

Private Infrastructure Investment Opportunities in Islamic Countries

Kumi Harischandra
Ryan J. Orr

Working Paper #54

April 2009



| Collaboratory for Research on Global Projects

The Collaboratory for Research on Global Projects at Stanford University is a multidisciplinary center that supports research, education and industry outreach to improve the sustainability of large infrastructure investment projects that involve participants from multiple institutional backgrounds. Its studies have examined public-private partnerships, infrastructure investment funds, stakeholder mapping and engagement strategies, comparative forms of project governance, and social, political, and institutional risk management.

The Collaboratory, established in September 2002, also supports a global network of scholars and practitioners—based on five continents—with expertise in a broad range of academic disciplines and in the power, transportation, water, telecommunications and natural resource sectors.

Collaboratory for Research on Global Projects
Yang & Yamazaki Energy & Environment (Y2E2) Bldg
473 Via Ortega, Suite 242
Stanford, CA 94305-4020

<http://crgp.stanford.edu>

About the Authors

Kumi Harischandra is a graduate student in the International Policy Studies Program at Stanford University. She was formerly a Research Economist in the Fraser Institute's Fiscal Studies Department. She holds a Bachelor of Social Sciences (Honors) degree in Economics from the National University of Singapore and a Master of Arts degree in Economics from Simon Fraser University. Her research has examined subjects such as taxation, government spending, foreign investment, poverty, charitable giving and business attitudes. Her recent co-publications at Fraser Institute include *The Impact and Cost of Taxation in Canada* and *Canadian Government Debt 2008: A Guide to the Indebtedness of Canada and the Provinces*.

Ryan J. Orr is executive director at the Collaboratory for Research on Global Projects and teaches Global Project Finance to engineering, law school and MBA students. He also serves on the editorial review board of the *Journal of Structured Finance, Public Works Management and Policy*, and the *Journal of International Business Studies*. Dr. Orr has recently been involved in strategic planning for a new city in northern India, policy formation for a program of infrastructure renewal in California, and portfolio construction for a globally diversified infrastructure fund of funds. Dr. Orr holds a PhD in Engineering from Stanford University and was advised by Nobel Laureate, Economics, Douglass North.

ABSTRACT

This study ranks the 56 member countries of the Islamic Development Bank on the basis of their attractiveness for private infrastructure investment. The study uses a 14 component index to compare and contrast countries on factors generally deemed important by private infrastructure investment funds. In addition to the quantitative ranking, the five top-ranked countries – UAE, Turkey, Qatar, Malaysia, and Saudi Arabia – are analyzed in greater detail for sector-level policies, trends, and opportunities. The results have implications for investors seeking infrastructure exposure in top-tier Islamic countries and for policy makers whose goal is to establish an institutional and business environment to attract capital.

INTRODUCTION¹

The purpose of the study is to identify, rank, and analyze the relative attractiveness of the member countries of the Islamic Development Bank (IDB) from the perspective of private infrastructure investors who are seeking to deploy capital to desirable country destinations.

The approach taken is to combine several factors for each country into a multi-dimensional index—including variables capturing measures of financial health, market size, business environment, government stability, infrastructure quality, and prior private investment for each country. These are the kinds of factors that infrastructure fund managers typically make reference to when specifying their country selection strategy and geographical allocation limits. After the quantitative ranking and discussion of the results, we review the top-ranked countries in greater detail with an emphasis on key sector-level trends and opportunities based on information gleaned from websites, local press, and trade magazines.

The results will be of interest to infrastructure investors and policy makers in the Islamic region whose anecdotal and experiential knowledge may be strengthened by a more systematic and structured approach to analysis. Policy makers in the region will benefit by seeing how investors view the prospects. International investors will gain information about the Islamic country opportunity set and potential points of high-value entry.

BUILDING A COMPOSITE INDEX

Although all 56 IDB member countries were initially considered, only 22 countries were selected for inclusion in the study sample. The remaining 34 countries were excluded if: (1) they had no prior track record of private participation in infrastructure investments; (2) they scored poorly on the Human Development Index (less than 0.5)², and; (3) GDP per capita was less than \$1000.³⁴

For the ranking, we started out by identifying key country-level criteria of interest to private infrastructure investors. We did this by reviewing country selection strategies of more than twenty unlisted infrastructure funds and by having conversations with infrastructure investment professionals at pension and sovereign funds about their geographical allocations to the infrastructure asset class. After identifying recurrent themes in terms of the desirability and importance of host country factors, we set out to find representative data sets covering the full set of IDB member countries. The individual factors were combined into a composite index using the Z-score method to permit a multifaceted ranking.⁵

¹ We thank Abu Bakar Chowdhury of Emerging Market Partnership (Bahrain) for insightful comments on earlier drafts of this article.

² The Human Development Index (HDI) is a composite index that measures a country's average achievement in three basic aspects of human development: health, education and standard of living (<http://hdr.undp.org/en/statistics/>).

³ Amounts presented in this report are in U.S. dollars unless otherwise specified.

⁴ Exceptions to this rule were Sudan, Bangladesh, Pakistan and Indonesia, which were included due to long-standing and substantial private participation in infrastructure investments.

⁵ See Annex 1 for a description of the Z-score method.

Exhibit 1 presents the 14 selection criteria and the corresponding data used.

Exhibit 1: Country selection criteria for private infrastructure investment	
Selection criteria	Data Description
1. Population	Total population in 2007
2. Population growth	Ten-year annual average growth rate for 1998-2007
3. GDP	GDP in 2007 (constant 2000 U.S. dollars)
4. GDP per capita	GDP per capita in 2007 (in constant 2000 U.S. dollars)
5. GDP growth	Ten-year annual average real growth rate for 1998-2007
6. Total private sector infrastructure investment	Value of infrastructure projects with private participation aggregated across telecommunications, energy, transport, water and sanitation sectors for 2000-2004
7. Net FDI	Three-year average net FDI flows for 2004-2006 in current U.S. dollars
8. Total approved financing from IDB	Total value of infrastructure projects funded by the IDB for the period 1976-2007
9. Quality of overall infrastructure index	From the Global Competitiveness Report 2008, on a scale of 1 to 7, with 7 being the highest score
10. Government stability	From Political Risk Services, on a scale of 0 to 12, with 12 being the highest score
11. Ease of doing business rank	A World Bank ranking of countries based on the ease of doing business on a scale of 1-181, with 1 being the highest rank
12. Public debt to GDP	Three-year average total debt (both local and foreign currency) for 2005-2007 owed by government to domestic residents, foreign nationals and multilateral institutions such as the IMF, expressed as a percentage of GDP
13. Current account balance to GDP	Three-year average current account balance for 2005-2007 as a percentage of GDP
14. Foreign exchange reserves to GDP	Three-year average total foreign reserves (excluding gold, including foreign exchange, reserve position with the IMF and Special Drawing Rights at end-period) for 2005-2007 as a percentage of GDP

See appendix for data sources

To account for the relative importance of drivers in determining a country's attractiveness, the drivers were weighted equally, with the exception of economic growth, total private sector infrastructure investment, and ease of doing business rank, which were weighted more heavily because they were deemed to be of greater significance to potential investors.

Our rationales for selecting these 14 factors are discussed below.

Total population and population growth indicate overall market size and the pace of growth and therefore roughly correspond to the demand for infrastructure services. Population growth, combined with rapid urbanization rates in and around major cities, creates demands for new and better transportation infrastructure to ease problems of congestion. IDB

member country populations grew at an average annual rate of 2.0 % over the period 1998 to 2007, higher than the growth in world population for the same period (1%)⁶.

