,000	2,190,000	2,310,000
%age total/world total	80.55%	79.84%	80.55%	80.90%	81.15%

The sector, as noted is dominated by a group of international companies, that include, Holcim (formerly Holderbank) (Switzerland), Lafarge (France), Cemex (Mexico), Heidelberger (Germany), Italcementi (Italy), Taihaino (Japan), Cimpor (Portugal). As an indication of the size, and dominance of

<sup>1</sup> US geological Survey Minerals Yearbook 2005; Cement.

these companies, in 2006 Holcim reported<sup>2</sup> production capacity of 197.8 million tonnes (sales of 140.7) and Lafarge of 132 million tonnes, Cemex, 93.2 million tonnes, i.e., between the three companies they have 18.3% of world production.

## 2.2 REGIONAL MARKETS

In 2006 the International Energy Association published a review of the cement industry in the Arab countries over the period 2002-2004<sup>3</sup>. This overview noted the significant increase in capacity in the region, with at the end of 2004 106 integrated plants, 17 clinker mills and 7 packaging stations, constituting 7% of the world's cement plants. Distributed as per table 2.2 (a).

Table 2.2 (a) Distribution of cement plants in the Arab World end 2004<sup>3</sup>

Region	No of plants	No of mills	No of packing stations	Total
Mashreq Countries <sup>4</sup>	43	3	3	49
GCC Countries	27	9	2	38
Maghreb Countries	36	5	2	43

Over this same period the design capacity of the plants grew to 147.7 million tonnes of cement and 129.4 million tonnes of clinker. These had growth rates respectively of 2.8 % and 3.3%. Production reached 120.7 million tonnes of cement and 110 million tonnes of clinker with growth rates of 6% and 6.3% respectively. Apparent consumption grew at a rate of 5.2%. The figures from this study are set out in table 2.2 (b).

Table 2.2 (b) Cement Industry Indicators in Arab Countries. Million tonnes

Year	Cement		Clinker		Exports	Imports	Apparent consumption
	Design capacity	Actual Production	Design capacity	Actual Production			
2000	132.177	96.554	113.916	86.477	7.766	10.486	98.728
2001	135.107	99.669	118.556	89.669	8.614	9.486	102.452
2002	136.264	112.173	118.671	99.003	12.865	9.615	112.411
2003	142.505	109.768	124.551	100.344	14.697	10.503	113.118
2004	147.705	120.477	129.370	109.632	18.858	12.574	120.647

Note: Total consumption figures are indicative and subject to estimating and rounding errors.

During the period there was significant and increasing inter-Arab trade, particularly between Egypt, Jordan, Lebanon and Saudi Arabia, with exports reaching 18.8 million tonnes in 2004, and imports at 12.6 million tonnes, representing a growth of 15% in the latter part of the period.

The majority of the industry is in the private sector, and there is significant involvement by the international majors (Holcim, Cemex, Lafarge etc).

The IEA identified that the rapid increase in investment in cement, either through construction of new plant or expanding current capacities may be attributed to some of the following:

<sup>2</sup> This information was taken from the respective 2006 annual reports of Holcim, Lafarge and Cemex.

<sup>3</sup> Cement Industry in Arab Countries 2002-2004. International Energy Agency. [www.iea.org](http://www.iea.org) Al Rouson 2006.

<sup>4</sup> Mashreq Countries: Egypt, Iraq, Lebanon, Palestine, Sudan, Syria, Yemen; GCC Countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE; Maghreb Countries: Algeria; Libya, Mauritania, Morocco, Tunisia.

- To dispense with old lines of low productivity and high cost
- To have new lines of modern technology, higher energy efficiency and meet environmental concerns
- Increase in domestic consumption rates in the Arab countries
- Increase in favourability of the investment climate and financial incentives
- Financial surpluses
- Lack of cement production in some countries
- Significant increase in the size of the construction industry
- Housing starts

There are significant plans to expand production in most Arab countries with the IEA estimate of planned and under-construction expansions of capacity by 2010 from the 2004 figures of 109.7 million tonnes of clinker, 120 million tonnes of cement, with total new capacities of 229 million tonnes of clinker and 267 million tonnes of cement, representing a 100% increase in clinker production and approximately 82% increase in cement production. Table 2.2 (c) gives a breakdown by region.

Table 2.2 (c) Planned and under construction cement expansion in the Arab regions to 2010. Millions of tonnes per year capacity.

Area	Current capacities		Planned and Under constructions				Forecast	
	Cement	clinker	Cement	% of total expansion in Arab countries	clinker	% of total expansion in Arab countries	total after expansion	
							cem	clink
GCC	40.507	31.898	69.166	56.13	59.581	52.96	109.3	88.3
Mashreq	63.730	60.196	41.275	34.43	40.860	37.27	100.3	97.0
Maghreb	38.18	34.151	9.445	7.88	9.205	8.40	47.6	43.4

Regional market data is given for 1999<sup>5</sup> and 2005<sup>6</sup> in Table 2.2 (d) for the purposes of comparison with the Iraqi figure. This data is graphically represented in Graph 2.2 (a) and (b).

Table 2.2 (d) Regional cement consumption figures for 1999. Kg per capita.

	per capita consumption (Kg)	
	1999	2005
Bahrain	841	788
Egypt	414	405
Iran	280	459
Iraq	165	161
Israel	822	491
Jordan	373	703
Kuwait	1,111	1,224
Lebanon	927	930
Libya	76	973

<sup>5</sup> The Global Cement Report. Fourth Edition International Cement Review. December 2000.

<sup>6</sup> World Statistical Review No 19 – 28/1996-2005 Cement production, Trade, Consumption Data. Cembureau. May 2007.

