



A Middle East Perspective

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Where and What



Middle East : Background

A turning point in the history of the Middle East came when oil was discovered, first in Persia in 1908 and later in Saudi Arabia in 1938 and the other Persian Gulf States, and also in Libya and Algeria.

A Western dependence on Middle Eastern oil and the decline of British influence led to a growing American interest in the region.

The modern Middle East was shaped by three things:

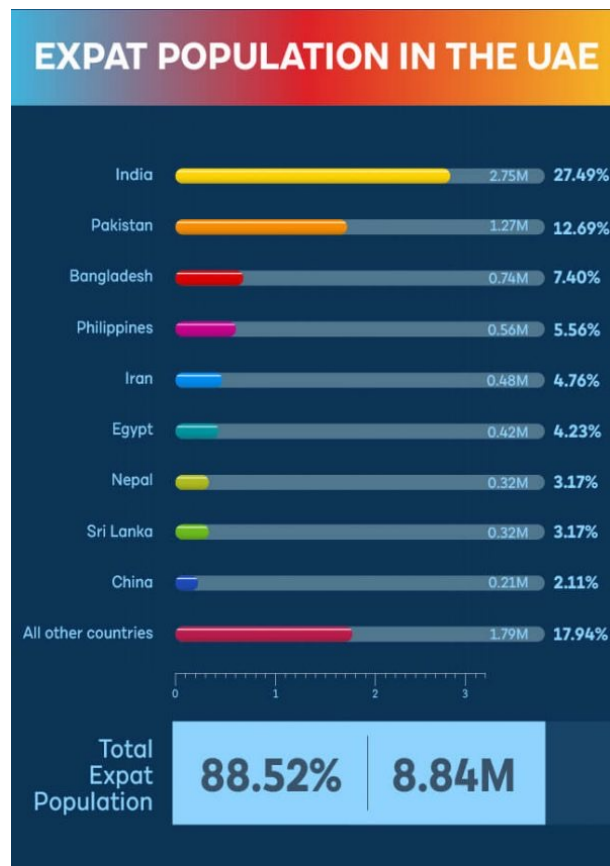
- departure of European powers,
- the founding of Israel
- the growing importance of the oil industry .

These developments eventually led to increased U.S.A involvement in the region

The United States was the ultimate guarantor of the region's stability as well as the dominant force in the oil industry after the 1950s

Middle East : Population

GCC	.000	LOCAL	EXPAT
BAHRAIN	1.600	900	700
KUWAIT	4.400	1.400	3.000
OMAN	5.300	4.700	600
QATAR	3.000	450	2.550
SAUDI ARABIA	35.800	22.300	13.500
UAE	10.100	1.200	8.900
TOTAL	60.200	30.950	29.250
EGYPT	105.800	105.400	400



Middle East : Temperatures

MINIMUM DEG C	january	february	march	april	may	june	july	august	september	october	november	december
BAHRAIN	14	16	18	23	27	30	31	32	29	26	22	17
KUWAIT	8	10	14	20	25	29	30	30	26	21	14	9
OMAN	17	18	20	24	29	30	30	28	27	24	21	18
QATAR	15	15	18	23	28	30	32	31	29	26	22	17
SAUDI ARABIA	9	11	15	20	26	28	29	29	26	21	16	11
UAE	14	15	18	21	25	27	30	30	28	24	20	16

MAXIMUM DEG C	january	february	march	april	may	june	july	august	september	october	november	december
BAHRAIN	21	22	26	31	36	39	40	40	38	34	28	23
KUWAIT	19	22	28	33	40	45	46	46	43	37	27	21
OMAN	25	26	30	35	40	40	38	36	36	35	30	27
QATAR	23	24	28	33	39	42	42	41	39	36	30	25
SAUDI ARABIA	20	23	28	33	39	42	44	44	40	35	28	22
UAE	24	26	30	35	39	41	42	43	41	37	31	26

Middle East : Temperatures



Middle East Dust Storms



GCC Countries Regulation Overview

Regional GSO scheme and national regulations for products in GSO LV TR List 2

Country	Safety test reports	EMC test reports	Energy Efficiency	RoHS	G-marking (GCTS)	Pre-shipment inspection	National Scheme
GCC (GSO)	✓ per LVTR	✓ per LVTR (Draft EMC TR)	Planned	Draft	✓	--	--
Saudi Arabia	(GTEC)	(GTEC)	✓	Published 9th July 2021	✓	○	SALEEM/Saber
UAE	✓ (CB + GTEC)	(GTEC)	✓	✓	✓	○	ECAS
Kuwait	(GTEC)	(GTEC)	✓	○	✓	✓	KUCAS
Qatar	✓ (CB)	(GTEC)	✓	○	✓	○	QGOSM
Oman	(GTEC)	(GTEC)	✓	○	✓	○	DGSM
Bahrain	(GTEC)	(GTEC)	✓	○	✓	○	OFOQ (BTMD)
*Yemen	✓	○	○	○	○	○	○