Real GDP (a measure of economic size) and economic growth also offer proxies for infrastructure demand. Rising levels of wealth, consumption, and business activity generate greater volumes of commuters, truckers, business travelers and tourists, placing intense demand on physical infrastructure, in turn putting pressure on national governments to keep up with fast-changing needs. In such situations, private sector involvement to bridge the infrastructure gap becomes more appealing to governments.⁷ Our sample of IDB members includes some of the fastest growing countries in the world, with annual average growth rates at 5% over the past decade.

Global capital movements provide critical information on the investment outlook of countries. Net FDI flows indicate the relative attractiveness of countries to foreign investors and implicitly signal the strength of a country's economic and political fundamentals. All 22 IDB countries had net FDI inflows over the period 2004 to 2006, averaging around \$3.3 billion for the 3-year period. Turkey, Saudi Arabia and UAE attracted the heaviest inflow of FDI, averaging over \$10 billion for the same period.

In addition to FDI inflows, net foreign trading positions and the extent of foreign currency reserves indicate the availability of funds to meet investments needs and to make good on government-provided guarantees and capacity payments. This is particularly relevant to major resource exporting countries such as Saudi Arabia that use commodity price windfalls to finance infrastructure projects and weaker countries such as Pakistan that may become fiscally strained during periods of global and regional recession. The majority of countries in our sample registered current account surpluses over the three-year period from 2005 to 2007 with strong foreign exchange reserve positions among some of the major oil exporters such as UAE and Libya.

Perhaps one of the most straightforward indicators of the attractiveness of a country environment is the past level of private involvement in infrastructure projects. Greater private involvement signals the presence of attractive investment opportunities in specific sectors and periods of fair and equitable treatment by government ceding authorities and regulators. In our sample, private investment data was available for 17 countries for the period 1995 to 2005 of which 16 countries showed growth in private participation between the periods 1995-1999 and 2000-2005.

Another relevant indicator of attractiveness among Islamic countries is the prior commitment of Islamic Development Bank (IDB) financing for infrastructure projects which shows regional confidence and country-level capacity. The Bank provides interest-free financing to member countries for projects in both public and private sectors such as roads, canals, dams, schools, hospitals, housing, and rural development. Over the last 30 years, IDB has approved over \$43 billion in total financing for countries in the sample, with Pakistan, Bangladesh, and Turkey being the largest beneficiaries.

⁶ WDI indicators online.

⁷ For a similar analysis of Asian markets, see: Lowik, L., P. Hobbs and H. Stratton (2007). "Asian Infrastructure Markets", RREEF Research.

Arguably, one of the most important determinants of private sector involvement, especially in long-term projects, is a country's regulatory framework. Simpler and more transparent regulations and stronger protection of property rights are more attractive. The World Bank's *Ease of doing business rank* assesses countries based on whether their regulatory environments are conducive to business. The index averages ten sub-indicators, each capturing an aspect of doing business in a country: starting a business; protecting investors; obtaining construction permits; paying taxes, employing workers; trading across borders; registering property; enforcing contracts; obtaining credit, and; closing a business.⁸ In our sample of countries, Saudi Arabia, Bahrain and Malaysia had the highest rankings.

In addition to the regulatory framework, government stability is another key factor affecting the investment decisions of private investors. Unstable regimes impact the economic fundamentals of a country and compound the business risks of private investors. The Political Risk Services (PRS) Group's rating of government stability measures a government's ability to stay in office and carry out declared programs.⁹ The rating includes 3 subcomponents: government unity, legislative strength, and popular support. On average, the countries in our sample scored 9.5 on a scale of 0 to 12, with 12 indicating very low risk.

Another important factor related to the health of government is the level of public debt relative to GDP. Highly indebted countries face risks from high debt repayment costs and loss of value of their domestic currencies when large proportions of debts are owed to foreign lenders. The cost of government debt ultimately falls on taxpayers either through tax increases or the channeling away of government revenues towards debt repayment rather than productive investment. On average, the public debt to GDP ratio for our sample stood at nearly 46% for the period 2005 to 2007 and ranged from 4% (Oman) to 176% (Lebanon).

Finally, the availability of extensive and efficient infrastructure is an essential driver of competitiveness and an important consideration to private investors. Well-developed infrastructure provides opportunities for investors to purchase existing operating assets and indicates local capacity to construct new assets to high standards. The Global Competitiveness Report 2008 includes a measure of overall infrastructure quality for countries, which is a combination of scores for quality of roads, railroads, ports, air transport, electricity supply, telephone infrastructure, and available seat kilometers. The IDB countries in our sample scored an average of 3.9 on overall infrastructure quality on a scale of 1 to 7 (1 being "underdeveloped" and 7 being "extensive and efficient by international standards").

DATA MATRIX & COUNTRY RANKING

This section ranks IDB member countries based on their relative attractiveness for private sector infrastructure investment. Exhibit 2 displays a data matrix with countries sorted in rank order according to the Z-score composite index.

United Arab Emirates (UAE) tops the ranking with a Z-score index of 12.1, followed by Turkey (10.0) and Qatar (9.8) in second and third place respectively. Malaysia (9.2) and Saudi Arabia (8.8) complete the list of 5 top countries.

⁸ For further details see www.doingbusiness.org/EconomyRankings/

⁹ Visit www.prsgroup.com for further details on political risk ratings.

Exhibit 2: Relative attractiveness of Islamic countries for private infrastructure investment