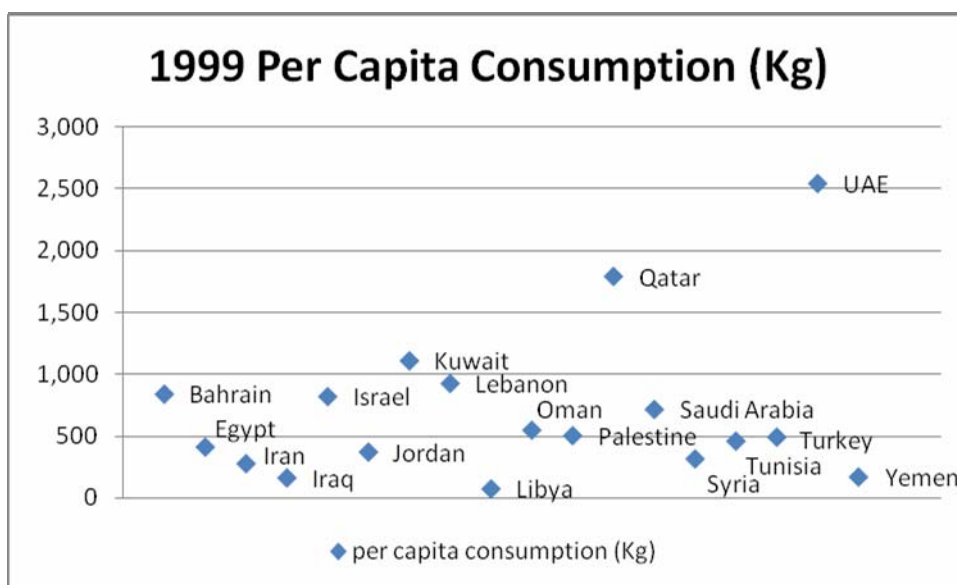


Oman	550	929
Palestine	506	439

Table 2.2 (d) Regional cement consumption figures for 1999. Kg per capita. (continued)

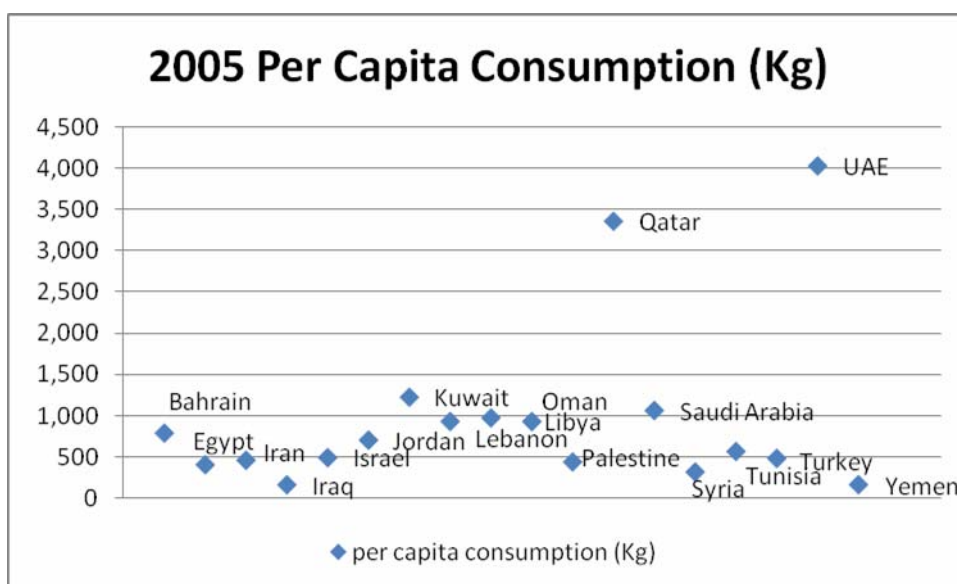
	per capita consumption (Kg)	
	1999	2005
Qatar	1,792	3,358
Saudi Arabia	718	1,063
Syria	318	566
Tunisia	462	482
Turkey	494	4,030
UAE	2,542	163
Yemen	172	

Graph 2.2 (a) Graphical representation of regional per capita cement consumption data for 1999.



Note: countries are distributed alphabetically along the x axis

Graph 2.2 (b) Per capita consumption in 2005 (alphabetical)



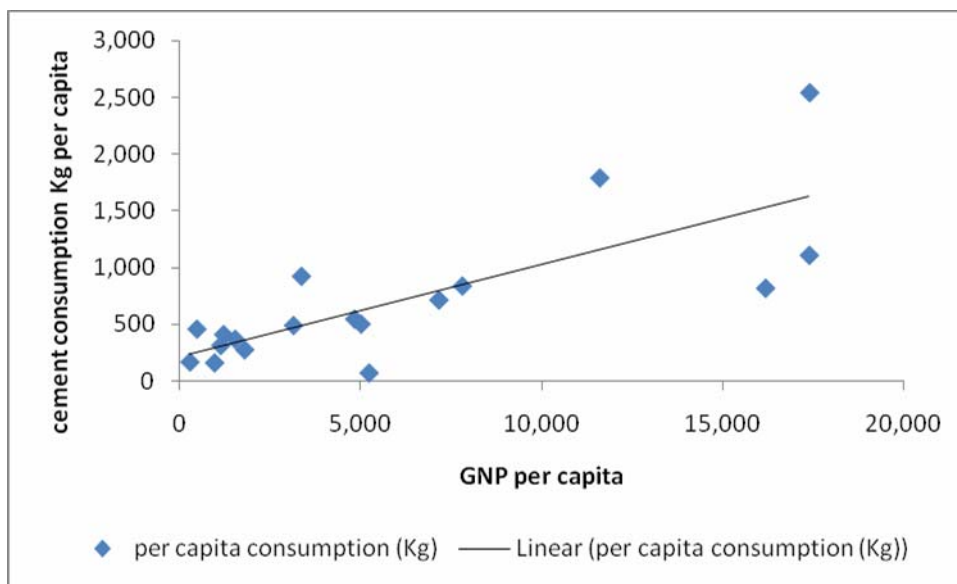
Graph 2.2 (b) shows the huge increase in cement consumption in Qatar and the UAE over this five year period. This is directly related to the enormous development programmes being undertaken by these respective states – in particular in the UAE in Dubai.

Table 2.2 (e) regional per capita cement consumption and GNP, sorted by volume. 1999 KG, USD.

