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Seminar on: "Monitoring the Implementation of Energy Related SDG Indicators in the Arab Region"

Energy Efficiency in the Arab Region

Beirut, 17 April 2019

Economic and Social Commission for Western Asia

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Session II. Energy Efficiency: Sustainable Growth.

ENERGY EFFICIENCY IN THE ARAB REGION.

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Context

Improving energy efficiency and energy productivity will reconcile the world's growing need for energy services with the impact that energy resource development has on the natural resource base. Thus, improving energy efficiency and energy productivity are two very important ways to combat climate change, improve air quality, and reduce energy costs.

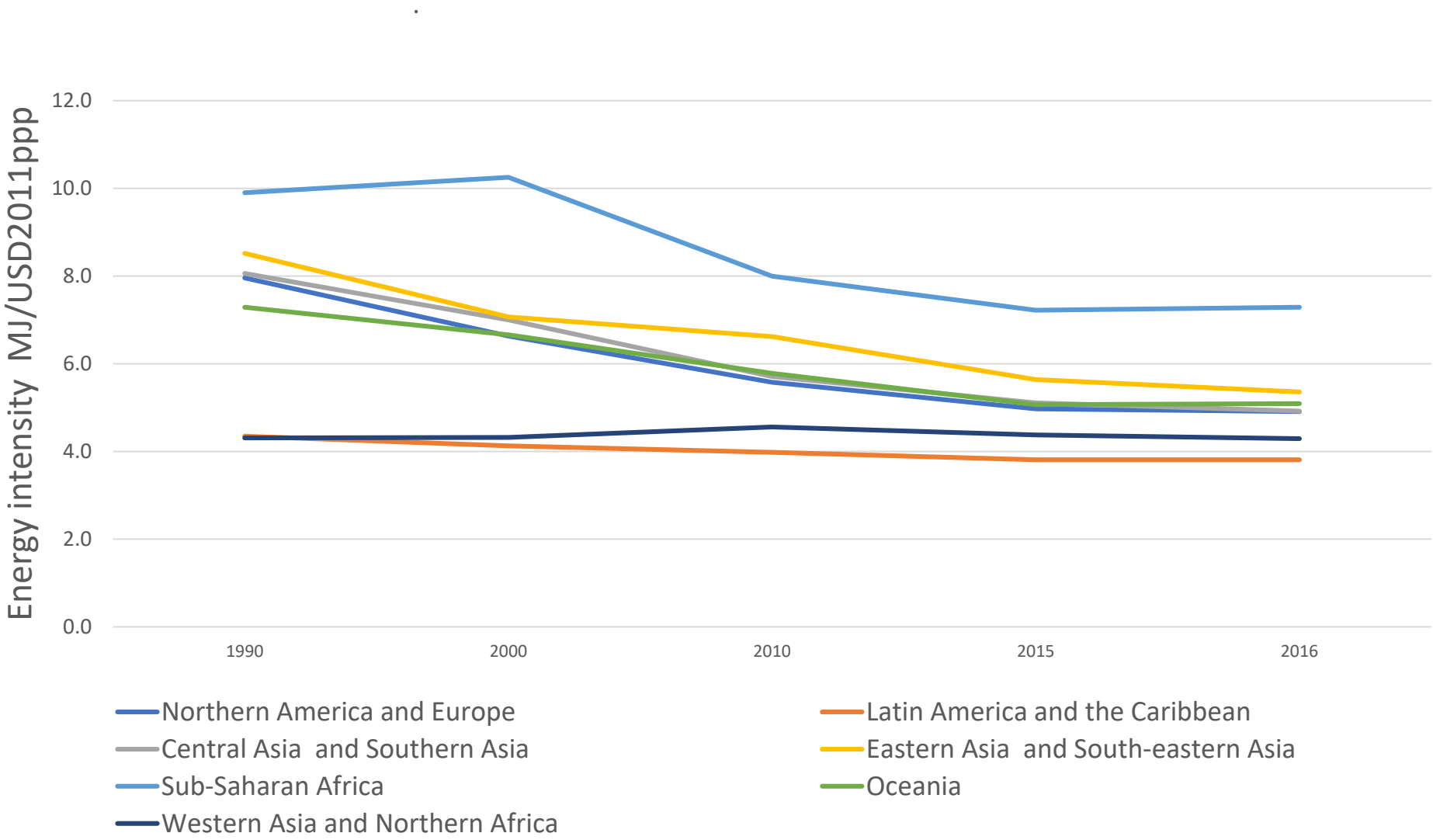
The Arab region is characterized by ***unchecked demand aided by decades of low-cost energy supply coupled with an energy mix that is highly dependent on fossil fuel***s and a ***slow progress in raising energy efficiency*** requires ***policymakers to prioritize their efforts in enhancing the management of their countries' natural resources.***

While this transition raises several challenges, it also creates an opportunity for policymakers to work towards adopting a sustainable energy development planning.