GTEC = Gulf Type Examination certificate

LVTR = Low Voltage Technical Regulation

GCC Countries Regulation Overview

Regional GSO scheme and national regulations for products out of GSO LV TR List 2

Country	Safety test reports	EMC test reports	Energy Efficiency	RoHS	G-marking (GCTS)	Pre-shipment inspection	National Scheme
Saudi Arabia	✓ (CB for Products in Scope SASO IECEE)	○	✓ (large AC, motors, lighting)	Published 9th July2021	N/A	○	SALEEM
U.A.E.	✓ (CB)	○	✓ (large AC, dish- washers, pumps, TV)	✓	N/A	○	ECAS
Kuwait	✓	○	○	○	N/A	✓	KUCAS
Qatar	✓ (CB)	○	○	○	N/A	○	QGOSM
Oman	✓	○	✓	○	N/A	○	DGSM
Bahrain	✓	○	✓	○	N/A	○	OFOQ (BSMD)
Yemen*	✓	○	○	○	N/A	○	--

Gulf Conformity Tracking Symbol

Mandatory for List 2

1. Domestic electric fans
2. Refrigerators & freezers
3. Clothes dryers & washing machines
4. Food grinders, mixers, juice extractors
5. Toasters
6. Hair dressing apparatus & hand dryers
7. Domestic electric heating apparatus
8. Microwave ovens
9. Other ovens, cookers, grillers and roasters
10. Water heaters
11. Electric smoothing irons
12. Plugs, sockets, adaptors, cord extension sets and chargers
13. Air conditioners



GCC Energy Efficiency Programmes

Each country has its own rules and regulations!

KSA: SASO Technical Regulation for Energy Efficiency can only be performed in SASO approved laboratories

UAE: Regulation: Emirates Conformity Assessment Scheme

- Certification Body: ECAS Notified Bodies

Kuwait: Energy Efficiency Scheme is controlled by 2 Authorities:

- Public Authority for Industry (PAI)
- Ministry of Electricity and Water (MEW)

Bahrain and Oman have similar schemes .

Oman: Directorate General for Standards and Metrology (DGSM)

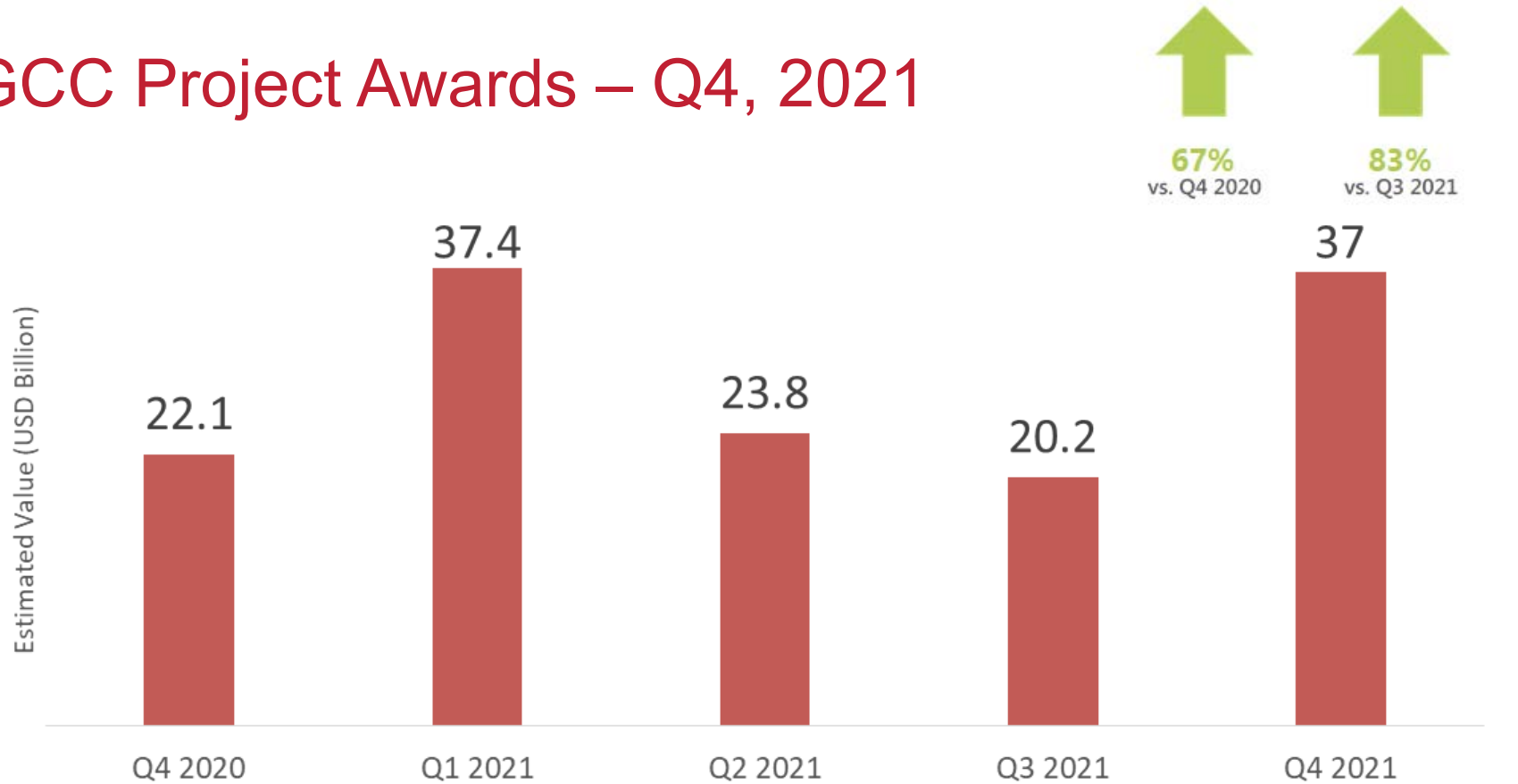
Bahrain: Bahrain Testing and Metrology Directorate (BTMD)