Country	per capita consumption (Kg)	GNP/Capita <sup>7</sup>
Yemen	172	270
Tunisia	462	462
Iraq	165	950
Syria	318	1,120
Egypt	414	1,200
Jordan	373	1,520
Iran	280	1,780
Turkey	494	3,130
Lebanon	927	3,350
Oman	550	4,820
Palestine	506	5,000
Libya	76	5,220
Saudi Arabia	718	7,150
Bahrain	841	7,800
Qatar	1,792	11,600
Israel	822	16,180
Kuwait	1,111	17,390
UAE	2,542	17,400

<sup>7</sup> Op cit Global Cement report

Graph 2.2 (c) Cement consumption per capita against GNP per capita – with trend line



Graph 2.2 (c) demonstrates the relationship between per capita cement consumption and GNP per capita. In general the relationship for developing countries implies an increased consumption with increasing discretionary wealth. In the developed countries, e.g., in Western Europe the per capita consumption tends to fall again, with for example French consumption per capita of 373, UK 226, but Spain 1,253 (Kg per capita, 2005).

### 3.0 IRAQ 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.

#### 3.1 ESTIMATES OF DEMAND

Total current demand in Iraq can be estimated, and forecasted on the basis of total current supply, comprising domestic production and imports. Sections 3.2 and 3.3 provide these figures. 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<sup>8</sup> 3 million tonnes of production and an import figure of 7 million tonnes, giving a

<sup>8</sup> Orascom Construction Industries Annual Report 2006

total current demand figure of 10 million tonnes, or a (nominal) per capita<sup>9</sup> consumption of 385 kg per head. The MIM is reported<sup>10</sup> 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 2005. Significantly with a rebuilding and reconstruction programme in place, to match that of Qatar, would require another 600 kg per head, and in the light of the massive building and redevelopment programme 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.

## **3.2 DOMESTIC SUPPLY**

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

### **3.2.2 Present Structure of the Iraqi Industry**

#### **3.2.2.1 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.

<sup>9</sup> Based on a normalised population figure for 2005 of 26 million

<sup>10</sup> Salah Kambour, DG at the MIM quoted San Francisco Times, Feb 4, 2006. The article also noted that the price of cement has risen from USD 20.00 per tonne in 2003 to as USD 120.00 at the time of writing.

### 3.2.2.2 Current Status

Table 3.2.2.2 (a) combined presents a consolidated list of the cement plants in Iraq, as identified by a CPA study<sup>11</sup>, this was also supplemented from Ministry of Industry and Minerals sources<sup>12</sup>. The two sources differ slightly in their respective recognition of production lines and plant. For example for the Iraqi Cement Company, the MIM Guide identifies the four locations of the company as Kubaisa, Kirkuk, Qaim and Fallujah, the separate lines for Fallujah identified in the former are not in the latter.

Since that time in the KRG region a successful private-public relationship has been established and two private greenfield plants are being built, as discussed in section 4.3.

The cement plants are very evenly distributed throughout Iraq, reflecting the wide availability of raw material. In an efficient and functioning sector this would also ensure a uniform, and consistent low price for cement. However, as is discussed further, the current state of the industry means that much is imported and transport costs add significantly to the price of cement paid.

---

<sup>11</sup> Iraqi Cement Factories Activation, Coalition Provisional Authority, extracted from presentation dated 22 July 2004.

<sup>12</sup> State Owned Enterprises Guide. Ministry of industry and Minerals, Republic of Iraq, 2005

---

Table 3.2.2.2 (a)

Company	Plants/Offices	Plant Number	Process Type	2004 Working Status Yes or No	2004 Output (Tons) 2	2005 Working Status Yes or No 3	Capacity			Production Lines 4	Labor 2004 Total No. of Employees 1
							2004 Design Capacity (Annual, Tons) 1	2005 Design Capacity (Annual, Tons) 2	2005 Available Capacity (Annual, Tons) 3		
Northern Cement Company (Mosul)	Old Badoosh Cement Plant (I)	1	Wet	Yes	190,000	No	190,000			2	157
	New Badoosh Cement Plant (II)	2	Wet	Yes	130,000	Yes	700,000	1,720,000	1,548,000	2	403
	Badoosh Expansion Plant (III)	3	Dry	Yes	250,000	Yes	1,000,000			1	284
	Sinjar Cement Plant	4	Dry	Yes	290,000	Yes	1,200,000	1,200,000	1,080,000	2	673
	Hammam Al Ali Plant (Old) (I)	5	Wet	Yes	0	Yes	200,000	607,000	546,300	2	529
	Hammam Al Ali Plant (New) (I)	6	Wet	Yes	15,000	Yes	450,000			1	
	Work Shop										79
	Head Office Employees										230
Northern Co. Totals:					875,000		3,740,000	3,527,000	3,174,300	Total:	2,355
Iraqi Cement Company (Baghdad)	Kirkuk Cement Plant	7	Dry	Yes	150,000	Yes	2,000,000	2,000,000	1,800,000	2	656
	Kubaisa Cement Plant	8	Dry	Yes	150,000	Yes	2,000,000	2,000,000	1,800,000	2	661
	Al Qaim Cement Plant	9	Dry	Yes	90,000	Yes	1,000,000	1,000,000	900,000	1	503
	Falluga Normal Cement (I)	10	Wet	No	0	No	200,000			2	NA
	Falluga White Cement (II)	11	Dry	Yes	50,000	Yes	300,000	291,000	261,000	3	429
	Work Shop ( Assumed )										95
	Head Office Employees										527
Iraqi Cement Co. Totals:					440,000		5,500,000	5,291,000	4,761,000	Total:	2,871
Southern Cement Company (Kufa)	Old Kufa Cement Plant (I)	12	Wet	Yes	145,000	Yes	200,000	302,000	272,160	1 or 2	1,415
	New Kufa (Al-Ashref) Cement Plant	13	Wet	Yes	420,000	Yes	1,800,000	1,800,000	1,620,000	4	380
	Karbala Cement Plant	14	Dry	Yes	90,000	Yes	2,000,000	1,800,000	1,620,000	2	874
	Muthana Cement Plant	15	Dry	Yes	220,000	Yes	2,000,000	2,000,000	1,800,000	2	833
	Sadah Al-Hindia Cement Plant	16	Wet	Yes	72,000	No	200,000			2	416
	Um Qasir Cement Plant	17	Dry	Yes	60,000	Yes	500,000	576,000	518,400	1	300
	Al-Jinoob Cement Plant	18	Wet	Yes	25,000	Yes	450,000	450,000	405,000	1	801
	Samawa Cement Plant 4	19	Wet	No	0	No	400,000			1	300
	Karbala Limestone Plant	20	Dry	Yes	90,000	NA	200,000	NA		2	314
	Work Shop ( Assumed )										119
Head Office Employees (Assumed)										345	
Southern Co. Totals:					1,122,000		7,750,000	6,928,000	6,235,560	Total:	5,296
<b>Three Companies Above</b>					<b>Totals:</b>		<b>16,990,000</b>	<b>15,746,400</b>	<b>14,171,760</b>	<b>Total:</b>	<b>10,522</b>

