Green Building Standards in MENA:
An assessment of regional constraints, needs and trends

ISAAC A. MEIR[1], AVIVA PEETERS[1], DAVID PEARLMUTTER[1], SULEIMAN HALASAH[2], YAAKOV GARB[1], JOHN-MICHAEL DAVIES[3]

[1] Institute for Dryland Energy and Environmental Research (IDEER), Blaustein Institutes for Desert Research (BIDR), Ben Gurion University of the Negev (BGU), Sede Boqer Campus 84990 Israel, Corresponding author: sakis@bgu.ac.il
[2] *i*.GREENs, Amman, Jordan
[3] McGill University – Macdonald Campus, Montreal, Canada

ABSTRACT: The paper reviews briefly regional constraints and trends in the Middle East and North Africa (MENA), among them environmental climatic and social ones, which should affect planning, design and construction policies and practices. It reviews the current state of legislation regarding energy and other green building issues, as well as the various voluntary tools which are being promoted in the region. Covering 20 countries (from Turkey to Yemen, from Morocco to Iran), and based on over 150 documents in Arabic, English, French, Turkish and Hebrew, the paper concludes that the pace of building practices adaptations is far from meeting the pace of needs and constraints. The repercussions on the liveability of buildings and settlements, and the survivability and resilience potential of communities in the arid regions of MENA, may well be at risk. Thus, for many countries in the region, green building (and the standards that encourage this) are not a luxury of developed countries, which they might adopt in the future once more pressing constraints are eased, but, rather, a critical development goal to lessen these constraints and allow a viable path into such a future.
Keywords: aridity, assessment tools, climate change, desert, energy, green building, MENA

INTRODUCTION

Green building has evolved out of the growing environmental awareness and concerns of recent years. Alongside the concepts and technologies arose also the need for benchmarking and green building assessment tools. Some of the earlier ones such as LEED [1-3] and BREEAM [4, 5] have become an integral part of the environmental discourse in architecture and planning. They were quickly followed by the Australian and South African Green Star [6, 7], the Japanese CASBEE (IBEC, 2012), and many others. Parallel to these, the World Green Building Council has fostered national Green Building Councils (GBCs). To date, there are 24 established GBCs, 13 emerging, 30 prospective, and 25 associated groups. As far as MENA is concerned there is only one established GBC (United Arab Emirates), 2 emerging (Jordan, Qatar), 7 prospective (Bahrain, Kuwait, Lebanon, Morocco, Palestinian Authority, Saudi Arabia, Syria) and 4 associated groups (Egypt, Libya, Oman, Tunisia). Israel, which has an established GBC, is listed under Europe, as is Turkey which moved from emerging to established GBC in late 2012 [8]. Whereas some of these are already part of the infrastructure promoting legislation, standards, policies and even materials, others are still in their formative stages. But why are these of interest and relevance?

For one, because MENA is characterized by a relatively old building stock alongside high reproduction rates that create pressure for massive new construction. However, both the existing stock and the current construction need to meet green benchmarks for a number of reasons: lower pressure on the energy infrastructures of the region, in themselves not very dependable in some of the MENA countries, and certainly not very green; and aim at providing viable solutions in time of climatic uncertainty and climatic extremes exacerbation. These, combined with the traditionally harsh climate of significant parts of MENA, encompass serious dangers for public health, and may push up morbidity and mortality statistics.

CHRACTERIZING MENA SPECIFICITIES

The inclusion of different countries in the MENA group has much deeper roots than simply the geography or geopolitics and is of far reaching repercussions. It indicates shared characteristics of relevance to green building in a set of countries that are quite different in many other respects. In order to analyze the shared climatic characteristics of MENA countries (and the spatial variability between them) as well as characterize the socio-economic and demographic conditions that will drive the construction of buildings and the policy milieu related to green building codes, we used Geographical Information Systems (GIS) software to map the key dimensions of the area, treated as a unit. Moving between datasets of climatic variables (for example, mean, maximum, and minimum temperatures) and country boundaries, we were able to compare and contrast the baseline conditions of relevance for green

building in the region. All analysis was performed using the ArcGIS® Desktop software package [9], and based on available data sets (which in some cases, such as the Palestinian Authority, were less complete). All those data are presented in GIS generated maps included in a much longer and detailed version of this paper published recently in JABER [10].