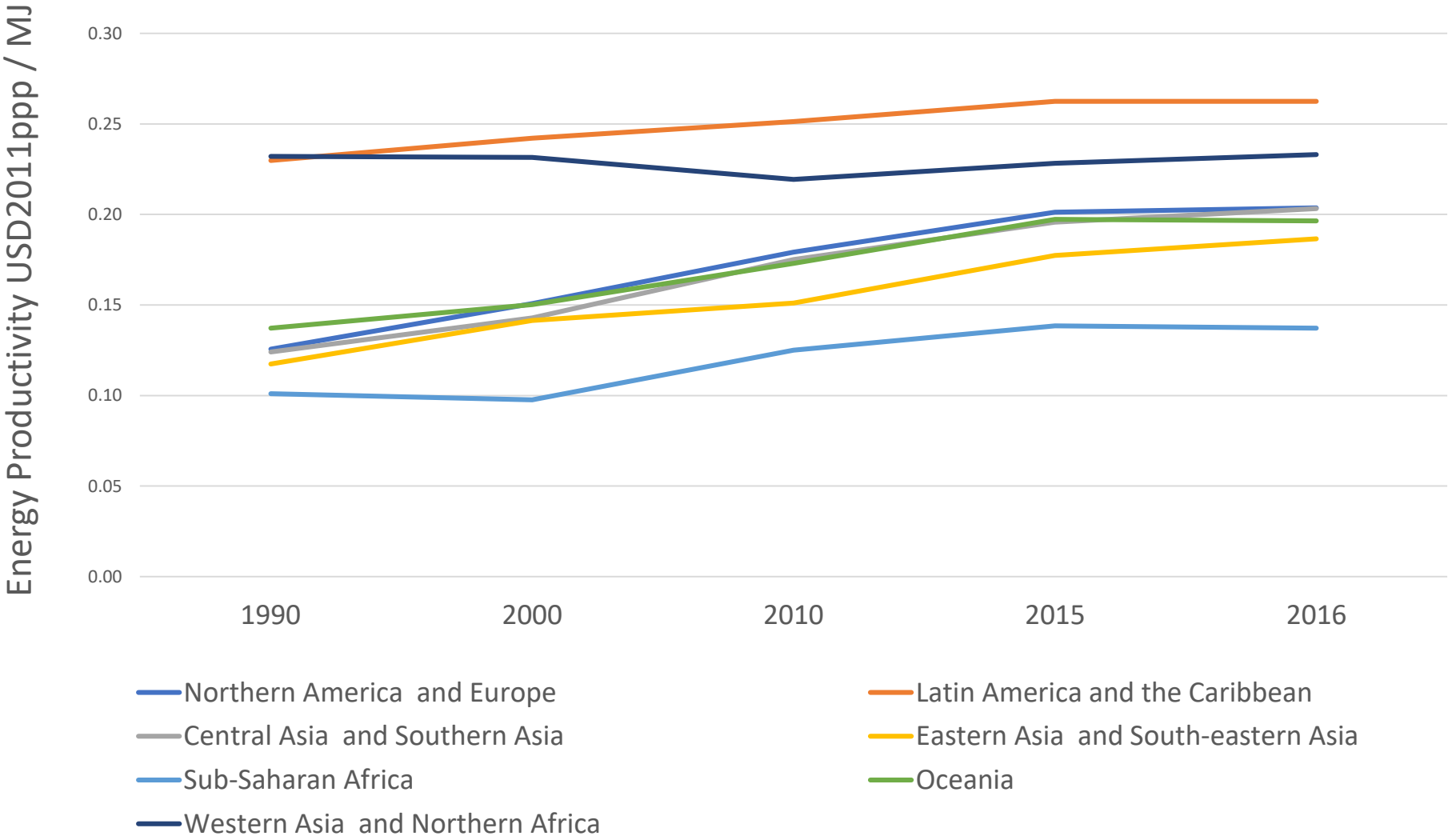
SDG7 tracking report.

- Global trends and drivers
- Arab region trends in energy intensity
- Sector trends
  - Industry
  - Power – and water
  - Transport
  - Buildings

Global Energy Intensity Trends



Global Energy Productivity Trends



Drivers of Energy Intensity change

All regions achieving long-term improvement in their energy intensity (productivity) since 1990.

Most change is autonomous, driven by advances in:

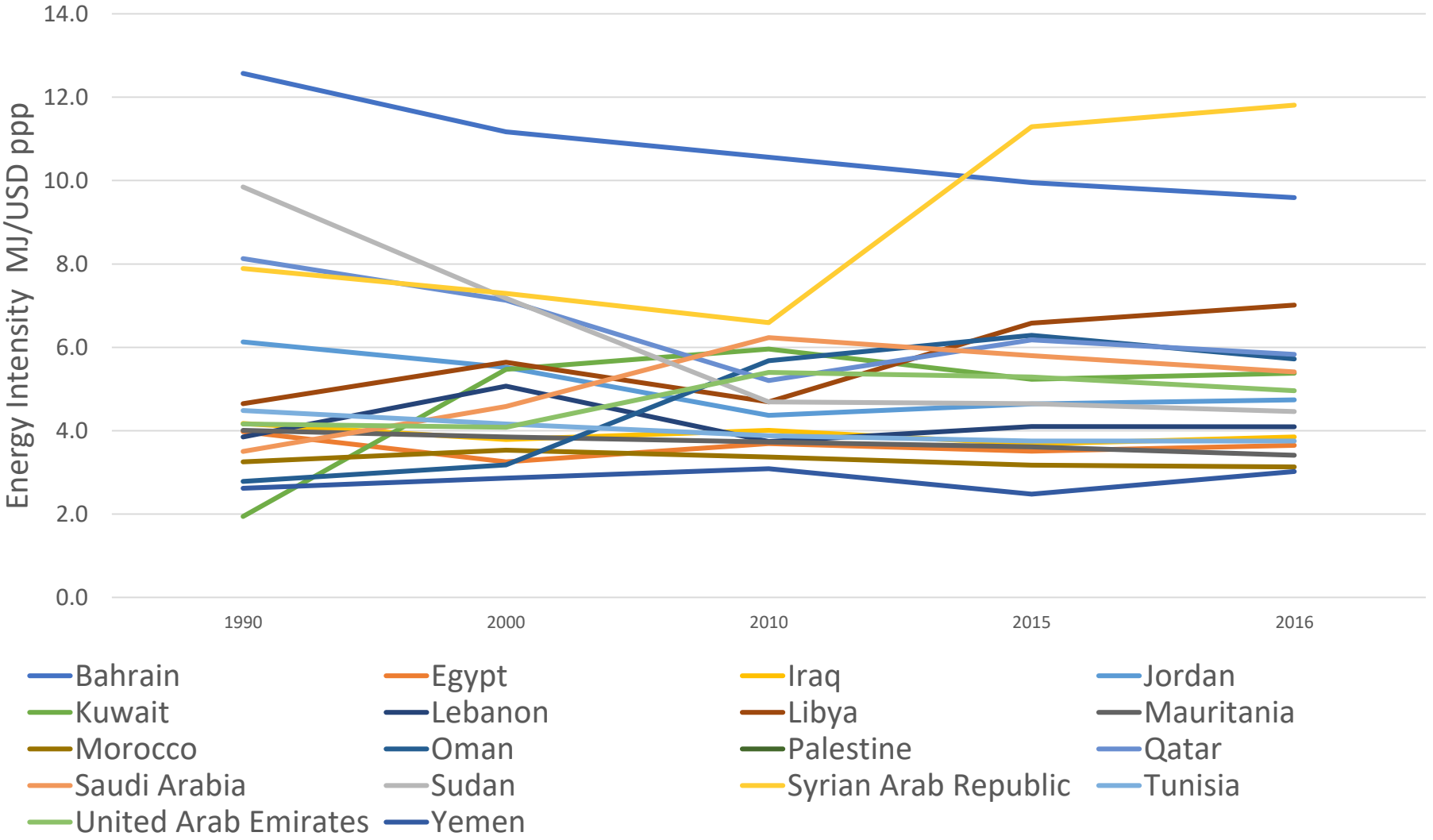
- efficient technologies
- structural changes: from agrarian, through industrialisation, to service economies.

Few countries have substantive energy efficiency policies or carbon mitigation strategies.