Country	Overall		Selection Criteria													
	Ranking	Z-score index	Population 2007 (millions)	Population growth 1998-07 (%)	Real GDP 2007 (\$ millions)	Real GDP per head (\$)	Real GDP growth 1998-07 (%)	Public debt to GDP 3-year average 2005-07 (%)	Current account balance to GDP 3-year average 2005-07 (%)	FOREX to GDP 3-year average 2005-07 (%)	Total private infrastructure investment 2000-05 (millions)	Net FDI year average 2004-06 (\$ millions)	3- Total approved financing from IDB 1976-08 (\$ millions)	Quality of overall infrastructure 2008	Government stability 2007	Ease of doing business rank 2008
UAE	1	12.1	4.4	5.0	121,782	27,901	6.7	23.6	20.2	30.4	0	9,763	581	6.0	11.0	46
Turkey	2	10.0	73.9	1.4	372,744	5,045	4.1	45.2	-5.4	7.5	23,029	10,935	3,786	3.5	9.1	59
Qatar	3	9.8	0.8	4.1	37,634	45,013	9.4	13.5	16.2	9.4	0	1,379	282	4.7	11.5	37
Malaysia	4	9.2	26.5	2.0	125,187	4,715	4.1	42.5	15.4	25.4	21,173	4,883	1,145	5.6	9.5	20
Saudi Arabia	5	8.8	24.2	2.2	242,047	10,004	3.3	33.3	27.5	5.6	8,779	10,777	3,203	4.7	10.0	16
Kuwait	6	4.0	2.7	3.0	64,768	24,322	5.9	10.6	45.2	10.4	0	128	1,102	4.6	9.4	52
Pakistan	7	0.4	162.4	2.3	107,255	660	4.9	52.0	-4.8	3.2	6,242	2,531	6,151	3.1	6.7	77
Bahrain	8	-0.1	0.8	2.1	12,054	16,013	5.2	31.0	13.8	12.5	0	1,610	1,098	5.0	8.0	18
Libya	9	-0.6	6.2	2.0	45,401	7,375	3.7	5.7	40.2	67.3	0	1,043	676	2.4	10.5	120
Oman	10	-0.8	2.6	1.3	27,256	10,485	4.0	4.0	11.5	10.9	2,885	694	597	5.1	11.0	57
Kazakhstan	11	-1.9	15.5	0.1	35,981	2,324	8.2	10.0	-3.8	8.6	1,478	4,092	314	3.1	10.7	70
Bangladesh	12	-2.0	158.6	1.9	69,684	439	5.6	39.4	1.0	2.1	2,029	592	5,790	2.2	8.7	110
Indonesia	13	-2.0	225.6	1.3	233,202	1,034	2.8	39.4	1.9	5.5	8,111	5,263	1,574	2.8	7.5	129
Algeria	14	-2.1	33.9	1.5	73,013	2,157	4.0	17.7	22.1	32.6	4,895	1,253	2,495	3.1	9.4	132
Egypt	15	-2.2	75.5	1.8	136,936	1,815	4.8	115.4	1.6	6.8	4,860	5,859	2,453	3.9	9.8	114
Jordan	16	-3.1	5.7	2.5	12,856	2,248	5.4	73.5	-14.9	25.1	1,758	1,768	1,567	4.9	10.5	101
Iran	17	-3.3	71.0	1.6	151,455	2,133	5.1	24.2	10.0	8.7	1,345	514	3,309	3.9	8.3	142
Tunisia	18	-3.4	10.2	1.1	27,118	2,646	5.0	54.7	-1.9	9.0	781	1,578	1,523	5.0	11.0	73
Morocco	19	-3.5	30.9	1.2	52,016	1,686	4.5	67.7	1.1	16.9	7,043	2,305	3,015	3.5	10.1	128
Syria	20	-7.5	19.9	2.6	26,624	1,339	3.8	32.0	1.6	6.6	583	458	673	3.5	10.0	137
Sudan	21	-8.9	38.6	2.2	20,314	527	6.7	97.9	-9.7	2.3	621	2,452	872	2.0	9.7	147
Lebanon	22	-12.8	4.1	1.2	20,938	5,111	2.6	175.7	-8.8	32.7	291	2,513	935	3.9	6.0	99
Max		12.1	225.6	5.0	372,744	45,013	9.4	175.7	45.2	67.3	23,029	10,935	6,151	6.0	11.5	147
Min		-12.8	0.8	0.1	12,054	439	2.6	4.0	-14.9	2.1	0	128	282	2.0	6.0	16
Avg		0.0	45.2	2.0	82,146	7,954	4.9	45.9	8.2	15.4	4,359	3,290	1,961	3.9	9.5	86

Source: Economist Intelligence Unit Data (2008); IDB online data (2008); Statistical Monograph No. 28: Key Socio-Economic Statistics on IDB Member Countries; WDI (2008), IDB website (www.isdb.org), Global Competitiveness Report (2008); S&P online sovereign ratings; Bhatia (2002). Calculation by authors.

The five lowest ranked countries are Lebanon (-12.8), Sudan (-8.9), Syria (-7.5), Morocco (-3.3), and Tunisia (-3.0).

UAE comes out on top given the highest population growth rate in the sample (5%), highest score on the quality of overall infrastructure (6.0), second highest GDP per capita (\$27,901), high government stability (11.0), and high rate of economic growth (6.7%). This is despite having a tiny population and relatively small real GDP. Turkey comes a close second based on having the highest level of real GDP (\$372.7 billion), net FDI inflows (\$11 billion), and private infrastructure investments from 2000 to 2005 (\$23 billion).

INTERPRETING THE RESULTS

In the top five countries, there are two clusters with relatively similar traits. The first cluster includes smaller countries in terms of total population and GDP (Qatar and UAE) but that score higher on economic growth and population growth. They also score higher on GDP per capita, being two of the wealthiest countries in the sample, and on government stability – a critical factor for long-term private investment. Both are open to private investment, have major construction booms underway, and have programs in place at the highest levels of government to promote themselves as destinations for FDI. Qatar's economy is driven by the gas industry whereas UAE's economy is edging away from its dependence on hydrocarbons and more towards manufacturing, services, and tourism.

The other cluster of countries in the top five (Turkey, Saudi Arabia and Malaysia) tend to be relatively large, both economically and demographically, with a track record of private presence in infrastructure investment. Together these three countries accounted for 55% of the \$95.9 billion in private infrastructure dollars invested across the 22 countries. They also have attracted a healthy share of IDB financing in the past and have had somewhat higher levels of FDI on average compared to the smaller, faster-growing economies.

These differences largely persist when we examine the remaining countries in the top 10. The smaller Arab economies (Kuwait, Bahrain and Oman) were wealthier and grew faster economically than the larger countries (e.g. Pakistan). However, the latter clearly had an advantage in terms of demographic and economic size, private infrastructure investments and IDB financing. Interestingly, Libya appears among the top 10 due to a strong current account position, large stock of foreign reserves and low public debt.

The bottom 5 countries (Lebanon, Sudan, Syria, Morocco, and Tunisia) scored below average in most areas deemed important for private infrastructure investment.

There are four countries that perhaps deserve more credit than the rankings show.

Ranking in 10th place, Oman is held back by a small population (2.6 million), sluggish population growth (1.3%) and low GDP (\$27 billion). One Middle East investor who reviewed an earlier draft of the study thought Oman would be rated higher because, in his own words,

It has a stable government, low public debt, and good infrastructure already, it was one of the first countries to undertake a privately financed infrastructure project and it has a long history of BOT

projects attracting international bidders, and it has a well defined legal and regulatory framework.

At 18th place, Tunisia is perhaps also worthy of a higher ranking – the data show that it has good quality infrastructure, high government stability, and an above average ease of doing business rank; it has been a recipient of FDI, Islamic financing, and private infrastructure investment in moderate quantities; and yet it is held back by low real GDP, GDP per capita, and a negative current account balance.

Also, Kazakhstan and Indonesia, in 11th and 13th spot respectively, have made steady headway in enacting public policy reforms that may not yet be reflected in the data. Indonesia has made steady progress since the 1998 collapse of the three-decade long Suharto regime and Kazakhstan has introduced major public policy reforms to improve its legal and regulatory environment, strengthen its domestic financial institutions, and attract international investors to private infrastructure.

Countries where the rank assigned may be over-optimistic include Libya and Pakistan. Both countries face political uncertainty that the data does not reflect.

It is important to note that the country rankings are somewhat sensitive to the methodology used, especially the choice ranking method. Other ranking methods such as the ordinal rank method¹⁰ and the linear scaling method¹¹ – while preserving the composition of the top-5 countries – yield slight differences in the relative standing of the top-5. Similarly, an unweighted index results in slight changes in ranking although general patterns are preserved.

SECTOR-LEVEL ANALYSIS OF TOP RANKED COUNTRIES

In the final section of the article, we highlight current trends, activities, projects, and policy priorities in the five top-ranked infrastructure markets.