Climatic conditions surveyed included level of aridity, minimum, maximum and mean temperatures, global radiation, relative humidity and precipitation. The most important climatic aspect regarding MENA countries is that they are, for the most part, geographically located within the world desert belt. This means that most areas within MENA countries are characterized by a hot semi-arid, arid or hyper-arid climate. The UNEP aridity index (AIu) which measures the degree of dryness and is calculated as: average annual precipitation / potential evapotranspiration (P/PET) is, with the exception of some coastal or mountainous areas, less than 0.50. As a result of these aridity levels most countries, with the exception of Turkey and Lebanon, are in the 20ºC range and maximum temperatures are well above 30ºC in summer, and in the hottest month can reach up to 49ºC. Minimum temperatures exhibit a larger range in values which is influenced also by the topographical conditions and distance from the sea (often expressed as Index of Continentality). For example, whereas Qatar minimum in the coldest month is 12ºC, other countries such as Turkey and Iraq can reach temperatures as low as -25ºC. Precipitation, relative humidity and solar radiation levels in MENA countries follow the characteristics associated with hot-arid lands. Thus, with the exception of the coast, relative humidity levels low and annual average solar radiation is very high with values over 2000 kWh/m^2. Most precipitation is concentrated in the cold season with most areas receiving less than 240mm of rainfall annually. The exceptions are countries such as Turkey and Lebanon with mean rainfall values over 500mm.

Socio-economic indicators, namely population and building trends, were analyzed in order to understand the economic potential for energy conservation and development of green building standards. The following socio-economic indicators were selected and mapped: gross domestic product (GDP) per capita, gross national income (GNI) per capita, CO_2 emissions, electric power consumption, population density and population projections, urbanization level and major urban centers. In terms of population size, based on 2009 data, three major groups of countries can be recognized: Turkey and Egypt with about 80 million people, a second group of countries with 20-35 million people and the third and largest group of 10 countries with less than 10 million people. However, when examining population projections for 2007-2025 in terms of predicted growth in percentage, the largest countries in terms of population exhibit (in relation to the area) relatively smaller growth while the smallest country – the Palestinian Authority - exhibits the largest growth (a 75% growth in population for the Gaza Strip). While most MENA countries in 2025 will still have a medium to low population density with less than 100 people per km^2, the smaller countries such as Israel, Lebanon and the West Bank will exhibit a significantly higher population density of 300-800 people per km^2. The Gaza Strip, one of the most densely populated areas in the world, is projected to have about 11,365 people per km^2. The majority of the MENA population is urban with the exception of Yemen and Egypt. Most countries are over 70% urban with countries such as Israel, Qatar and Kuwait being almost entirely urban. However, while most of the population in MENA countries lives in cities only three of these urban centers have a population of over 5 million people.

To analyze the standard of living and social progress of the population in MENA countries their gross domestic product (GDP) per capita and gross national income (GNI) per capita were mapped. In general, the GDP per capita varies greatly ranging from 61,532 USD in Qatar to 1300 USD in Yemen with most MENA countries below 10,000 USD except for Israel, Kuwait, Oman, Saudi Arabia and the United Arab Emirates – with a GDP ranging between 15,000 – 41,000 USD per capita. The GNI per capita follows a similar pattern. Such patterns recognized in the standard of living (GDP and GNI) are expressed in the electric power consumption as well and consequently in the CO_2 emissions. The countries with high GDP and GNI per capita are also the high electric power consumers and subsequently high in CO_2 emissions. These countries are the oil producing countries, while Israel, a relatively high consumer of electric power, is exceptionally low in CO_2 emissions per capita.

To conclude, most areas in MENA countries lie in climatic zones that are well suited for the application of passive solar and other free running building strategies for improving thermal comfort. In addition, inhabitants could easily benefit and improve their living conditions if an accelerated development in climatically adapted building standards would take place. However, some of the MENA countries situated in areas with the harshest climate also have the highest GDP and GNI. This allows them to artificially control indoor environments to suit their needs by employing costly and energy-intensive means, and may lack the motivation to develop climatically aware building standards.