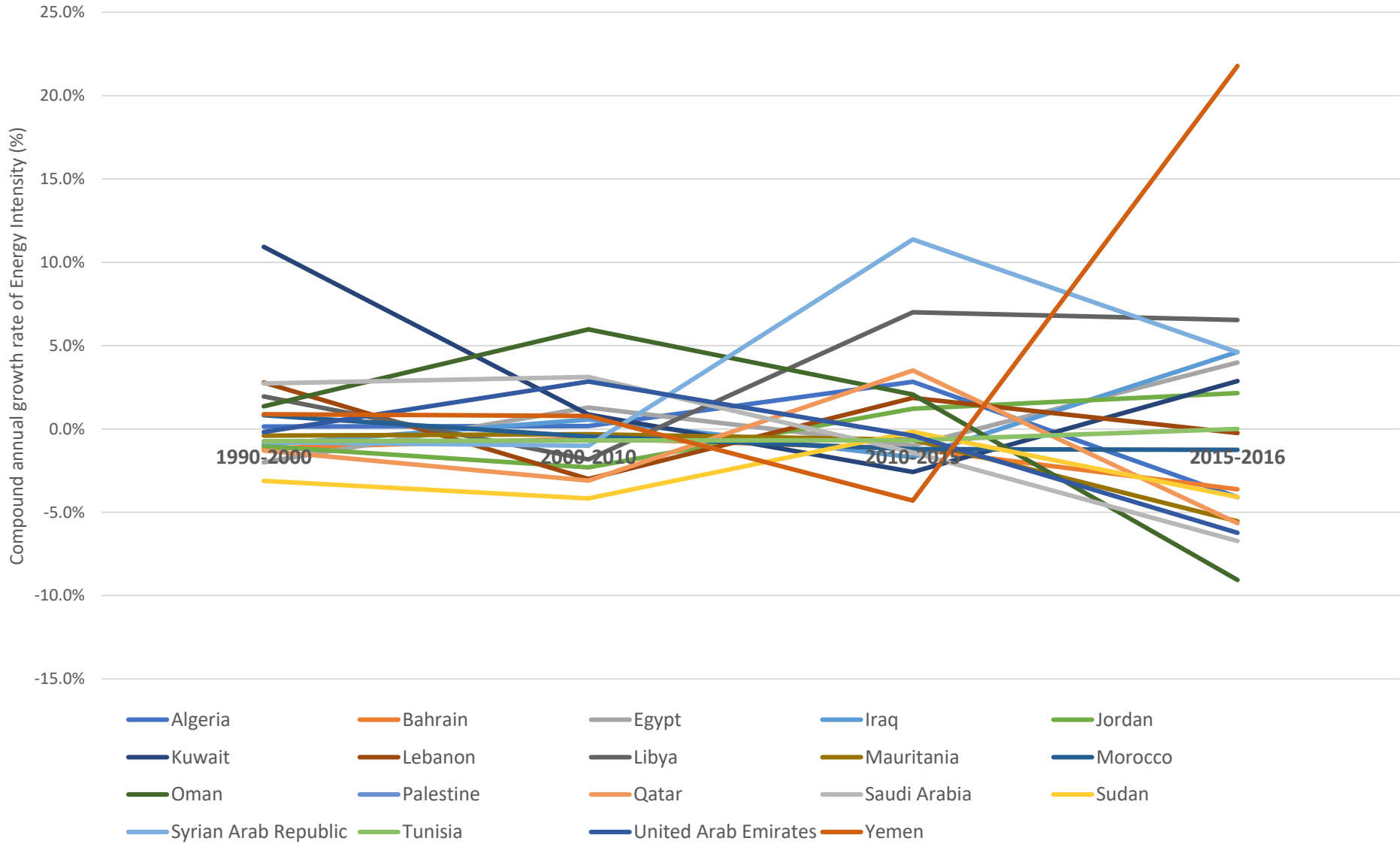
The Arab region has maintained relatively low energy intensities at 4MJ/$USD_{2011ppp}$ over the past 26 years,

Considerable economic and social development has occurred in many Arab countries.

Arab Region: Country Energy Intensity 1990 - 2016



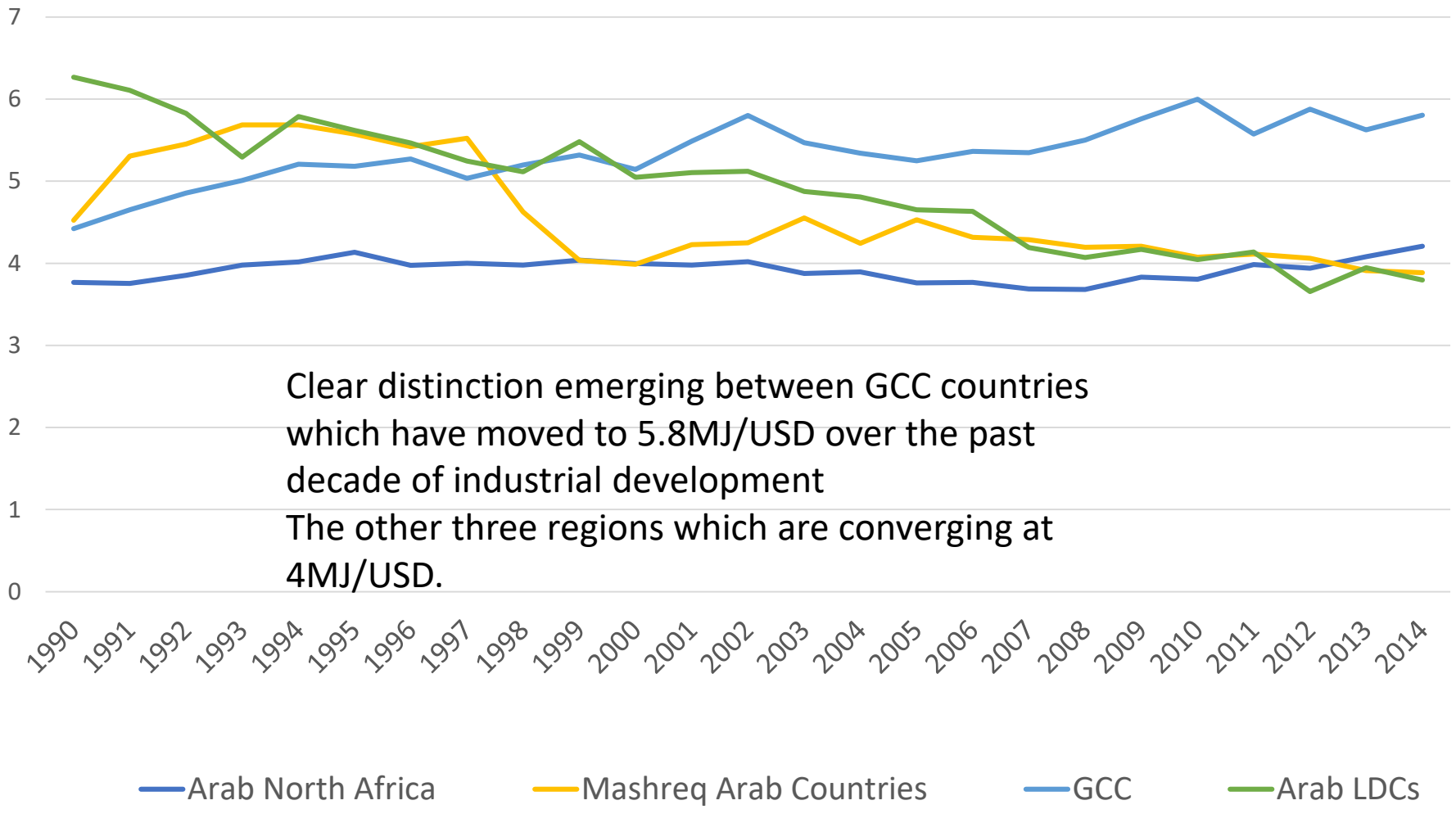
Country Energy Intensity changes 1990 - 2016