1. United Arab Emirates

UAE has been boosting its infrastructure spending with public-private partnerships becoming a major component of infrastructure investment. The governments of the different emirates are opening up sectors to private investment for the first time in an effort to draw expertise and funds to respond to rising demand. UAE is home to over 6000 construction companies and tops the world in construction per capita spending.¹² In the past, oil windfalls have allowed diversification into other sectors with Abu Dhabi and Dubai leading the recent construction boom.¹³ According to news reports, UAE is planning infrastructure projects worth close to \$500 billion in the next five to seven years.¹⁴ However, UAE's construction industry has been affected by the global economic crisis and funding for costly projects are decreasing as are oil windfalls due to the decline in global oil prices. UAE

¹⁰ The ordinal rank method is a technique where each variable is ranked on an ordinal scale (e.g. 1 to 22). The ranked variables are then linearly combined to form a composite index.

¹¹ The linear scaling method is used to standardize the range of a variable. The linearly scaled variables take values from 0 to 1 and can be combined into a composite index.

¹² UAE Infrastructure Report Q1 2009, BMI

¹³ UAE Country Profile 2008, Economist Intelligence Unit

¹⁴ "More than \$500 billion worth of projects are underway in UAE", *zawya.com* (July 2007)

also faces risks of labor unrest in several Emirates. On the upside, long-term fundamentals of the country remain strong and are likely to support infrastructure growth. Raw material prices are also expected to decline and may reduce long terms costs for developers and contractors.¹⁵

Power/Utilities

UAE holds 10% of the world's oil reserves, with production estimated at 2.95 million barrels per day in 2007.¹⁶ The majority of oil is exported with domestic consumption at only 1.4% of total production. Among the more recent energy investments, China National Petroleum Corporation was awarded a US\$3.9 billion to build a major oil pipeline in the UAE from the Habshan oil field in Abu Dhabi to Fujairah port.¹⁷

Electricity is based on natural gas and virtually all new power generation is expected to be gas-fired. However, to meet rapidly rising demand, the emirate of Ajman announced plans to invest in the first coal-fired power plant in the Gulf.¹⁸ UAE also plans to adopt nuclear power for electricity generation and is the first Gulf State to agree to a nuclear co-operation accord with France.¹⁹ More recently, UAE signed an agreement for co-operation in nuclear power generation with Japan's Ministry of Economy and Trade.²⁰ Since 2005, the Gulf Co-operation Council (GCC) countries²¹ have also started construction on an integrated power grid in the region to support economic development. The project estimated at US\$ 3 billion is set to be completed by 2010.²²

UAE's water and electricity authorities are currently raising capital to fund infrastructure expansion to meet rising demand. For instance, Dubai Electricity and Water Authority (DEWA) is planning to invest around \$16 billion in generation, distribution and transmission projects in the next five years.²³ In May 2008, Abu Dhabi Electricity and Water Authority (ADEWA) announced a strategic plan to build one of the world's largest sewage network tunnel systems by 2012 with an estimated cost of US\$1.09 billion.²⁴ Dubai and Abu Dhabi have also announced plans to construct new wastewater treatment plants and related infrastructure. In an effort to go green, construction of the world's first zero-carbon emission city at a cost \$22 billion is also underway in Abu Dhabi.²⁵

In a larger effort to privatize utilities, the government has also reportedly approved plans to sell electricity and water plants owned by ADEWA.²⁶ In addition, partial divestment of Abu

¹⁵ "UAE: Projects costs fall as land, raw material prices fall", www.zawya.com (March 2009)

¹⁶ BP Statistical Review of World Energy 2008

¹⁷ "China's CNPC to build USD 3.9 billion pipeline in UAE", [zawya.com](http://www.zawya.com) (December 2008).

¹⁸ "Malaysia's MMC to build coal-fired power plant in UAE", Reuters (July 2008)

¹⁹ "UAE and France sign landmark nuclear cooperation agreement", Gulfnews (January 2008)

²⁰ "UAE to cooperate on nuclear with Japan", World Nuclear News (January 2009)

²¹ The GCC is a regional common market established in view of the special relations (political, cultural, geographic proximity, adoption of free trade economic principles) that exist between its members. GCC member countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE.

²² "GCC power link to be fully operated by 2010", Al Riyadh Daily (March 2009)

²³ "DEWA needs \$16 billion in next five years", Gulf News (November 2007)

²⁴ UAE Infrastructure Report Q1 2009, BMI

²⁵ "Abu Dhabi aims to build first carbon-neutral city", NPR (April 2009)

²⁶ See http://www.uae.gov.ae/Government/w_e.htm (Accessed on April 19, 2009)

Dhabi's integrated water and power plants (IWPPs) has given private investors the opportunity to enter the utilities market.

Seaports

According to *Lloyd's List*, Jebel Ali Port and Port Rashid located in Dubai were ranked among the world's top container ports in 2008. Construction is underway at Jebel Ali to add further capacity by 2009. High investor interest has accelerated construction of the new Khalifa Port and industrial zone, expected to be completed ahead of schedule in 2028.²⁷ According to local press, Abu Dhabi intends to invite more bids for the remaining four stages of the port development plan.

Airports

UAE has eight international airports and efforts are underway to construct Al Maktoum, the world's largest airport, with an estimated cost of \$10 billion to be completed by 2015.²⁸ The airport will eventually have an annual capacity of about 120 million passengers and 12 million tons of cargo. A new international airport is also planned for Ajman²⁹ and \$254 million expansion of Abu Dhabi International airport is currently underway.³⁰

Road

UAE currently has 1,088 km of road network and Business Monitor International forecasts that road haulage will grow at 5.9% per year (2008-2011). Car ownership is also forecast to rise in the country. Interestingly, the share of roads for freight transport is expected to decline between 2006 and 2011 due to greater investments channeled towards ports and airports in efforts to decongest the road system. The Road Transport Authority announced that the value of road projects currently underway in Dubai is approximately \$231 million.³¹ The works will expand the emirate's estimated road length of 10,000 km and will add to the continued development of Dubai's business and tourism sectors.

Dubai is also on the verge of entering the last construction phase of the Parallel Roads project costing nearly \$490 million. Abu Dhabi is also constructing a 10-lane Shahama-Saadiyat highway with an estimated cost of US\$1.48 billion and the project is expected to be completed on schedule.³² In 2008, the emirate Ras Al Khaimah announced plans for a road development project to upgrade the network throughout the emirate.³³ The project is estimated to cost around \$600 million with funding from the emirate and the federal government over a four to five year period.

Rail

Dubai was the first emirate to introduce rail as a means of public transport and has become a model for neighboring emirates. The \$4.22 billion Dubai Metro, currently under

²⁷ "UAE project to develop Khalifa port and industrial zone", Port Engineering News (February 2009)

²⁸ "The airport with an X factor", Market Watch (June 2008)

²⁹ "Ajman airport could handle 1 million passengers", Gulfnews (December 2007)

³⁰ See http://www.adnec.ae/abu-dhabi/developments/abu_dhabi_airport_expansion.php (Accessed on April 19, 2009)

³¹ UAE Infrastructure Report Q3 2008, BMI

³² "Key highway project right on track", The National (April 2009)

³³ "RAK to upgrade road infrastructure with an investment of Dhs 3 billion", ameinfo.com (January 2008)

construction, has already scheduled test runs.³⁴ In April 2008, the RTA awarded a consortium of European companies the contract for phase one of the Al Safouh tramline in Dubai – the first in the Gulf – scheduled to be operational by 2011.³⁵ The emirate of Sharjah will begin construction of a rail network in 2015, according to an official statement in December 2007. The network will include a metro line, tram networks and monorails, which will eventually be linked to Dubai's system.

The RTA has plans to integrate a water transport network into its expanding transport infrastructure. This is part of a wider undertaking called the Marine Transport Strategic Plan 2020, which seeks to introduce the use of water transport networks for the first time in the Arab Peninsula by 2020.³⁶ The network will cover 21% of Dubai's water frontage around the heavily congested Central Business district with a cost estimate of \$500 million.