Consumption and the environment. In environmental terms, however, this use of resources by

wealthier countries creates an ecological footprint that is far larger than the local biocapacity - each person is consuming more resources, in global terms, than the area available to produce these. Plotting ecological footprint versus biocapacity for all countries [11] shows that almost all MENA (denoted by blue crosses) have below median biocapacities, and are divided into two groups. Those in the top left quadrant, have a lower than median biocapacity with higher than median footprint (Lebanon, Libya, Saudi Arabia, Israel, Kuwait, and the UAE), and are considerably "overdrawn" in terms of their footprint exceeding capacity (visualized through a horizontal line crossing the origin). The poorer ones, in the lower left quadrant, have low biocapacity too, but, also, lower consumption footprint. These groups are also useful conceptual categories of those states for whom green building practices are a luxury, in some sense (their wealth allows them to exceed their local biocapacity and adopt resource-intensive adaptations to their climatic conditions), versus those with low consumption levels, for whom green building measures are the only way to obtain comfortable living conditions. Relevant standards and their uptake in the MENA countries are presented extensively and in detail in the homonymous paper published recently in JABER [10].

GREEN BUILDING STANDARDS IS MENA

Our review of green building standards in MENA is based on the very rich and diverse set of open sources, mostly accessible through the Internet. We collected and reviewed extensive materials on building codes and energy standards, some mandatory and others voluntary, as well as green building standards which are mostly advisory and voluntary. The latter are mainly promoted by NGOs, usually the national GBCs, though the local green building standard of Abu Dhabi was promoted by the relevant national authorities, that of Egypt embraced by relevant Ministries, and in the case of Israel its development was the initiative of government ministries (primarily the Ministry of Environmental Protection), also promoted through the cooperation of other non-governmental and academic bodies, and eventually adopted by the Israel GBC, which pushed for the standard's revision and expansion.

On the whole, most MENA energy conservation/performance related standards were developed with the support of external professional and academic organizations acting through GEF, GTZ, MEDENEC, UNDP, and USAID. Such codes typically include both prescriptive and integrated routes to compliance. The former defines the performance requirements of specific building elements, whereas the latter sets a whole-building performance target and provides a calculation mechanism to evaluate a building's compliance. However, in many cases such standards and codes deal mainly or only with the building envelope. Though Africa as a whole seems to be largely still lacking relevant standards, both African and Middle Eastern countries show intense activities toward the proposal and promotion of energy standards[12].

We examined the various standards and codes for each MENA. The usually volatile situation in MENA, particularly that of the last couple of years, with dramatic events overwhelming most of the region's countries, have hampered some of these initiatives and/or accessibility to their documentation. However, in order to conduct a systematic survey we reviewed approximately 150 codes, standards, government decrees, assessment tools, official surveys and policy reports, and peer reviewed journal papers, in Arabic, English, French, Hebrew and Turkish, and, in the cases when official materials were not available we relied more heavily on the "grey" literature (conference presentations, online sources, and press reports), trying to cross-reference each such item through at least two independent sources. We have used many of those, and referenced all of these in a detailed way which will allow access to readers, so that they can form their own independent opinions [10]. Thus, we have assembled a complete, if somewhat patchy, inventory of efforts in the region, with elaborate treatment of some countries (Egypt, Jordan, Israel, and the UAE), fair coverage of most of the remaining, and minimal coverage of just a few for whom information was hard to access. We regard our efforts as an initial mapping, which can serve as the basis for more refined work conducted through interviews and jointly conducted assessments, most likely coordinated by an external agency that can serve as a neutral hub for collaborative work.

CONCLUSIONS: IMPORTED LUXURY OR CORE CONCERN? GREEN BUIDLING IN AN ERA OF CLIMATE CHANGE

An outsider, looking at the current dramatic constraints and processes in many of the MENA countries, could suggest that energy conservation and environmental issues—and green building in particular—are a nicety the region can little afford. A closer look, however, suggests that green building lies at the nexus of the dynamics that are key for the area: resources, equity, population growth, urbanization, the rebuilding of physical structures and social fabrics damaged in recent violent transformation in the area, and the resilience and vulnerability of populations in the face of uncertain but potentially calamitous consequences of a shifting climate. In this final section we develop this argument for the centrality of green building, the need for the intensive channelling of energies and resources to this end because (not in spite) of the great challenges the

region faces, and we consider the interplay of local and external influences and guidelines in these efforts.

Urbanization is perceived by many as the greenest process of contemporary human settlement. It is often argued that the denser and higher the cities, the more land they free – or preserve - for agriculture, leisure and nature reserves, while enhancing the processes of human interaction and cross fertilization of ideas (e.g., [13]). Whereas it is not claimed here that garden city concepts, urban sprawl and suburbia are the solution, it is vital to remember that urbanization and densification need to be considered critically under the looking glass of the region's constraints, potential and behavioral patterns which have shaped vernacular architecture, often considered the source for future solutions. The vernacular has allowed for intramural migration, which in turn allowed occupants to find reasonably comfortable parts of the house in which thermal comfort could be ensured for the different times of the day and the year. However, traditional materials and morphology, the latter often dictated by the former's availability and the way those dictated the latter through structural systems and details, are unable to provide contemporary solutions for massive urban construction [14].