Qatar: Qatari General Organization for Standards and Metrology (QGOSM)

Projects Market Size YoY Movement Matrix Q4 2020 vs. Q4 2021

Country	Urban	Industrial	Transport	Utilities	Oil & Gas	Overall
UAE	↓ -7%	↑ 5%	↗ 4%	↑ 10%	↓ -15%	↓ -5%
Saudi	↗ 3%	↗ 4%	→ 0%	↑ 28%	↗ 3%	↑ 6%
Qatar	↓ -15%	↓ -8%	↓ -14%	↑ 69%	↑ 10%	↗ 4%
Kuwait	↓ -5%	↑ 5%	↗ 2%	↑ 6%	↓ -17%	↓ -5%
Oman	↗ 2%	↗ 1%	→ 0%	↑ 55%	→ -2%	↑ 6%
Bahrain	→ 0%	↓ -14%	↓ -11%	↑ 68%	↑ 6%	↗ 4%
GCC	→ -4%	↗ 3%	→ -1%	↑ 25%	→ -4%	↗ 1%

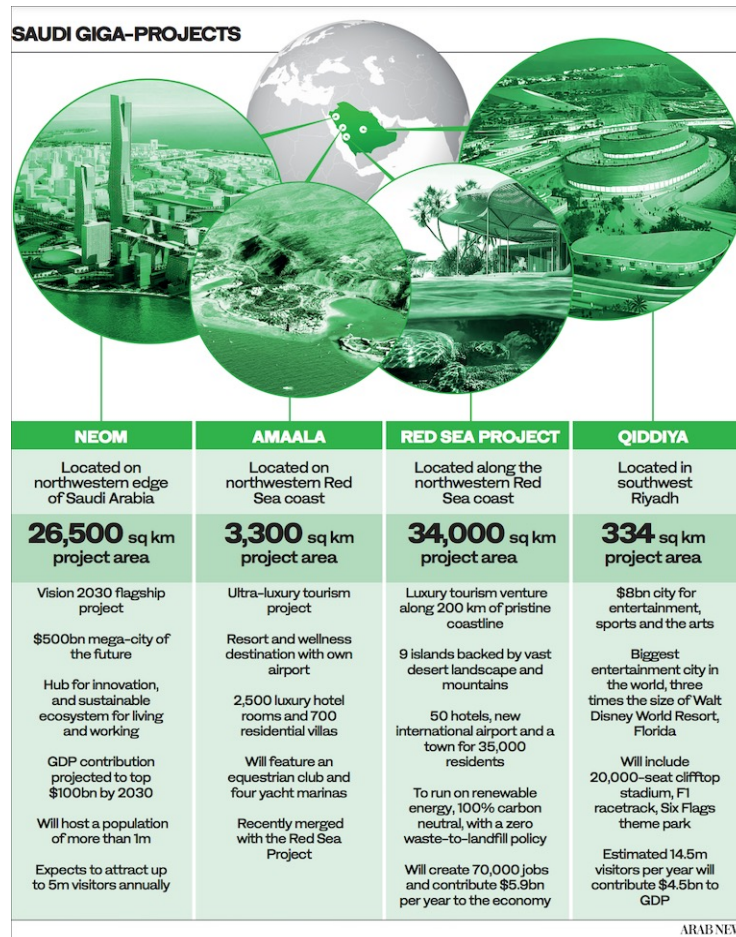
GCC Project Awards – Q4, 2021



Diversification from Oil : KSA

Land mass European Countries

Lithuania	65,300	North Macedonia	25,713
Latvia	64,589	Turkey*	23,764
Croatia	56,594	Slovenia	20,273
Bosnia and Herzegovina	51,129	Montenegro	13,812
Slovakia	49,036	Kosovo	10,887
Estonia	45,339	Azerbaijan*	6,960
Denmark*	44,493	Georgia*	2,642
Switzerland	41,290	Luxembourg	2,586
Netherlands*	41,198	Andorra	468
Moldova	33,846	Malta	316
Belgium	30,510	Liechtenstein	160
Albania	28,748	San Marino	61



Why KSA Giga Projects

“Six ambitious landmark projects being developed in the Kingdom aim to help transform the economy,
while **showing the world and all Saudis the nation’s geographic wealth, cultural heritage and hospitality, economic ambitions and aspirations for environmental conservation.**

These projects are needed now more than ever to drive foreign investments and increase spending in the economy,
as the Kingdom is expecting \$7 trillion in investment and government spending to materialize by the end of the decade.
But continued liberalization and economic reforms will be needed to ensure their success, as will continuing foreign investment, according to a finance CEO and an economic consultant and former economics minister.”

ARAB NEWS

The Voice of a Changing Region

What does it all mean

- Predominance of USA standards throughout the region – with the exception of AHU, where Eurovent is the more recognized and accepted standard
- The demographics of the region where the necessity historically for expatriate workforce to rapidly develop and build the region at all levels has provided a vast array of qualified and non qualified personnel
- High cost level has often reduced the quality level of the workforce. More a case of employing against cost not capability and experience.
- Lack of training and continual tracking of capabilities of the workforce – absolute necessity for education, imparting of knowledge for everything from product knowledge, standards, installation, testing, operation and maintenance.
- One of the biggest problem areas for installed equipment is the lack of maintenance and understanding of preventative maintenance