Understanding Arab region energy intensity.

- Recent energy intensity trend is -1% from 2010 - 2016. This is an important reversal over the 0.3% increase in energy intensity from 1990 to 2010.
- But still less than half the world average energy intensity improvement rate over 2010 -2016.
- Changes in both currency value and GDP earnings as well as in energy use and efficiency alter energy intensity.
- How can the region further improve its energy productivity while delivering improved wellbeing and environmental outcomes.

Sub-regional energy intensity trends.



Countries in Regions

- Most Arab region countries have consistently improved their energy intensity since 1990: Egypt, Iraq, Jordan, Kuwait, Mauritania, Morocco, Qatar, Tunisia and Sudan
- Algeria, Kuwait, Lebanon, Oman, Saudi Arabia and UAE have increased energy intensities since the 1990's as they have industrialised.

  For example, Bahrain remains an energy intensive economy, but continues to transform from mid-20th century oil producer with development of services sector since the 1970's. It however retains an economic structure based around oil production and a large aluminium smelter that dominates the economy of a small country.

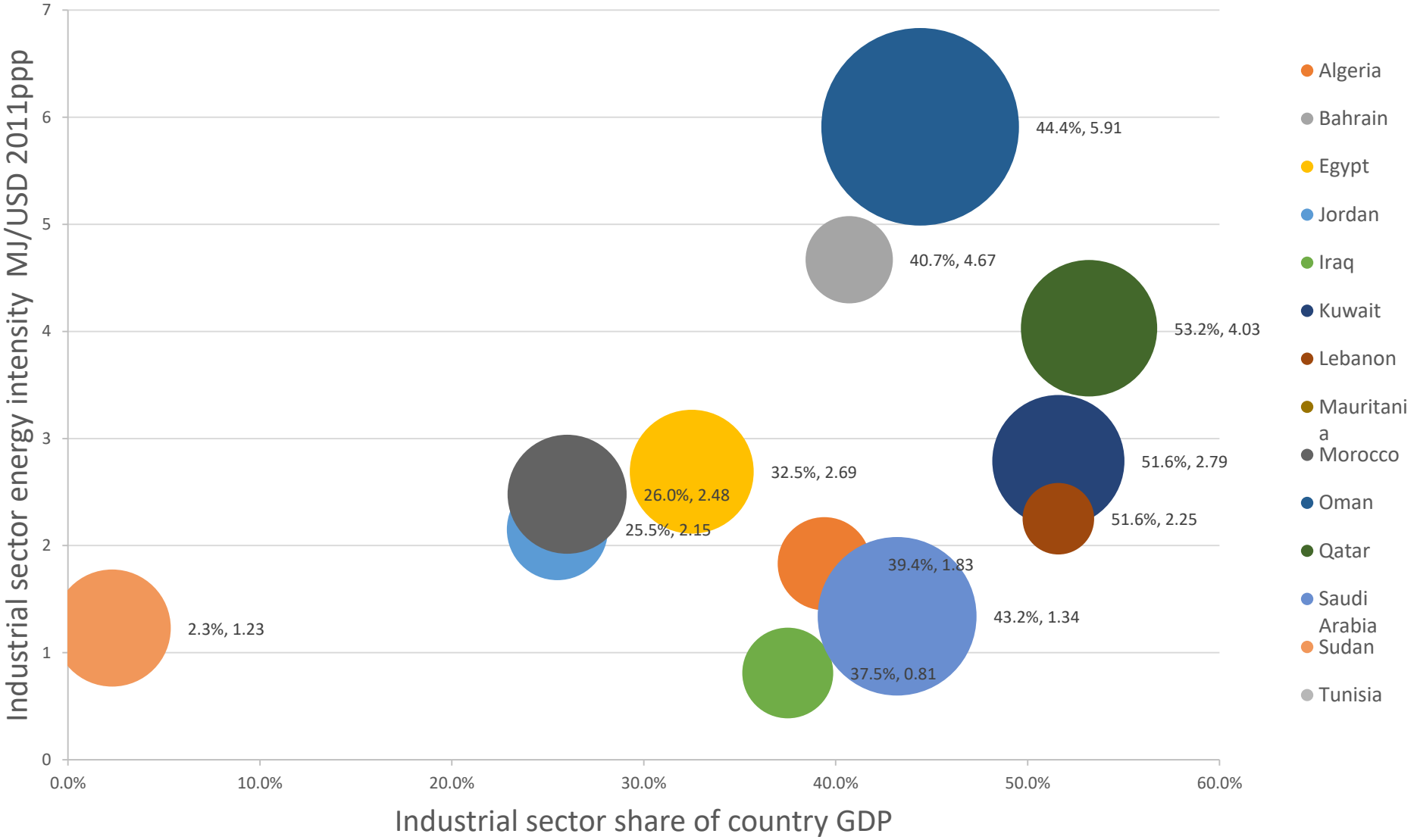
- Exogenous forces have a profound effect on energy intensity: The upswings in energy intensity in Iran, Libya, the Syrian Republic and Yemen are all linked to unrest. Neighbouring countries are vulnerable too, both Lebanon and Jordan are experiencing related constraints to economic intensity improvements , 2% in 2016, compared to 5.5% in 2009.