Telecommunications

Telecommunications in the UAE entered a new phase in 2006 with the release of the General Policy for the Telecommunication Sector (GTP) which aimed to liberalize the market. Emirates Telecommunications Corporation (Etisalat), formerly the sole telecom operator, has made the UAE one of the most wired nations in the region.³⁷ More recently, UAE's Telecommunications Regulatory Authority (TRA) has ruled out the possibility of allowing a foreign-owned operator to enter the country's saturated mobile market. It will instead remain in the hands of Etisalat and Du (the second largest operator) and therefore the state. Etisalat is preparing to extend its international footprint both through further investments in Africa, Iraq, and Gulf States such as Qatar, and Oman.³⁸

Key sources of dealflow

The most active construction, engineering and development companies in UAE are Ducto Balfour Beatty, Al Habtoor Leighton Group, Veolia Water, Emaar, Nakheel, and Mubadala Development.

2. Turkey

Turkey's strategic location in Europe and Central Asia has motivated the government to modernize infrastructure with private participation. The government recently announced a TRY 26.8 billion investment in South Eastern Anatolia between 2008 and 2012, equaling nearly 78% of total gross regional product in 2008.³⁹ Infrastructure, construction, and agriculture sectors in particular are expected to boom as a result, helping to narrow the relative wealth gap between the region and the more affluent western parts of the country. In addition, the prospective accession of the country into the European Union (EU) has seen FDI flows increase substantially since 2005.

³⁴ "Metro train begins test run from Jebel Ali station", Gulf News (May 2008)

³⁵ See <http://www.railway-technology.com/projects/dubailightrail/> (Accessed on Nov 17, 2008)

³⁶ "An alternative way of commuting", Gulf News (October 2007)

³⁷ UAE Interact.com Infrastructure report

³⁸ UAE Telecommunications Report 2009, BMI.

³⁹ Turkey Infrastructure Report Q1 2009, BMI.

In December 2007, a new law passed that broadens Turkey's build-operate-transfer (BOT) model⁴⁰ to include a wider range of projects, thereby aiming to increase the pool of foreign companies eligible to enter construction projects. The model can now be applied to bus and train stations, logistics centers, ports, customs gates and integrated industrial facilities. Also according to press reports, Turkey's Capital Market Board (CMB)⁴¹ has considered establishing infrastructure-focused trust companies or investment funds to enter a market worth an estimated \$300 billion annually.⁴² Also, Turkey's Constitutional Court amended a law governing foreign ownership of real estate in July 2008⁴³. The amending law allows foreigners to acquire real estate within the boundaries of a municipality provided that principals of international reciprocity and certain legal restrictions are observed. More recently, the government is reviewing reciprocity agreements to make it easier for the citizens of Gulf States and Turkic republics to buy real estate in Turkey.⁴⁴

Power/Utilities

Turkey plans to build three nuclear power plants with a capacity of about 4,000 megawatts, as part of efforts to reduce a costly dependence on energy imports.⁴⁵ The government called for tenders in September 2008 for the first nuclear power plant in the country and is expected to call for tenders for the second plant. Turkey is also planning to divest parts of the country's power grid system. International utilities companies are showing interest for long-term commitments in the market. For instance, the newly merged GDF Suez won a tender for the gas distribution rights of Izgaz, Turkey's third-largest distribution company in August.⁴⁶ In energy, the construction of the Baku-Tbilisi-Ceyhan pipelines will make Turkey a major transit point between the Caspian and Middle East and Europe.⁴⁷

Seaports

Efforts to privatize Turkey's ports have attracted capital to expand port facilities and increase throughput. BMI estimates that by 2012, sea freight will be the largest sub-sector, accounting for approximately 50% of all shipments. Out of the 20 ports originally controlled by the state, five now remain under state control. Among recent investments, Delta Petroleum will be expanding the oil terminal of Ceyhan at an estimated cost of \$100 million.⁴⁸ The terminal is expected to become one of the largest independent oil storage terminals in the Mediterranean. In May 2008, Ceynak Logistics and Celebi Joint Venture Group won tenders to privatize the Black Sea port and the port of Bandirma respectively.⁴⁹ However, earlier this year, the State Council overruled the decision of the Supreme Privatization Board to privatize the port of Izmir amidst opposition by unions and lobbyists.⁵⁰

⁴⁰ The BOT model is a procedure for financing and implementing public projects through the involvement of the private sector.

⁴¹ CMB is the regulatory and supervisory authority in charge of the securities markets.

⁴² Turkey Infrastructure Report Q1 2009, BMI.

⁴³ "The Law Office: new law restricts real estate for foreigners", Turkish Daily News (September 2008)

⁴⁴ "Investing in Turkish property made easy", Turkish Daily News (November 2008)

⁴⁵ "Turkey to change nuclear energy tender law", Thompson Financial News (November 2008)

⁴⁶ "GDF wins tender for Turkey's Izgaz", Reuters (August 2008)

⁴⁷ "Startup of the Baku-Tbilisi-Ceyhan pipeline: Turkey's energy role", Policy Watch #998, The Washington Institute for Near East Policy (May 2005)

⁴⁸ Turkey Infrastructure Report Q1 2009, BMI

⁴⁹ "Celebi and Ceynak buy two ports," Turkish Maritime (May 2008)

⁵⁰ "Court suspends sale of port rights", Turkish Daily News (February 2008)

Airports

There are currently 62 airports in Turkey among which 15 are being used for both domestic and international flights. Public private partnerships and the Build-Operate-Transfer (BOT) models⁵¹ are popular means of developing airport capacity in Turkey. Among recent projects, GMR Infrastructure, an Indian consortium, has spearheaded the Sabiha Goken International airport BOT project to build a new international terminal at an estimated cost of \$554.8 million.⁵² Investments totaling nearly \$182 million are planned for 2009 including construction of 3 new airports in Istanbul, Kutahya-Afyon-Usak, and Cukurova. The publically listed company TAV is one of the larger airport operators and is backed by a consortium of investors including Goldman Sachs.

Road

Currently, the road system in Turkey handles the majority of passenger and freight transport. Investments into roads have made Turkey's transport system one of the country's prized assets, and privatization is expected to bring significant revenues for the state. Currently, five foreign companies are competing to secure the privatization of 8 highways and the 2 Bosphorus bridges.⁵³ Turkey is also constructing one of the world's most sophisticated transport projects, the Marmaray tunnels under the Bosphorus. Plans are also underway to construct a bridge over the Canakkale Strait as BOT project with an estimated cost of TRY 600 million.⁵⁴

Rail

The previously underinvested railway sector in Turkey, is seeing some new capital investments. Rail freight has witnessed a steady decline and only accounted for 2% of total freight carried in 2007. The European Investment Bank has reportedly agreed to a \$1 billion loan to extend Istanbul's metro.⁵⁵ The \$350 million Baku-Tbilisi-Kars transnational rail project is also underway to link up segments of railroads in Georgia, Azerbaijan and Turkey.⁵⁶ There are plans to build the country's first high-speed rail line linking major cities in Turkey to be fully operational by 2013.

Telecommunications

Further expansion in the Turkish mobile market is expected in 2009 due to the introduction of mobile number portability in late 2008, with Turkcell (the market leader), Vodafone and Avea leading the way.⁵⁷ A cut in the rate of the private communications tax in November 2008 is also expected to increase the competitiveness of the mobile and internet markets.