Furthermore, contemporary urbanization, planning and design, structural and building systems, are based on paradigms developed in the industrialized countries, mostly in northern latitudes, more-often-than-not aimed at heating needs solutions. Thus it may be claimed that such principles and practices may well be incompatible with MENA constraints, climatic, technological and behavioral. Practices such as Passivhaus, developed primarily for countries with predominantly heating needs, may not be relevant to or compatible with hot climates [15], in which daytime comfort ventilation, and night cooling ventilation may be among the most viable strategies for energy conservation. In such regions people have found comfort in shaded and ventilated outdoors including for sleeping, or well ventilated indoors, not least during working hours.

The relevance of this discourse becomes evident when one notices the source of influences on the MENA standards and paradigms. These are instigated, often prepared, by external groups, institutions and organizations, the influence of which may be necessary and welcome as catalysts of processes, but to the extent that it starts affecting the applicability and viability of such solutions. Reviewing briefly the previous sections it suffices to sum up the most obvious of those external catalysts. Most important, of course, LEED and WGBC, and to a lesser degree BREEAM, which have affected and are affecting most of the MENA GBCs and their approach to the creation of local standards, practices and paradigms. In varying degrees such are the cases of Abu Dhabi, Egypt, Israel and elsewhere. Additionally, Oman seems to be influenced by the locally active GUTech, a German academic institution. UNEP and its Plan Bleu are widely involved in what is happening in the Mediterranean countries such as Lebanon, Syria, Turkey and the Maghreb. USAID has been active in various countries in MENA and is still widely involved in developments in the region, not least the Palestinian Authority where, additionally, the office of Mario Cuccinela is attempting to establish its first major case study in the form of green schools for Gaza. Morocco boasts its first green buildings designed by Foster and Partners (2012), who are also responsible for the Kuwait International Airport (2009); the residential and commercial development 3Beirut (2008); a stadium and a mixed use project in Doha, Qatar (2009 and 2005 respectively); and maybe most publicized of them all, Masdar City in Abu Dhabi, referred to as the first carbon neutral desert city, or zero carbon city [16].

It is, of course, hard, if not impossible and even unreasonable, to expect that in a globalised world there will be no such influences. However, it should be questioned whether such influences should not be critically considered. Can occidental paradigms and technologies be transferred to and succeed in the MENA countries without passing an adaptation stage? Several preliminary studies have shown, for example, that the practice of non-openable windows in HVAC supported office buildings may not be viable in hot climates, certainly not the coastal and milder ones [17-19].

This review has shown that there are some interesting similarities and common points which need to be further explored and capitalized on. Such include the strategic decisions and consequent actions of some of the smaller countries (e.g., Oman, Qatar and UAE), and the promotion of sustainable development to offset the constantly growing energy demand. This has been a fundamental difference from oil and gas producing countries (Egypt, Libya, Saudi Arabia) that seem to lag behind their smaller neighbors [20]. Whether under external influence or not, some of the Mediterranean countries of MENA, e.g., Israel, Lebanon, Syria, Tunisia and Turkey, have already developed building insulation codes and standards, alongside additional standards and assessment tools promoting energy conservation and green building. These are in essence very similar in the way they address the issues.

The growing influence of the WGBC seems to contain some great opportunities, among them the creation of formal or informal regional professional and academic contacts. These have the ability to foster dialogue on issues of regional and national vital importance, and allow the free flow and exchange of

ideas between the different countries. As a matter of fact, there may be much more to be gained from such regional cooperation than from a continuous influx of ideas, technologies and paradigms that are either based on technology incompatible with the regional constraints and abilities, or on romanticism imposed on the region from outside. It may well be much more fruitful to share experience gained under similar environmental and cultural constraints than to try to adapt to imported technology and its influences on the way buildings are used by their occupants. Furthermore, the lack of accepted, uniform assessment tools within a country will always create a problematic ambiguity. Such may be the case in Israel, for example, where some of the developers or owners opt for the LEED accreditation rather than the IS 5281 Sustainable Building Standard, mainly because of public relations issues.