Industrial sector. (Manufacturing and Construction)

Globally, industry energy intensity improved by 2.7% CAGR from 2010 to 2016.

- attributed to advances in global production technologies
- increasing ICT systems in the commercial sector achieved a 2.4% energy intensity improvement.

Industrialisation, Energy Intensity and emissions.



Transport Sector.

The world's transport sector consumes 27% of global energy use, or 64% of global petroleum products.

- Passenger transport activity grew by 30% but energy demand only by 12% over 2010-2015.
- Transport's share of global energy-related CO_2 emissions is 23%. Emissions increased by 2.5% annually between 2010 and 2015.
- Energy intensity achieved a -3% CAGR improvement since 2010.

Much of the improvement in global passenger transport energy intensity attributed to Vehicle Fuel Economy programmes in major vehicle manufacturing markets; China, USA, EU, Japan, and India.

- Structure of transport is changing; growth in PT, air travel, active modes

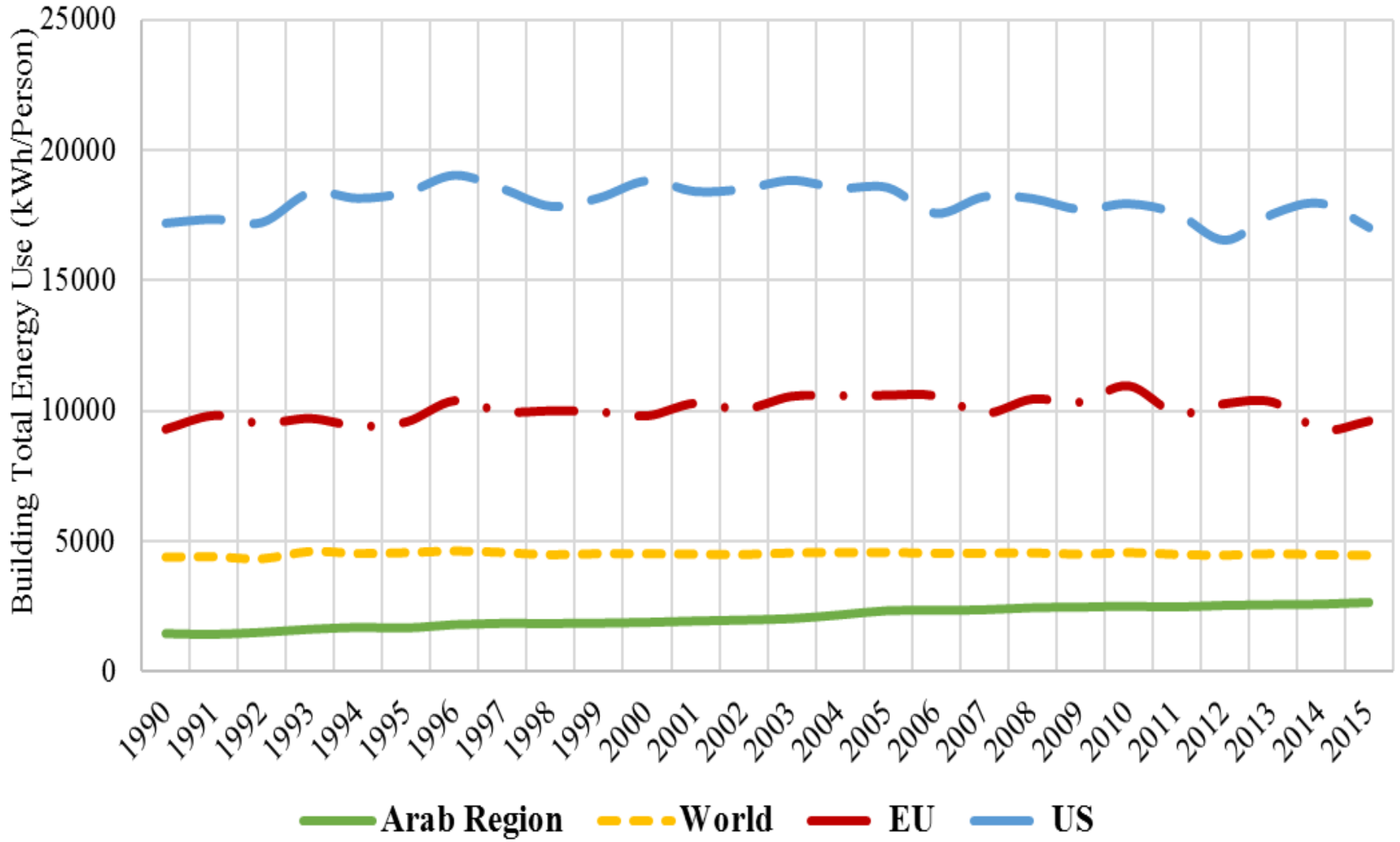