⁵¹ BOT is a form of project financing, where a private company receives a concession from the public or private sector to finance, design, construct, and operate a facility state in the contract.

⁵² Turkey Infrastructure Report Q1 2009, BMI

⁵³ "Turk Minister defends Bosphorus bridge privatizations", Hurriyet Daily News (May 2008)

⁵⁴ "Bridge on the Canakkale Strait", Turkish Maritime (May 2007)

⁵⁵ "Turkey: Istanbul metro to benefit from EIB loan", European Investment Bank Press Release (June 2008)

⁵⁶ "The Baku-Tbilisi-Kars Railway: The First Step in a Long Process", Power and Interest News Report (December 2007)

⁵⁷ Turkey Telecommunications Report Q1 2009, BMI

Key sources of dealflow

The most active construction, engineering and development companies in Turkey are Gama Holdings and Enka.

5. Qatar

As elsewhere, the business environment in Qatar will be less favorable to investors and project delays are expected as financing becomes more difficult to secure. There are also concerns of a real estate correction due to the credit crisis which could cause developers, banks and investors to sustain heavy losses. Real estate prices have fallen by more than 50% in the Doha suburbs while land prices within the city limits have fallen by 30%.⁵⁸ However the country's overall credit rating remains strong and budget and trade surpluses will help buoy the country's investment base.

Despite the slowdown, Qatar's long-term infrastructure projects include the Qatar Science and Technology Park - a research and development hub and Qatar's first free trade zone. Over \$300 million has been invested to date and tenants include ExxonMobil, Shell, Total, Rolls Royce, EADS and Microsoft.⁵⁹ Other projects include the \$2.5 billion man-made Pearl-Qatar island project, Barwa Al-Khor city, Lusail City and the Qatar Entertainment City.⁶⁰ The government also plans 27 large industrial projects at a cost of \$60 billion by 2010.⁶¹

Energy/ Utilities

Qatar has the world's third largest reserves of natural gas and the 13th largest proven oil reserves.⁶² Qatar is also the world's leading producer of liquefied natural gas (LNG) and therefore, hydrocarbons will be the driving force of the economy in coming years. However, investments will be adversely affected if fuel prices stabilize at a lower rate due to depressed global demand. Already, plans for expansion by Qatar's two LNG producers Qatargas and RasGas are expected to slow down due to financing concerns, a weak global economy, and labor and equipment shortage.⁶³ However, tentative plans to form an OPEC-style gas cartel between Qatar, Iran and Russia could potentially boost LNG revenues for Qatar in future.⁶⁴

Delays are also expected in other energy-related projects as financing gets tighter. For instance, a joint-venture (JV) by QP and a South Korean company to build a \$2.6 billion petrochemical plant is delayed due to the credit crisis. Other delayed projects include \$5 billion Barzan gas-field JV by ExxonMobil, the Shaheen refinery in Mesaieed, and the Pearl GTL plant.⁶⁵

Most of Qatar's local power needs are fuelled by natural gas and water desalination is achieved in tandem with electricity generation. Among recent power and water projects, a \$1

⁵⁸ "Qatar – steep fall in real estate prices", The Peninsula (November 2008)

⁵⁹ Investment Promotion Department of Qatar (<http://www.investinqatar.com.qa/business/newinvestors.php>)

⁶⁰ See Investment Promotion Department website: <http://www.investinqatar.com.qa/business/projects.php>

⁶¹ See www.gov.qa

⁶² BP Statistical Review of World Energy 2008

⁶³ Qatar Business Forecast Report 2009, BMI

⁶⁴ "Russia, Iran, Qatar talk OPEC-style gas cartel", Associated Press (October 2008)

⁶⁵ "Global oil, gas projects delayed in 2009", Reuters (April 2009)

billion 1025 mega-watt power and desalination plant is also set to be completed in Ras Laffan in 2011.⁶⁶

Seaports

Doha port is the country's main commercial port while Umm Sa'id is the primary petroleum export facility. The \$4.4 billion first phase of a new port facility in Mesaieed is currently under development for completion in 2014 to ease port congestion in the region.⁶⁷

Airports

Qatar has plans to construct the \$7.5 billion Doha International Airport by 2015 to replace existing facilities in Doha and in response to increased demand for additional international passenger capacity in the region. The current Doha airport will also be expanded and refurbished at a cost of \$140 million to increase passenger capacity in the interim period.⁶⁸

Roads

Construction on the Qatar-Bahrain Friendship Bridge is expected to commence in late 2009. When completed in 2013, the two-lane \$3 billion road and rail bridge will be the longest marine causeway in the world spanning 40 km. The bridge will be one of the most important infrastructure projects in the region as it will strengthen economic ties in the region.⁶⁹

Another major road project currently underway is the Doha Expressway linking the north and south of the country to the capital. The project comprises of 13 phases including construction of a three-lane dual carriageway, service roads on both sides, two multi-level interchanges in addition to the development of the network infrastructure and landscaping work.⁷⁰

Rail

The Qatar Diar Real Estate Investment Company has signed a multi-billion dollar memorandum of agreement (MoU) with Deutsche Bahn, the German national railway company, to develop a conceptual design to integrate Qatar's planned railways into a comprehensive and consolidated system. The project includes passenger and freight rail services linking Qatar and Bahrain, light rails, metro networks and a high-speed rail link to the new Doha International Airport, Doha city and Bahrain via the planned causeway.⁷¹

Telecommunications

Recent investment plans include Meeza's \$34.5 million agreement with Vodafone Qatar to provide an end-to-end turn key infrastructure solution to support Vodafone Qatar's telecommunications operations.⁷² Vodafone Qatar is the holder of the second public mobile telecommunications networks and services license.

⁶⁶ "Emir dedicates Ras Laffan power plant to nation", Gulf Times (March 2008)

⁶⁷ New capacity to ease port congestion in the region", Emirates Business 24/7 (April 2009)

⁶⁸ "New Doha International Airport, Qatar", airport-technology.com (<http://www.airport-technology.com/projects/doha/>)

⁶⁹ "Causeway to begin work in nine months", The Peninsula (April 2009). Also see <http://www.investinqatar.com.qa/business/projects.php>

⁷⁰ "Work starts of QR 8 billion Doha Expressway", www.zawya.com (December 2007)

⁷¹ "Qatari Diar and Deutsche Bahn sign MoU for Qatar's integrated railway project", AME Info (August 2008)

⁷² "Vodafone Qatar signs agreement with Meeza", ITP.net (November 2008)

Key sources of deal flow

Key state-owned companies and government agencies include Qatari Diar, Qatar Petroleum, Qatar Gas, Urban Planning and Development Authority, and Ministry of Finance.