Table 3.2.2.2 (a) (continued)

<b>Kurdish Regional Government</b>	Tasluja Cement Plant (Suleimaniya)	21	Dry	Yes	300,000	Yes	2,300,000	2,000,000	1,800,000	2	NA
	United Cement Co.(Sarchinar)	22	Wet	Yes	100,000	No	250,000			2	NA
	Kurdistan Total:				400,000		2,550,000	2,000,000	1,800,000		
						Grand Total:	19,540,000	NA	NA		
Grand Total Active:				2,837,000		<b>18,690,000</b>	<b>17,746,400</b>	<b>15,971,760</b>			

Except process type for the Kurdish plants, which is from USGS, ibid., Table 2.

2 Data from USGS, Minerals Annual, Vol. III, Iraq Country Page, Table 2, <<http://minerals.usgs.gov/minerals/pubs/country/2004/izmyb04.xls>>

3 Source: Izdihar survey.

4 Seems to omit the Samara II plant. Plant in table is Samara I.

Table 3.2.2.2 (b)

Company	Plants/Offices	Plant Number	Process Type	Production Lines	Working Status Yes or No	Capacity				Energy			Energy Efficiency					
						Design Capacity (Annual, '000 Tons)	MDC (Tons)	Wet ADC ('000 Tons)	DRY ADC ('000 Tons)	Design Power (MW)	Wet DP (MW)	DRY DP (MW)	Current Power (MW)	ADC/DP (Tons/MW)	DP/ADC (Watts/Ton of ADC)	Wet DP/ADC (Watts/Tons ADC)	Dry DP/ADC (Watts/Tons ADC)	
Northern Cement Company (Mosul)	Old Badoosh Cement Plant	1	Wet	2	Yes	190	15,800	190		7.0	7		15	27,143	36.8	36.8		
	New Badoosh Cement Plant	2	Wet	2	Yes	700	58,300	700		20.0	20			35,000	28.6	28.6		
	Badoosh Expansion Plant	3	Dry	1	Yes	1,000	83,300		1,000	23.0		23.0		43,478	23.0		23.0	
	Sinjar Cement Plant	4	Dry	2	Yes	1,200	100,000		1,200	35.0		35.0	15	34,286	29.2		29.2	
	Hammam Al Ali Plant (Old)	5	Wet	2	Yes	200	16,700	200		7.0	7		5	28,571	35.0	35.0		
	Hammam Al Ali Plant (New)	6	Wet	1	Yes	450	37,500	450		15.0	15			30,000	33.3	33.3		
	Work Shop																	
	Head Office Employees																	
	Northern Co. Average													28.6	36.4	26.4		
	Northern Co. Totals					3,740	311,600	1,540	2,200	107.0	56	58	35					
Iraqi Cement Company (Baghdad)	Kirkuk Cement Plant	7	Dry	2	Yes	2,000	166,700		2,000	35.0		35.0	10	57,143	17.5		17.5	
	Kubaisa Cement Plant	8	Dry	2	Yes	2,000	166,700		2,000	43.0		43.0	10	46,512	21.5		21.5	
	Al Qaim Cement Plant	9	Dry	1	Yes	1,000	83,300		1,000	22.5		22.5	7.5	44,444	22.5		22.5	
	Falluga Normal Cement (I)	10	Wet	2	No	200	16,700	200		10.0	10		0	20,000	50.0	50.0		
	Falluga White Cement (II)	11	Dry	3	Yes	300	25,000		300	10.0		10.0	2.5	30,000	33.3		33.3	
	Work Shop ( Assumed )																	
	Head Office Employees																	
	Iraqi Cement Co. Ave.														22.0	50.0	20.8	
	Iraqi Cement Co. Totals					5,500	458,400	200	5,300	121.0	10	110.5	30					

Key: ADC, Annual Design Capacity; MDC, Monthly Design Capacity; Dp, Design Power; CP, Current Power; APM, Average Production Per Month; AEPPM, Average Existing Production per Month; EF, Existing Efficiency; P, Production; WS, Working Status; CRC Conceptual Rehabilitation Cost; ETV Estimated Total Value; EAV, Estimated Appraised Value; PPA, Percentage Power Available; LOP, Lines of Production.



Table 3.2.2.2 (b) continued

Company	Plants/Offices	Labor			Optimal Labor Efficiency		
		Total No. of Plant Workers	Wet Process	Dry Process	Total Annual	Wet Process	Dry Process
			No. of Workers	No. of Workers	(Tons/Worker)	(Tons/Worker)	(Tons/Worker)
Northern Cement Company (Mosul)	Old Badoosh Cement Plant	157	157		1,210	1,210	
	New Badoosh Cement Plant	403	403		1,737	1,737	
	Badoosh Expansion Plant	284		284	3,521		3,521
	Sinjar Cement Plant	673		673	1,783		1,783
	Hammam Al Ali Plant (Old)	529	529		1,229	1,229	
	Hammam Al Ali Plant (New)						
	Work Shop	79					
	Head Office Employees	230					
	Northern co Average				1,828	2,326	2,299
Northern Co Totals	2,046	1,089	957				
Iraqi Cement Company (Baghdad)	Kirkuk Cement Plant	656		656	3,049		3,049
	Kubaisa Cement Plant	661		661	3,026		3,026
	Al Qaim Cement Plant	503		503	1,988		1,988
	Falluja Normal Cement (I)	NA	NA		NA	NA	
	Falluja White Cement (II)	429		429	699		699
	Work Shop ( Assumed )	95					
	Head Office Employees	527					
	Iraq Cement Co Avge.				2,446		2,191
Iraq Cement Co Totals	2,871	NA	2,249		NA		

Note: Labour efficiency is calculated on the basis of the design capacity of the plant, not the actual output. Total number of workers are estimated from initial figures provided by the MIM. Total numbers change according to the operational condition of the plant and local circumstances.