Vehicle fuel economy policies

LDV market where sales have grown by around 10% between 2015 and 2017.

Global average fuel consumption of newly registered light-duty vehicles (LDVs) reached 7.2 litres of gasoline-equivalent per 100 kilometres (Lge/100 km) in 2017

The average fuel consumption differs substantially among countries, ranging between 5.2 Lge/100 km and 8.9 Lge/100 km

Buildings energy intensity



Cooling

Space cooling is increasingly essential in many Arab region countries and building electricity use is closely linked to outside air temperatures.

Space cooling uses 70% and 60% of the total energy consumption for respectively residential and commercial buildings in Saudi Arabia due to the extreme climatic conditions.

Access to air conditioning is linked to income:

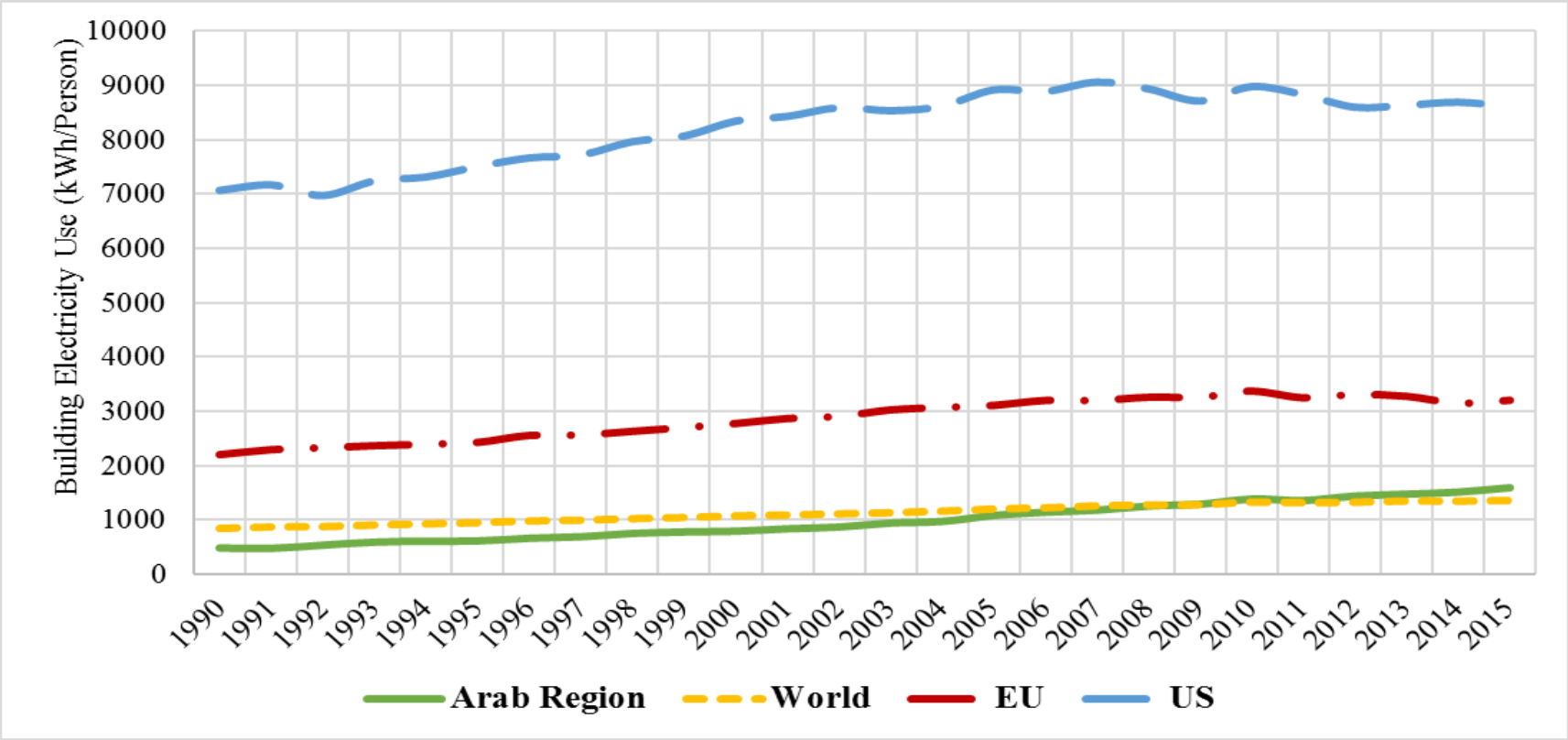
- Wealthier GCC countries almost 100% penetration of air conditioning,
- Maghreb and Masreq regions, 40-50% penetration, with projected growth to 80% by 2030,
- LDCs around 9-12%,
- Refrigerators exist in similar penetration rates.