4. Malaysia

According to the Ninth Malaysian Plan⁷³ spanning the period 2006 to 2010, investing in infrastructure projects is a key priority for the government. As such, several large-scale infrastructure projects are currently underway. However, a general slowdown is expected in Malaysian commercial construction, public investments and infrastructure tenders due to external risks generated by the global economic downturn. Despite some scale-backs, projects like the \$443 million low-cost carrier terminal in Labu and the \$831.2 million Mines Golf City are expected to be completed as scheduled.⁷⁴

Energy/ Utilities

Malaysia has substantial reserves of natural gas and oil, although coal is imported. The country plans to shift its energy dependence from gas to coal in the future to preserve its gas reserves for export purposes. According to recent estimates, electricity generation is largely based on gas (55%) and coal (34%).⁷⁵ Hyrdoelectricity accounts for less than 8% and there is yet no significant contribution from renewables. Currently electricity generation and distribution is a vertically integrated and regulated industry with three state utilities supplying power to Peninsula Malaysia, Sabah and Sarawak. There is some private participation through Independent Power Producers (IPPs), power purchase agreements, co-generation and licensing. However, there is a broader move towards deregulating the industry and achieving a competitive power market although reform is still at an early age.⁷⁶

To meet the country's growing demand for power, the authorities announced plans to install the world's longest submarine cable (700 km) to connect the Bakun hydroelectricity plant (under construction) in Sarawak to Yong Peng on the Peninsula. The project is still in the early planning stages but a state utility company and the Finance Ministry are expected to take major stakes in financing the project.⁷⁷

The Malaysian state of Sarawak plans to provide power to 85% of rural areas under the Rural Electricity Scheme and sanitation to 70% of rural areas by 2012. In addition, there are plans to develop regional energy corridors (e.g. Sarawak Corridor of Renewable Energy) that use renewable energies and hydroelectricity to boost economic growth.⁷⁸

Two-fifths of the country's waterways are located in Peninsula Malaysia with the remaining three-fifths in the Borneo states of Sabah and Sarawak. Currently, there are plans to build a \$35.9 million 12.6 km water transfer tunnel in Negri Sembilan as part of the larger water

⁷³ See <http://www.epu.gov.my/rm9/html/english.htm> (Accessed on April 19, 2009)

⁷⁴ Malaysia Infrastructure Report Q1 2009, BMI

⁷⁵ 2007 BP Statistical Review of World Energy, Malaysia Infrastructure Report Q1 2009

⁷⁶ "Power vendors waiting for power transfer", The Malaysian Insider (April 2009)

⁷⁷ "Big stake for TNB in Bakun cable job", The Star Online (January 2009)

⁷⁸ "Sarawak Corridor of renewable energy to help reduce poverty", Asia Pulse News (February 2008)

scheme.⁷⁹ The government also approved plans to construct a dam, tunnel and filtration plant to transport water from Pahang River to Selangor.⁸⁰

Seaports

The Malaysian government plans to position Penang as a leading hub in the Indonesia-Malaysia-Thailand trading region.⁸¹ Dredging efforts are underway at Penang port to allow large vessels to use the facilities by 2012. The North Butterworth Container Terminal project in Penang is at its fourth stage of development which includes 450 hectares of land reclamation from the sea. Facilities at PTP in Johor, a port for container ships, will also be upgraded over the next 17 months.⁸²

Airports

Malaysia has 6 major airports of which Kuala Lumpur International Airport is the largest. The government is upgrading and expanding some of the current facilities and has announced plans to build a new airport in Lahad Datu to accommodate larger carriers.⁸³

Roads

Malaysia is well connected by an extensive road network of which 75% is paved. The North South Expressway is part of the Asian Highway network and connects to Thailand and Singapore. Roads on the eastern coast of the peninsula are underdeveloped due to mountainous terrain. Some recent investments in the pipeline include a highway construction project⁸⁴ worth \$294.1 million awarded to a private Malaysian builder in June 2008 and a revitalization of the \$427 million Lebuhraya Kajang-Seremban Highway project in 2006 due to be completed in 2009.⁸⁵ Work on a second Penang Bridge, the longest to date in South East Asia, is also underway and expected to be completed by 2011.⁸⁶ The \$549.38 million Stormwater Management and Road Tunnel (SMART) motorway, completed recently, is the world's first dual-function road and storm-water tunnel.

However, the global credit crunch has tightened financing for some large-scale road projects. A \$867 million highway project, the West Coast Expressway, connecting Taiping in the North to Banting in the West coast has been put on hold due to financing difficulties.

Rail

The vast majority of railways in Malaysia (97% of 2418 km) consist of narrow gauge. In recent years, the government has undertaken joint ventures with private firms to construct new rail infrastructure. In December 2007, \$3.8 billion contract was finalized with MMC Corp, Malaysia's investment holding company and Gamuda, an infrastructure developer, to construct a 330km double-track rail project in Northern Malaysia.⁸⁷ Another 103 km double-track rail project is underway in the Seremban-Gemas region worth \$1 billion.⁸⁸

⁷⁹ Malaysia Infrastructure Report Q1 2009, BMI

⁸⁰ See <http://www.ktak.gov.my/template01.asp?contentid=289> (Accessed on April 10, 2009)

⁸¹ http://www.penangport.com.my/english/mainpage/ppsb_dev_prj.htm (Accessed on April 19, 2009)

⁸² Malaysia's Putrajaya Perdana wins US\$56.4 million port project", Asia Pulse News (May 2008)

⁸³ "Implement Lahad Datu project without delay", Daily Express (November 2008)

⁸⁴ "Malaysia's Mudajaya wins \$294 million highway contract", Reuters (June 2008)

⁸⁵ See <http://www.ijm.com/infrastructure/toll/LEKAS/> (Accessed on April 19, 2009)

⁸⁶ "Work begins on second Penang Bridget", The Star Online (December 2007)

⁸⁷ "Malaysian builders Gamuda, MMC win \$3.8 billion rail deal", Reuters (December 2007)

⁸⁸ "Ircan to take part in Seremban-Gemas rail project" Business Times (April 2008)

Telecommunications

Malaysia's telecommunications market is among the more developed sectors in the region with a competitive mobile telecom market and introduction of wireless technologies. The government, recognizing the importance of the telecommunications sector to the overall economy, is looking to invest MYR 2.4 billion into the deployment of a national broadband network rather than relying solely on private funding.⁸⁹

Key sources of dealflow

The most active construction, engineering and development companies in Malaysia are Gamuda, IJM Group, WCT Engineering, Sunway Construction and Bina Puri Holdings.

5. Saudi Arabia

Saudi Arabia is attempting to shift its development drive away from traditional reliance on oil to investments in physical infrastructure (transport networks, ports, utilities). Although the construction industry is booming with major projects in the pipeline (e.g. King Abdullah Economic City, Knowledge Economic City), the global economic downturn is expected to affect the industry, leaving investors with less money to fund infrastructure projects, especially in real estate. This could particularly impact companies participating in Private Public Partnership projects, resulting in delays and even cancellations of proposed infrastructure schemes. Inflation concerns due to rising project costs in the Gulf region are expected to erode returns on infrastructure investments in 2008-2009. However, some large-scale BOT projects launched in 2008 (e.g. Saudi Landbridge Project, Haramain railway and North-South railway) are expected to continue as planned.⁹⁰

Energy/ Utilities

Saudi Arabia is the world's biggest producer and exporter of crude oil and is self-sufficient in resources (oil, gas) that forms the basis of its power generation. The country has tended to preserve natural gas reserves by minimizing production to meet domestic requirements and favoring oil for newer power plants. Coal, hydroelectricity and nuclear power are not part of Saudi Arabia's energy market, although feasibility studies are underway to develop a nuclear sector. An agreement with the United States was signed last year to develop Saudi Arabia's civilian nuclear energy sector.⁹¹ Other ongoing energy projects include the construction of an ethylenamines plant in Jubail Industrial City⁹² and a polyethelene production facility in Al Jubail, both awarded to Korean companies.⁹³

Investing in water resources is critical to Saudi Arabia due to rapid population growth, urbanization and the need to upgrade current facilities. Some proposed projects include constructing a new water supply network in Jeddah which links to dams in Mecca and a \$375

⁸⁹ Malaysia Telecommunications Report 2009, BMI

⁹⁰ "Railway to link GCC countries", Arab News (April 8, 2009)

⁹¹ In May 2008, the U.S. Department of State announced that the Secretary of State and the Saudi Foreign Minister had signed a Memorandum of Understanding on Civil Nuclear Energy Cooperation. The United States will assist Saudi Arabia to develop civilian nuclear energy for use in medicine, industry, and power generation and will help in development of both the human and infrastructure resources in accordance with International Atomic Energy Agency guidance and standards (www.america.gov).