Table 3.2.2.2 (b) continued

Company	Plants/Offices	Plant Number	Process Type	Production Lines	Working Status Yes or No	Capacity				Energy				Energy Efficiency				
						Design Capacity (Annual , '000 Tons)	MDC ( '000 Tons)	Wet ADC ( '000 Tons)	DRY ADC ( '000 Tons)	Design Power (MW)	Wet DP (MW)	DRY DP (MW)	Current Power (MW)	ADC/DP (Tons/ MW)	DP/ADC (Watts/Ton of ADC)	Wet DP/ADC (Watts/ Tons ADC)	Dry DP/ADC (Watts/ Tons ADC)	
Southern Cement Company (Kufa)	Old Kufa (Al-Ashref) Cement Plant	12	Wet	2	Yes	200	16.7	200		7.0	7		3.5	28,571	35.0	35.0		
	New Kufa Cement Plant	13	Wet	4	Yes	1,800	150.0	1,800		29.0	29		8.5	62,069	16.1	16.1		
	Karbala Cement Plant	14	Dry	2	Yes	2,000	166.7		2	35.0		35.0	10	57,143	17.5		17.5	
	Muthana Cement Plant	15	Dry	2	Yes	2,000	166.7		2	35.0		35.0	10	57,143	17.5		17.5	
	Sadah Al-Hindia Cement Plant	16	Wet	2	Yes	200	16.7	200		10.0	10		3	20,000	50.0	50.0		
	Um Qasir Cement Plant	17	Dry	1	Yes	500	41.7		.5	10.0		10.0	1	50,000	20.0		20.0	
	Al-Jinoob Cement Plant	18	Wet	1	Yes	450	37.5	450		22.0	22		4	20,455	48.9	48.9		
	Samawa Cement Plant	19	Wet	1	No	400	33.3	400		15.0	15		0	26,667	37.5	37.5		
	Karbala Limestone Plant	20	Dry	2	Yes	200	16.7		.2	4.0		4.0	2	50,000	20.0		20.0	
	Work Shop ( Assumed ) Head Office Employees (Assumed)																	
		Southern Co.Average													46,407	21.5	27.2	17.9
	Southern Co.Totals					7,750	646	3,050	4.7	167.0	83	84.0	42					
<b>Three Companies Above</b>		Industry Average				849.5	70.8	479	1.2					43,122	23.2	29.6	20.7	
		Industry Total				16,990	1,416	4,790	12.2	394	142	253	107					
Kurdish Regional Government <sup>13</sup>	Tasluja Cement Plant (Suleimaniya)	21	Dry	2	Prob. Yes	2,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	United Cement Co.(Sarchinar)	22	Wet	2	Prob. No	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

The "Samara II" plant seems to be omitted. Plant in table is "Samara I. Industry average capacity is per plant.

<sup>13</sup> USGS Minerals Yearbook. Volume III. Area Reports: International. Chapter The Mineral industry of Iraq. Philip M Mobbs 2004

Table 3.2.2.2 (b) continued

Company	Plants/Offices	Labor			Labor Efficiency		
		Total No. of Plant Workers	Wet Process	Dry Process	Total Annual	Wet Process	Dry Process
			No. of Workers	No. of Workers	(Tons/ Worker)	(Tons/ Worker)	(Tons/ Worker)
Southern Cement Company (Kufa)	Old Kufa (Al-Ashref) Cement Plant	1,415	1,415		141	141	
	New Kufa Cement Plant	380	380		4,737	4,737	
	Karbala Cement Plant	874		874	2,288		2,288
	Muthana Cement Plant	833		833	2,401		2,401
	Sadah Al-Hindia Cement Plant	416	416		481	481	
	Um Qasir Cement Plant	300		300	1,667		1,667
	Al-Jinoob Cement Plant	801	801		562	562	
	Samawa Cement Plant	300	300		1,333	1,333	
	Karbala Limestone Plant	314		314	637		637
	Work Shop ( Assumed )	119					
	Head Office Employees (Assumed)	345					
	Southern Company average				1,604	921	2,025
	Southern Company Totals	5,633	3,312	2,321			
Three Companies Above	Industry Average				1,840	1,446	1,540
	Industry Total	9,127	NA	7,920			
Kurdish Regional Government	Tasluja Cement Plant (Suleimaniya)	NA	NA	NA	NA	NA	NA
	United Cement Co.(Sarchinar)	NA	NA	NA	NA	NA	NA

Another major issue with the plants is their age. Table 3.2.2 (c) gives the year of commissioning of each of the major plants<sup>14</sup>.

Table 3.2.2.2 (c) Age of cement plant in Iraq.

Plant	Year
Al Qaim	1988
Falluja II	1978
Hindiyah Barrage	1957
Kerbala	1984
Kubaisa	1983
Kufa II	1977-78
Al Tamin	1984
Badoosh II/III	1978/83
Hammam Al Alil I/II	1963/79
Sinjar	1985
Tasluja	1984
Samawah I	1955/73
Samawah II	1986

### 3.2.3 Current Iraqi Cement Production:

Estimates of current Iraqi cement production are crude and vary widely. Table 3.2.3 (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..

Table 3.2.3 (a) Recent estimated Iraqi cement production<sup>15</sup>. 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 3.2.3 (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 3.2.3 (c).

<sup>14</sup> World Cement Directory 2002. The European Cement Association

<sup>15</sup> Iraq: Statistical Appendix, IMF Country Report No 05/295, August 2005

Table 3.2.3 (b) USGS estimates of Iraq cement production<sup>16</sup>. '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 3.2.3 (c). USGS estimates of operating versus design capacity for 2004<sup>16</sup>.

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.

### 3.2.4 Constraints on Production

#### 3.2.4.1 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.

<sup>16</sup> US Geological Survey Minerals Yearbook, 2004 & 2005, Volume III. Area Reports: International: Chapter 'Iraq'.

The CPA study<sup>11</sup> 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.

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<sup>17</sup>.

A Cembureau estimate for a modern plant is for the use of 60-130 Kg of fuel oil per tonne of cement and about 105KWh of electricity.

White cement requires a 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.

#### 3.2.4.2 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 tonne 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.

#### 3.2.4.3 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.

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.

---

<sup>17</sup> World Cement Directory 2002. The European Cement Association. 'Cembureau'.