In 2016 5.28M air conditioners were sold, an increase by 17% on the 4.5M sold in 2011.

The cooling driver of residential and building energy demand will continue to drive up energy consumption as population grows and wellbeing expectations consistent with SDG goals are met.

MEPS

In countries with established appliance MEPS and building codes, electricity has dropped off over the past decade. This trend reflects the growing penetration of higher efficiency appliance displacing older less-efficient stock over time.



Country	Appliance MEPS	Building Codes	% Improvement Code type
Algeria	Air Conditioners, Freezers, Refrigerators, since 2009	Building envelope insulation since 2005	56%, M (D)
Bahrain	Air Conditioner MEPS under development in 2018	Comm Bldg. Thermal Insulation (1999) other building types (2013)	25% M (D) P
Egypt	Air Conditioners, Freezers, Refrigerators, Washing Machines. 2003, rev. 2006.	EE code for residential (2005), commercial, public buildings (2009),	48% M (D)
Iraq	NA	EE Specifications for Buildings (2012)	NA V
Jordan	Air Conditioners, Freezers, Refrigerators, Washing Machines since 2014.	Energy Conservation Building Code (2010)	57% M (D)
Kuwait	Air Conditioners, since 1983 as part of building code. Rev, 2010, 2014.	Energy Conservation Code of Practice No. R-6 (1983, updated 2014)	30% M (D)
Mauritania	NA	NA	9%
Morocco	NA	Energy Efficiency Code (2015)	42% M (D)
Lebanon	Voluntary MEPS for Refrigerators since 2008, Air Conditioners since 2007	Thermal Insulation Requirements. ARZ Building Rating System for Existing Buildings (LBGC, 2011)	35% V V
Libya	NA	None	NA
Oman	NA	None	NA
Palestine	NA	Energy Efficiency Code for Buildings (2004)	NA V
Qatar	Air Conditioning systems since 1983	Global Building Assessment System Public Buildings (2012) Commercial Buildings (2016) Residential Buildings (2020)	50% M (D)
Saudi Arabia	Air Conditioners, Freezers, Refrigerators, Washing Machines since 1983. Last rev. 2013.	Thermal Performance Code (2014)	49% M (D)
Sudan	NA	None	19%
Syria	Refrigerators since 2008	Thermal Insulation Code (2009)	NA M (D)
Tunisia	Refrigerators and Freezers since 2004, phase-in 2006 to 2009 Air-conditioners since 2009, phase in 2010 – 2011	EE residential code (2009). Select commercial buildings (2008)	68% M (D, C, P)
United Arab Emirates (Dubai)	Air Conditioning systems, Freezers, Refrigerators, Washing Machines since 2013.	Thermal Insulation requirements (2003) Green Building Regulations and Specifications (2011)	63% M (D)
Yemen	NA	NA	12

Key guiding questions for discussion

1. What are the major areas for energy efficiency improvements in key economic sectors (building, industry and transportation sectors) in the Arab countries?
2. Do you have industry sector, activity, energy use and emissions data that enables insight beyond aggregate energy intensity?
3. Can you provide power sector data? Sector size, types and capacities of energy sources used, generator stock and performance data?
4. Can you outline EE programmes run by utilities?
5. Do you have any transport sector statistics that outline the stock of motor vehicles, energy use, distance driven, carbon emissions or fuel economy for passenger vehicles?
6. What are the main challenges that have hindered countries' ability to achieve EE gains?
7. Are national energy subsidy reforms affecting the pace and priority given to national programmes in EE?
8. Are there specific regional patterns of development that could be addressed at the country level to help increase the rate of EE investments and savings?
9. What are the data sources for EE at the national and sub-national levels, Census/Surveys/Administrative and major challenges for data shortcoming, disaggregation?

Thank you

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