⁹² Projects Monitor (www.zawya.com)

⁹³ "Daelim wins \$962.3 million construction order from Saudi Arabia", Bloomberg.com (December 2007)

million water pipeline linking the New Marafiq Desalination Plant in Jubail to Dammam, Alkhobar, Ras Tanura and Safwa. New desalination facilities, including floating plants off the coast of Shuaiba, are also planned around Jeddah to boost water supply to the city.⁹⁴ Overall, Saudi authorities plan to invest \$60 billion in the country's water sector over the next 20 years with joint public-private partnerships.⁹⁵ The National Water Company, a state-owned company, was established in early 2008 to oversee the privatization of sewage services.⁹⁶

Saudi Arabia is also part of the Gulf Cooperation Council transmission project, an integrated power grid connecting the Gulf countries to ensure adequate supply of electricity to the region and to reduce power generation costs. Of the \$217 billion worth of new projects announced by GCC, \$11 billion is allocated to Saudi Arabia.⁹⁷

Seaports

Saudi Arabia currently has 6 commercial/ industrial seaports, the largest being facilities at Jubail. A \$450 million container terminal in Jeddah is currently underway with the first stage of operations to be completed by late 2009.⁹⁸ In 2007, a Saudi-Malaysian consortium won a bid to develop the Tusdeer Container terminal in Jeddah on a BOT basis.⁹⁹ In May 2008, the Minister of Transport announced plans to develop \$426 million dockyard in Jeddah on a BOT basis to expand container storage capacity. An agreement has also been signed by DP World in Emaar Economic City to develop a main cargo port in the King Abdullah Economic City. The port is designed to have multipurpose cargo facilities, a separate container terminal, and is expected to be the largest port on the Red Sea and one of the 10 largest in the world.¹⁰⁰

Airports

The vastness of the Arabian Peninsula makes flying a popular choice of transportation. Saudi Arabia has 3 international airports and 22 domestic/regional airports with regular services between major cities. Plans are underway to construct a \$137 million terminal at the King Abdul Aziz International Airport (KAIA) by 2012 to boost passenger capacity by 30 million per year.¹⁰¹ The General Authority of Civil Aviation (GACA) also plans to expand the capacity of KAIA generally and convert the airport into a profitable commercial operation. In late 2007, the GACA announced plans to develop 5 new airports across the country.¹⁰² An expansion of the Hajj Terminal at Jeddah Airport has been proposed on a BOT basis to accommodate the increasing movement of pilgrims.

Road

Due to the geographically concentrated nature of economic development and physical limitations of the landscape, road networks principally serve the areas of Riyadh, Jeddah and the eastern coast. In mid 2008, the Transport Minister announced agreements with the

⁹⁴ "Floating desalination plants set to multiply the region", Meed.com (March, 2009)

⁹⁵ "Saudi Arabia to invest \$60 billion in water infrastructure", www.thaindian.com (March, 2008)

⁹⁶ "Saudi utility to streamline water, sewage", Reuters (January 2008)

⁹⁷ Saudi Arabia Infrastructure Report Q1 2009, BMI

⁹⁸ "Gulf ports enter highly competitive phase", Business Intelligence Middle East (February, 2009)

⁹⁹ "Tusdeer sign BOT deal to develop third container terminal at JIP", Maktoob Business (Jan 2007)

¹⁰⁰ Saudi Arabia Infrastructure Report Q1 2009, BMI

¹⁰¹ Industry Projects (www.airport-technology.com)

¹⁰² "Saudi Arabia to establish five new airports", Arab News (October 2007)

private sector to construct highways and agricultural roads in various regions of the country to facilitate the growing movement of people and freight.¹⁰³

Rail

In 2008, the Saudi Railway Organization (SRO) launched the Saudi Landbridge Project to expand a major rail-line in the Arabian Peninsula. The project is estimated to cost \$5 billion and includes the construction of a 950 km railway between Riyadh and the port city of Jeddah to transport freight and passengers.¹⁰⁴ SRO is also issuing tenders for the 440 km MMRL (Saudi Mecca-Medina Rail Line) railway project which will connect Mecca and Medina to Jeddah to facilitate the travel of Hajj pilgrims to the Islamic holy cities.¹⁰⁵

Telecommunications

By late 2008, Saudi Arabia had more than 37 million mobile subscribers following a 30% growth during the year, bringing the mobile penetration rate of the country to 150%.¹⁰⁶ A third mobile operator Zain entered market, putting pressure on incumbents to offer more competitive products. Growth in fixed-lines has been relatively negligible compared to the growth in mobile services. However, growth in the fixed-lines market is expected with the launch of services offered by 3 new fixed-lines operators.

Key sources of dealflow

The most active construction, engineering and development companies in Saudi Arabia are Damac Properties, Saudi Oger, Al Khodari Group, and Al Mabani General Contractors.

¹⁰³ “Kingdom allocates SR11.5 billion for roads”, Arab News (January 2009)

¹⁰⁴ “Saudi Landbridge contract to be awarded by March 2008”, ArabBusiness.com (January 2008)

¹⁰⁵ Zawya Projects Monitor (www.zawya.com)

¹⁰⁶ Saudi Arabia Telecommunications Report 2009 (BMI)

Appendix

The Z-score index methodology

The Z-score index is a composite index commonly used to measure economic and social well-being.¹⁰⁷ The index is constructed by first calculating the Z-score for each variable and then aggregating the variables by assigning appropriate weights. The Z-score for a variable is calculated as follows¹⁰⁸:

$$\text{Z-score} = (\text{Variable} - \text{Mean}) / \text{Standard deviation}$$

The Z-score essentially indicates how far and in what direction a variable deviates from its distribution mean, expressed in units of the distribution's standard deviation. The technique is useful when combining variables with different distribution means and/or standard deviations.

Once the variables are standardized using the Z-score method, they are combined into a weighted composite index as follows:

Z-score index = Population + Pop. Growth + GDP + GDP per capita + (1.5 × GDP growth) + FDI + Quality of infrastructure + Government Stability + (2 × Tot. Pvt. Investment) + (1.5 × Ease of doing business*) + Tot. approved financing + Public debt to GDP + Current account to GDP + Foreign exchange reserves to GDP

This weighting gives greater emphasis to economic growth, ease of doing business, and in particular, total private sector investment in infrastructure for reasons explained in other sections.

¹⁰⁷ For a discussion of the Z-score method and other techniques, see: Salzman, J. (2003). "Methodological Choices Encountered in the Construction of Composite Indices of Economic and Social Well-Being", Center for the Study of Living Standards. Versions of the Z-score index are used by the World Bank and the U.N.

¹⁰⁸ An exception to the standard method of calculating the Z-score was used for the variable "Ease of doing business rank". The data was first adjusted such that higher values indicated a better ranking, i.e. the reported rank for each country was subtracted from 181 (the maximum ranking in the scale).