#### 3.2.4.4 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.

#### 3.2.5 **Environmental Considerations**

Redevelopment, rehabilitation, and new plant will all have to take account of environmental considerations, which include areas such as employee health and safety, carbon emissions as well as the normal dust management systems. Those considering participating in the industry would also be advised to take account of the Cement Sustainability Initiative<sup>18</sup>, a sector specific subsidiary of the World Business Council for Sustainable Development. Key areas included as sub-studies by this body include:

- Climate protection
- Fuels and raw materials
- Employee health and safety
- Emissions reduction
- Local impact
- Business procedures

A list of some of their publications are given in the footnote.

Some of the recent issues in environmental management are given, as examples, in the following paragraphs.

##### 3.2.5.1 Carbon Emissions

New processes exist for the re-carbonation of concrete that have been shown to offset CO<sub>2</sub> emissions from cement manufacture by as much as 19%<sup>19</sup>.

Other initiatives include installation of more fuel-efficient kiln technologies, partial substitution of non-carbonate sources of calcium oxide in the raw material, and partial substitution of supplementary cementitious materials (SCM) additives in the finished cement and concretes<sup>20</sup>. A recent version of

---

<sup>18</sup> [www.wbscdcement.org](http://www.wbscdcement.org); Business Case for Sustainable Development; climate Change; Communications strategies for external stakeholders; Improving Environmental Performance Along the Value Chain; Industrial Ecology; Innovation; Performance Indicators; Impact Minimization (land, biodiversity); Life Cycle Analysis; Public Policy Instruments; company alignment on SD; Socio-economic Developments; Stakeholder Communications Approaches.

<sup>19</sup> Global Cement magazine July-August 2007

<sup>20</sup> US geological Survey, Mineral commodity Summaries, January 2007

ASTM-C150 allows for the incorporation of up to 5% ground limestone and an extender.

### 3.2.5.2 Chromium VI

Since the discovery that chromium VI sensitizes the skin and causes contact dermatitis, and is present in cement (chromium III is converted in the kiln, the Cr arises from raw material and abrasion of the kiln lining and chromium steel during firing) there is now an EC opinion<sup>21</sup> and directive<sup>22</sup> which has in turn been enacted into national legislation<sup>23</sup> that prohibits the supply or use of cement which has a chromium VI concentration of more than 2 parts per million. This also applies to products containing cement, e.g., mortars, grouts, tile adhesives etc. To counteract this it is mandatory to add a reducing agent, e.g., ferrous sulphate to the raw material. This has cost implications where new blending equipment has to be installed. Chromium VI is recognized by the USA EPA as a human carcinogen<sup>24</sup>.

### 3.2.5.3 Fuels and Waste

The burning of waste in kilns as a substitute for fossil fuels is becoming more common, as this can be an effective way of destroying them, and reduces the overall fuel consumption. There is also an increasing trend toward the use of waste fuels.

### 3.2.5.4 Smoke/Dust

Unregulated discharge to atmosphere of smoke and dust from cement plants is a common complaint. It is likely that with the degradation of the cement plants in Iraq over the last two decades, or so, most will not meet current environmental legislation, therefore all refurbishment (and new build) programmes will have to include a significant element for the scrubbing of emissions.

## 3.2.6 **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 tonne and reportedly rising to USD 120.00 per tonne in 2005. However, the quoted price for October 2006 was USD 46.00, bagged<sup>25</sup>.

---

<sup>21</sup> Risks to Health from Chromium VI in Cement. Opinion expressed at the 32<sup>nd</sup> CSTEE plenary meeting. June 2002. Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE)

<sup>22</sup> EU directive 2003/53/EC on chromium in cement

<sup>23</sup> For example; UK Health and Safety Executive (HSE) Control of Substances hazardous to health (Amendment) regulations 2004 (COSHH 2004)

<sup>24</sup> National Air Toxics Program: The integrated Urban strategy. Report to Congress. Appendix HAP Profiles

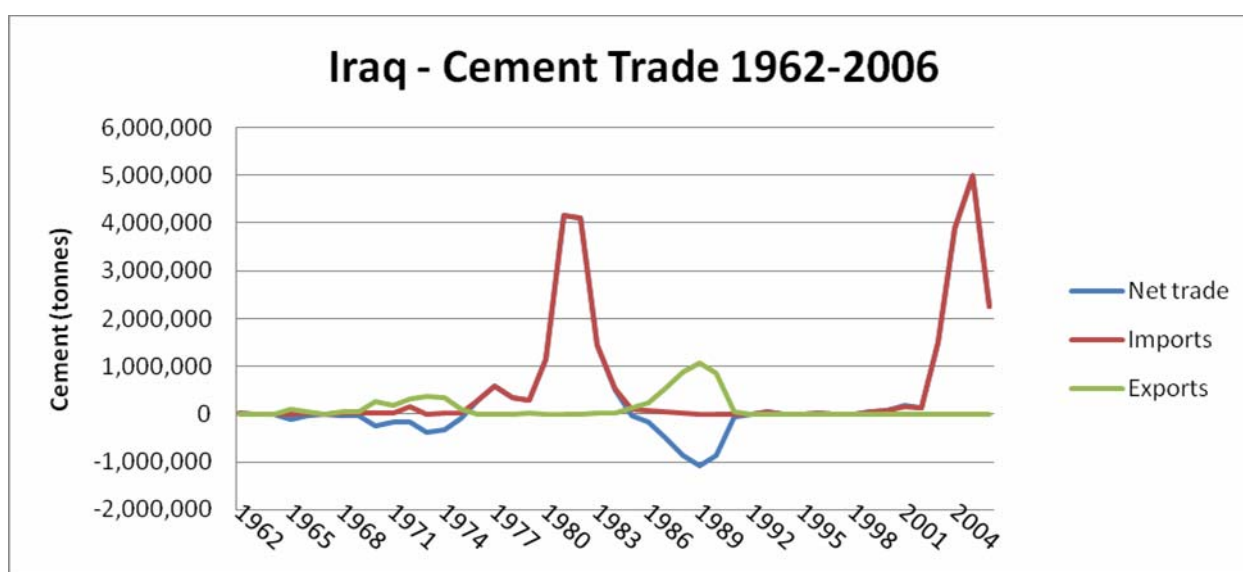
<sup>25</sup> Global Cement Magazine, July-August 2007.