What does it all mean

- 60% - 70% of energy consumption is through air conditioning – higher demand for energy efficient products
- Extreme temperature conditions throughout the year - SEER a more informative benchmark
- Mixture of rules and regulations throughout the region creates administrative and bureaucratic confusion – delays, blocked shipments, increased costs
- Each Governmental authority has their own energy efficiency programmes (within UAE there are also different programmes)
- The demand for energy efficiency products is there from the authorities having jurisdiction but is not carried through the supply chain and all stakeholders.
- Initial capex is the motivating factor not life cycle costs
- If products or sectors are not legislated, then manufacturers, suppliers, contractors and consultants will not enforce. Education at authority level and consultant level is imperative.

What does it all mean

- The interaction with governing bodies can only successfully be achieved through recognized Associations and has to be a continual process.
- There has to be an acknowledgement that there is an inherent lack of trust because of previous bad experiences compounded by a lack of knowledge in some cases
- Despite the drawbacks, the procedures, the rigorous demands, the pain of explanation, there is as can be seen vast opportunity
- Just using The Saudi Giga Projects as an example, which is an ongoing process of multiple projects there is huge scope throughout the region for innovative HVAC R manufacturers

Technical Necessities

The climatic conditions have to be considered when designing and proposing
e.g. CHILLERS

From a specification:

“6.4 PERFORMANCE

- a. The unit shall be able to start up with an evaporator entering fluid temperature up to 45°C
- b. The unit shall be able to operate as standard with an outside air temperature from -10°C to **55°C (without mechanical failure)** and an evaporator leaving fluid set point between 3.3°C and 15°C
- c. Chillers must be rated to Eurovent at nominal conditions which means best energy efficiency in its class even for high ambient series chillers “

Technical Necessities

- The extreme high summer temperatures and relatively lower winter temperatures engender the necessity to assess products with Seasonal Energy Efficiency Ratings
- High dust content in the atmosphere throughout the year necessitates the highest level of intake filtration and the correct staged filtration systems
- 60Hz demand in KSA
- 50 Hz demand in rest of Middle East



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complicated exercise



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