Unfortunately, the window of opportunities for the adoption of green, energy efficient buildings and standards for energy conservation, and for turning these into guidelines for urban planning, building design and the generation of new solutions, may be closing faster than we originally believed. The climatic changes, made evident in the sustained climatic instability, extremes exacerbation, and growing aridity, are already affecting thermal discomfort, public health and often morbidity and mortality, productivity and well being. Under such conditions, and considering the high population growth rates in some of the MENA countries, energy availability will become the limiting factor not to growth and prosperity anymore, but to the mere survivability of communities and countries. As cities absorb more people from the countryside in search of livelihoods, so community resilience will shrink, and the poorer will be exposed to climatic extremes and lower survivability.

Such ideas have been dismissed for years as alarmist delirium devoid of actual factual base. However, recent years have brought the actual realization that "sustainability" is not another idea for intellectuals to toy with, but the very basic concept that may ensure the survivability of communities, not least those in the hot arid parts of the world, such as MENA [21]. The writing is already on the wall. Australia is faced with the bleak prospect of Outback towns having to be abandoned as the climatic extremes will make life there unbearable, their livelihoods will become unsustainable, and the continuation of habitation there will become uneconomical [22]. "… *The places most at risk, according to the report, are those in remote locations, with a high percentage of people employed in agriculture and a limited capacity to adapt*…" [23]. This can be seen as an extension of the recently released IPCC report [24] and sounds like an accurate description of many of the MENA countries and large parts of their population. In such countries, "green building" is not a decadent slogan they can ill afford, but an urgent priority that may help lessen their exposure to these risks.

ACKNOWLEDGMENTS

We wish to thank the following people (in alphabetical order) for their assistance in the preparation of this paper, be it in obtaining relevant standards, regulations and laws, helping with translation and analysis of these, and by sharing with us their ideas and constructive criticism: Ms Bihter Bayramoglou, AKIS, BIDR, BGU – Turkey; Ms Hilla Beinish and Ms Michal Bitterman, Israel Green Building Council; Prof. Samuel Hassid, Technion – Institute of Technology, Israel; Shula Lichfield, doctoral student, BIDR/BGU, Israel; Dr. Lusi Morhayim, University of California, Berkeley, USA; Prof. Agis Papadopoulos, Aristotle University of Thessaloniki, Greece; Dr. Klaus Wenzel, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Germany, and MED-ENEC. Additional colleagues and friends from MENA countries offered their kind assistance and criticism, but preferred to remain unacknowledged, at least formally. We are grateful for their contributions, and look forward to an era when we can take the MENA-wide consideration of green building potentials and their achievement can be done smoothly with co-authors from all MENA countries. Since we share many aspects of our climate, culture, and building traditions, and are likely to face similar challenges in the coming years, as our climate shifts, we hope that the circle of academic and professional dialogue will increasingly include all our peers in the neighborhood.

REFERENCES

1. ASHRAE, (2006). ASHRAE Green Guide. American Society of Heating, Refrigerating and Air-Conditioning Engineers. Elsevier/Betterworth-Heinemann, Burlington, MA.
2. Kubba, S., (2010). *LEED Practices, Certification and Accreditation Handbook*. Elsevier/Betterworth-Heinemann, Burlington, MA.
3. USGBC, (2012). US Green Building Council. http://www.usgbc.org/
4. BREEAM, (2009). *BRE Environmental and Sustainability Standard.* Building research Establishment, BRE Global Ltd., Gartson, Watford, Hertfordshire.
5. BREEAM, (2012). Building Research Establishment Environmental Assessment Method. http://www.breeam.org/
6. GBCA, (2012). *Green Start Overview*. Green Building Council Australia. http://gbca.org.au
7. GBCSA, (2012). *Green Start SA Rating Tool*. Green Building Council South Africa. http://gbcsa.org.au
8. WGBC, (2012a). World Green Building Council. http://www.worldgbc.org
9. ESRI, (1982b). ArcGIS Desktop Version 10.0. Environmental Systems Research Institute, Inc., Redlands.
10. Meir, I.A., A. Peeters, D. Pearlmutter, S. Halassa, Y. Garb and J.M. Davis, (2012). Green building standards in MENA:

An assessment of regional constraints, needs and trends. *Journal of Advances in Building Energy Research.* 5: p.1-39.
11. Garb, Y. and R. Horne, (2012). *Explorations Toward a Social-Economic Disaggregation of the Environmental Impacts of Consumption in Israel*. Report submitted to the Jerusalem Institute for Israel Studies, Jerusalem.
12. Iwaro, J. and A. Mwasha, (2010). Implications of building energy standard for sustainable energy efficient design in buildings. *International Journal Energy and Environment*, 1(15): p.745-756.
13. Glaeser, E.L., (2012). *Triumph of the City*. Penguin Press HC.
14. Meir, I.A. and S.C. Roaf, (2005). The future of the vernacular. Towards new methodologies for the understanding and optimization of the performance of vernacular buildings. In Asquith L. and M. Vellinga (eds.) *Vernacular Architecture in the 21st Century.* Routledge, Oxford, pp.215-230.
15. Grove-Smith, J., (2009). *Passive Houses in the Mediterranean Climate*. Passivhaus Institut, Darmstadt.
16. Vidal, J. (2011). Masdar City – a Glimpse of the future in the desert. *The Guardian* (Apr.26).
17. Davar, Y., I.A. Meir and M. Schwartz, (2006). Architectural design and IEQ in an office complex. In *Healthy Buildings Conf. Proc.*, Lisboa, Portugal, III: p.77-81.
18. Morhayim, L. and I. Meir, (2008). Survey of an office and laboratory university building. An unhealthy building case study. *Indoor Air Conf. Proc.*, Copenhagen, Denmark, Paper ID: 933.
19. Meir, I.A. and J.Y. Golding, (2010) The unbearable lightness of "The Paradigm": On energy waste and discomfort in a hot arid climate. *Proc. 6th Windsor Conf.*, Cumberland Lodge, Windsor, UK, Apr.9-11.
20. Tassabehji, R. (2011). How genuine is the Arab world about the environment? *Green Prophet*, March 28.
21. Meir, I.A. and D. Pearlmutter, (2010). Building for climate change: Planning and design considerations in time of climatic uncertainty. *Corrosion Engineering and Technology*, 45(1): p.70-75.
22. Beer, A., S. Tually, M. Krohen and J. Law, (2012). *Australia's Country Towns 2050: What Will A Climate Adapted Settlement Pattern Look Like?* Center for Housing, Urban and Regional Planning, U Adelaide, Adelaide.
23. Marks, K. (2012). Climate could kill you, Outback towns are told. *The Independent*, July 13.
24. IPCC (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation.* Cambridge U Press, Cambridge, UK, p. 1-19.

Table 1: Status of insulation, energy performance and labelling, and green building standards in MENA countries. Legend: AG – Associated Group; Em – Emerging; Es – Established; GB – Green Building; GBC – Green Building Council; M - Mandatory; N/I – No information; P – Prospective; U/D – Under Development; V – Voluntary. For a detailed list of sources for this table's information see [10].

Country	Insulation Standard - Buildings	Energy Efficiency/ Performance Standard - Buildings	Energy Labeling Standard	Energy Audits - Buildings	GBC/status	GB Standard
Algeria	U/D	U/D	Home appliances - M	N/I	N/I	N/I
Bahrain	N/I	N/I	N/I	N/I	Pr	N/I
Egypt	N/I	V	M	V - subsidized	AG	V
Iran	N/I	V - offices	N/I	N/I	N/I	N/I
Iraq	N/I	N/I	N/I	N/I	N/I	N/I
Israel	M	V	M	V	Es (Europe)	V
Jordan	M	U/D	N/I	N/I	Em	V
Kuwait	N/I	M	N/I	N/I	Pr	N/I
Lebanon	V	V	U/D	N/I	Pr	V
Libya	N/I	N/I	N/I	N/I	AG	N/I
Morocco	N/I	U/D	U/D	N/I	Pr	N/I
Oman	N/I	N/I	N/I	N/I	AG	N/I
Palestinian Authority	V	V	N/I	N/I	Pr	N/I
Qatar	U/D	U/D	U/D	U/D	Em	V
Saudi Arabia	N/I	U/D	N/I	N/I	Pr	N/I
Syria	V	V	V	N/I	Pr	N/I
Tunisia	M	M	M	N/I	AG	N/I
Turkey	M	M	N/I	N/I	Es (Europe)	N/I
UAE – Abu Dhabi	N/I	U/D	M	N/I	Es	V
UAE - Dubai	N/I	U/D	M	N/I	Es	U/D
Yemen	N/I	N/I	N/I	N/I	N/I	N/I