### 3.3 International trade - Imports and Exports

Graph 3.3 shows the trade in cement with Iraq from 1962 to 2006<sup>26</sup>. 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 3.3 (a) with the corresponding principal trading partners.

Graph 3.3 (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 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.

<sup>26</sup> UN Comtrade: <http://comtrade.un.org/>

Table 3.3 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 3.3 (a) Reported exports of cement to Iraq 2002-2006 Tonnes.

Year	2002	2003	2004	2005	2006 <sup>27</sup>
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 3.3 (b) gives the Iraqi collated data is from 1999-2002 inclusive and then for 2005.

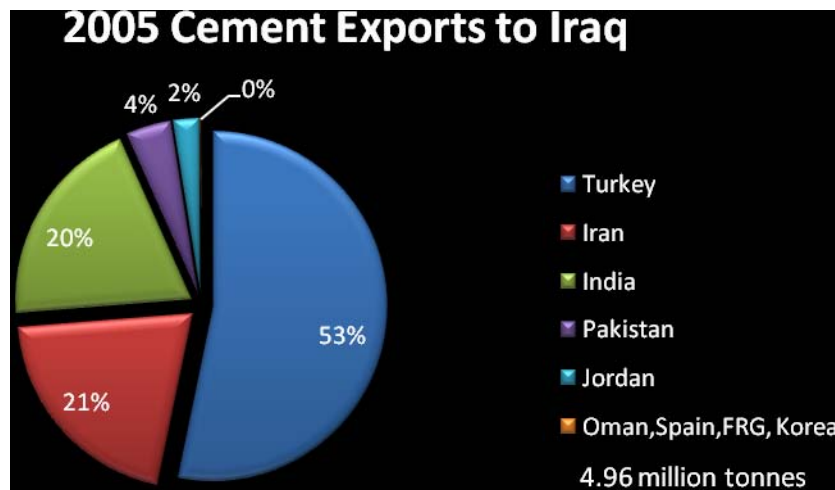
Table 3.3 (b) Iraq reported COSIT import figures for cement. Tonnes.

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

<sup>27</sup> Note: the Comtrade figures for 2006 are incomplete as at the time of writing India and Iran had not reported their world trade data.

<sup>28</sup> The figures given in the COSIT tabulations and reported here are the commodity specific by country. In the commodity specific tables the total weight of imports is given as 4,040,166.5, though the value difference is insignificant.

Graph 3.3 2005 (b) Cement exports to Iraq by principal exporter



## 4.0 DEVELOPMENTS IN THE IRAQI CEMENT INDUSTRY

### 4.1 INTRODUCTION

Since the second gulf war the cement industry has been high on the list of industrial sectors for restructuring and privatizing, firstly by the Coalition Provisional Authority (CPA) and latterly by the Gol through the Ministry of Industry and Minerals. This is principally because of the high profile of the industry, the immediate demand for cement in reconstruction, and the perceived ease with which this might be done. However, subsequent (and prior) to the war the cement industry has suffered major problems, which sanctions only exacerbated. The industry is old, much of it is reliant on technologies now considered redundant for new plant, it is heavily dependent on power, where there are major supply issues, and refurbishment/rehabilitation of the sector is going to be expensive.

The MIM, for the 15 governorates of Iraq is attempting to attract funds and participants into the sector through the initiatives outlined below. Separately the Kurdistan Regional Government has successfully allowed a private venture to rehabilitate one plant, and to develop a new one.

### 4.2 RESTRUCTURING

Understanding the requirement of the domestic market the Government of Iraq (Gol) through the Ministry of Industry and Minerals (MIM) created two initiatives. In recognition of the need to develop the private sector it was decided that private finance and development was essential for the long-term sustainable development of the sector.

The two initiatives are a) the granting of new mineral extraction licenses and land for the development of plant, and b), inviting the private sector to invest in a private public partnership scheme (PPP).

In separate negotiations the Kurdistan Regional Government allowed private sector involvement in the development of the cement sector, see section 4.3.

#### 4.2.1 New Licenses

In 2005 the MIM issued licenses for the development of 20 new cement plants. These are based on quarrying licenses and locations for new plant. A schedule of the successful bidders for these licences is given in table 4.2.1. Some of the key criteria<sup>29</sup> for the issue of the licenses include setting the geographical location with respect to quarry location, clay and gypsum deposits, the ability of the bidder to provide modern production techniques; a commitment to the provision of (independent) power for the plant; a commitment to environmental requirements, and obtaining ISO 14000; ISO 9000 compliance; meeting European cement specifications. 10 locations were selected and licenses were issued for two plants at each. The legal framework was specified as the Industrial Investment Law No. 20 of 1998, Mining Investment Law No. 91 of 1998, and the Companies Law of 1998. With these commitments and conditions the investor will manage or participate in managing the investment, jointly or severally with domestic or foreign partners of the vendor; invest in the quarry for the life-time of the project or 40 years, for fees. He will also enjoy the following fiscal benefits; namely exemption from customs duties on imported fixed assets, spare parts etc, and be exempt from income tax for three years. The MIM will assist in the provision of technical assistance, necessary permissions and indemnify or assist with future legislation. MIM reported that evaluation of bids was conducted in conjunction, and with the assistance of USAID, the Jordanian Investment Promotion commission and specialist consultancies.

Table 4.2.1. List of qualified companies and investors who have been granted licenses to develop new cement plants<sup>29</sup>.

No	Company	Investor	Capacity TPA	Province
1.	Complete Development Company	Luay Abd Mutalib Barakat	1,500,000	Kerbala
2.	Al- Rawad Company	Basil Mehdi Al-Rahim	1,200,000	Kerbala
3.	Abdul - Amir Al-Rubeiee	Abdul -Amir Bakir Kadhim Al-Rubaiee	750,000	Kerbala
4.	Mustafa Kadhim Behaia	Mustafa kabhin Behaiq	1,200,000	Muthana
5.	Basrah Group Company	Walid Abdul - Rahman Al – Oman	1,000,000	Muthana
6.	Lions Ground Company	Ali Fadhil Hussain shmara	2,000,000	Muthana
7.	Younis Mohammad Ali Al-samawi	Yaunis Mohammad Ali Al-Samawi	1,400,000	Muthana
8.	Al- Doh Company	Ali Khawam Abdul – Abbas	1,500,000	Muthana
9.	Economical Group Company	Mohammad Fakhri Shamshal	1,050,000	Muthana
10.	Happy Dreams company	Majid Dawood Salam	1,400,000	Najaf
11.	Zam Zam Co.	Wisam Abod Mohammad	750,000	Najaf
12.	New Iraq Co.	Ali Fadhil Hussain Shmara	1,200,000	Anbar
13.	Al- Rafidain Co. For Cement	Naji Isat Al-Jaf	1,000,000	Anbar
14.	Al- Janabi Construction Group	Ali Abdul - Kadir Mahmood	1,100,000	Anbar
15.	Nafia Al- Hashimi Beurae	Nafia Aaish Al-Hashimi	1,000,000	Anbar
16.	Tigris & Youfrits Masraf Co.	Abdul - Jabar Ahmad Rahim	1,750,000	Anbar
17.	Al-Hadar Co. for Engineering Industries	Mohammad Fadil Al-Samerrai	1,750,000	Anbar
18.	Hadi Shneif Mankhi	Hadi Shneif Mankhi	1,000,000	Anbar
19.	Al- Hadbaa Industrial Co.	Tariq Abdul - Rahman Saeed	1,000,000	Anbar
20.	New Iraq Co.	Mohammad Abdul - Latif Bunneia	2,000,000	Ninawa
	Total planned capacity		25,550,000	

<sup>29</sup> Source: 'Investment Opportunities to implement New Cement Plants in Iraq'. Powerpoint presentation prepared by Investment Department of the Ministry of Industry and Minerals, republic of Iraq. July 2007

The current status of the various projects is currently unknown to the author. It is reported however, that Lafarge, a significant cement major is involved in two projects in Kerbala, bidding USD 150 million for the refurbishment of one 2 million tpa plant, and investing some USD 200 million for a new (Greenfield) plant also of 2 million tonnes per annum. At the same time, significant administrative difficulties have been encountered, reflective of the lack of cooperation between the central government and the provincial governments, as well as between different institutions of the central government. More than 18 months after the licenses had been issued, most projects have not yet obtained permits and land grants at the governorate level. The projects in Muthanna, the only ones to receive the necessary permits at the governorate level, have run into a snag at the central government level, failing as yet to obtain a clearance by the Office of State property (part of the Ministry of Finance).

#### 4.2.2 Private Public Partnerships (PPPs)

This year (2007) the MIM offered 13 opportunities for private sector investment in partnership arrangements, five in the cement sector. The bid period was closed on 31<sup>st</sup> July – after a number of extensions, and the number of bids for each cement plant offered as part of the scheme is set out in table 4.2.2. The terms and conditions were set out on the Ministry’s web site with full documentation being made available for a USD 350.00 fee. Terms included such areas as production and required government deliveries, provision of power plants, and certain requirements particular to the individual plant.

Table 4.2.2 Bids received for PPP with the cement plants in the MIM offer<sup>30</sup>.

Factory	Offers	Design Capacity
Muthana Cement Factory	6 offers	2,000,000
Karbala Cement Factory	5 offers	2,000,000
Kirkuk Cement Factory	5 offers	2,000,000
Al-Qa'im Cement Factory	4 offers	1,000,000
Sinjar Cement Factory	2 offers	1,200,000
Total		8.2 million tonnes

At the time of writing the names of the bidders, or the value of the bids was unknown (August 2007), however, it is understood that the offers for Kerbala, Kirkuk and Muthanna are to be evaluated. Sinjar is not because there was a minimum requirement of 3 offers, and therefore the bid criteria are not met, and in Al-Qa'im domestic issues have precluded the process.

#### 4.2.3 Private Domestic Initiative

In 2004 a private company – Sawa Beach – approached the CPA with a view to operating one of the lines of the old Samawah cement plant. The objective of the company in operating this small capacity plant was to service the local construction industry. However the administration was unable to arrive at a suitable leasing or ownership arrangement and the plant was not re-opened.

<sup>30</sup> Source: Ministry of Industry and Minerals. August 2007.

### 4.3 KURDISTAN REGIONAL GOVERNMENT

A consortium headed by Orascom Construction Industries (OCI) of Egypt completed the rehabilitation of the of the first line of the Tasluja 2.3 million tpa plant in July 2005. The consortium includes the Faruk Rasool Group (Iraq) (FRG) and the Polysius Group. The operating capacity prior to the rehabilitation was 300,000 tpa. The company was granted a 12 year operating lease in November 2004, with first refusal on any plant privatisation. Investment was stated at USD 70 million<sup>31</sup>.

In a further development Orascom Construction Industries Cement Group (OCI) in association with FRG, and Blair, Sayed Magid (Iraq) formed the United Cement Corp to plan and build a 2.9 million tpa plant at Bazian near Haysai. Construction of this plant began in the second quarter of 2005 and the first line was completed in autumn of 2007. The second line is anticipated to take two years to commissioning. It was reported also that a new raw material online analysis system will be installed in front of the pre-blending bed for the analysis and monitoring of the blend<sup>32</sup>. It is noted that these raw material monitoring systems are being installed in most new plant, and in upgrading old plant in the Middle East. On completion of this plant the OCI Cement Group will have an annual production capacity in Northern Iraq of 5.2 million tonnes. The plant project is estimated to have cost 500 million dollars, with the partners taking loans of 200 million. The project also included a 73 MW power unit.

The project cost is estimated at USD 367.7 million<sup>33</sup> with an IFC investment of USD 210.3 million. Notably the plant will be powered by a 40 MW HFO fired generating plant, which is outside the scope of the project as identified by the IFC, and thus will have to be financed by the consortium.

In August of 2007 it was reported that the SJ Co will build a cement plant in the Sumel district Dohuk with a capacity of 2,000,000 tonnes per year at an investment cost of 328 million USD..

### 4.4 PRODUCTION VOLUME

From the foregoing, the total replaced and new production volume for Iraq is thus planned at some 41 million tonnes per annum, as shown in table 4.4.

Table 4.4 Total new and refurbished cement production.

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

<sup>31</sup> Orascom construction Industries Annual Report 2006

<sup>32</sup> World Cement July 2007, Annual review; Africa & Middle East

<sup>33</sup> IFC Summary of Project Information. Project number 24307, and (project) Environmental Review Summary

## **5.0 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.