

ARAB ENVIRONMENT IN 10 YEARS



2017 Report of the Arab Forum for Environment and Development

Food Security in Changing Arab Environment

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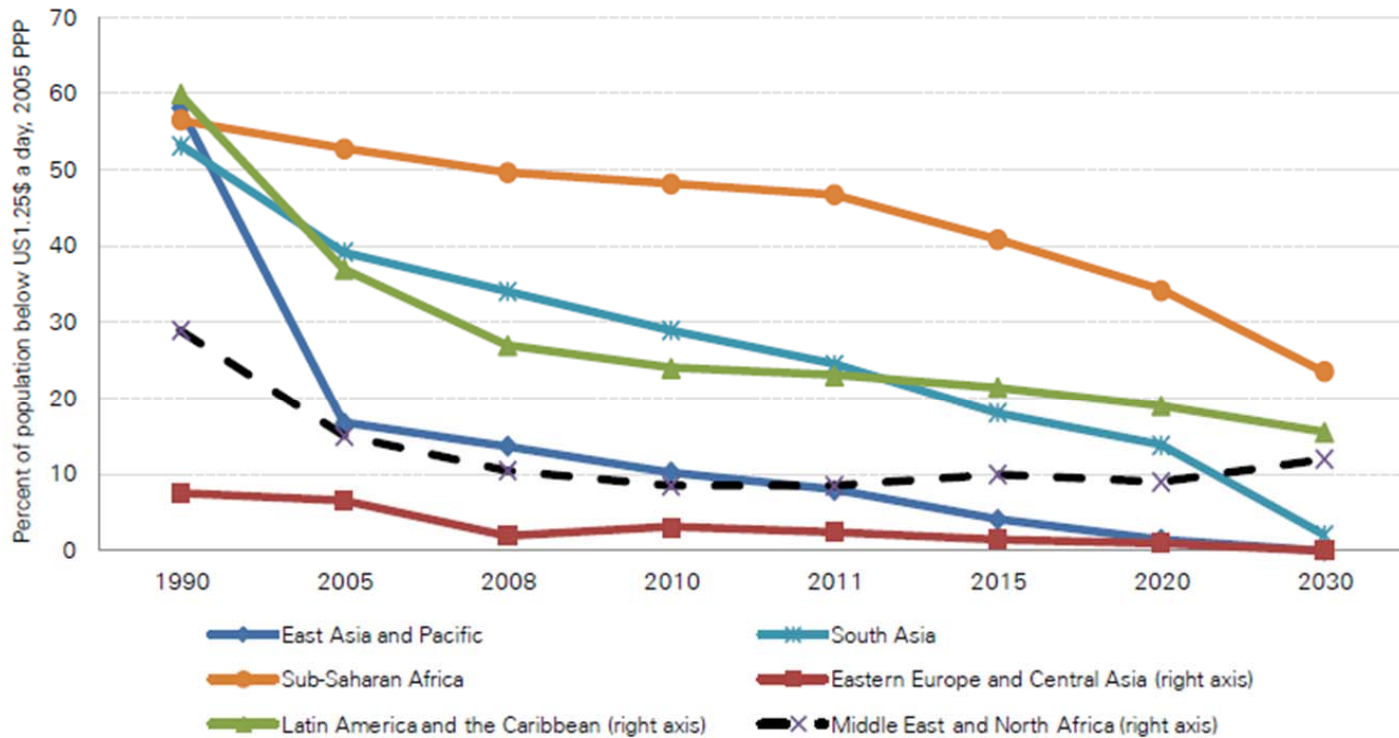
The Changes in the Arab Environment Over the Last 10 Years

- Degradation of already limited natural resources: water, land and biodiversity;
- **Serious climate change implications;**
- Lack of economic and social development;
- **High birth rate (2.3% compared to 1.9% in other developing countries);**
- Political unrest, wars and civil conflicts;
- **High unemployment, especially of the youth;**
- Brain drain due to migration.



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Poverty Forecast in Different Regions of the World by 2030

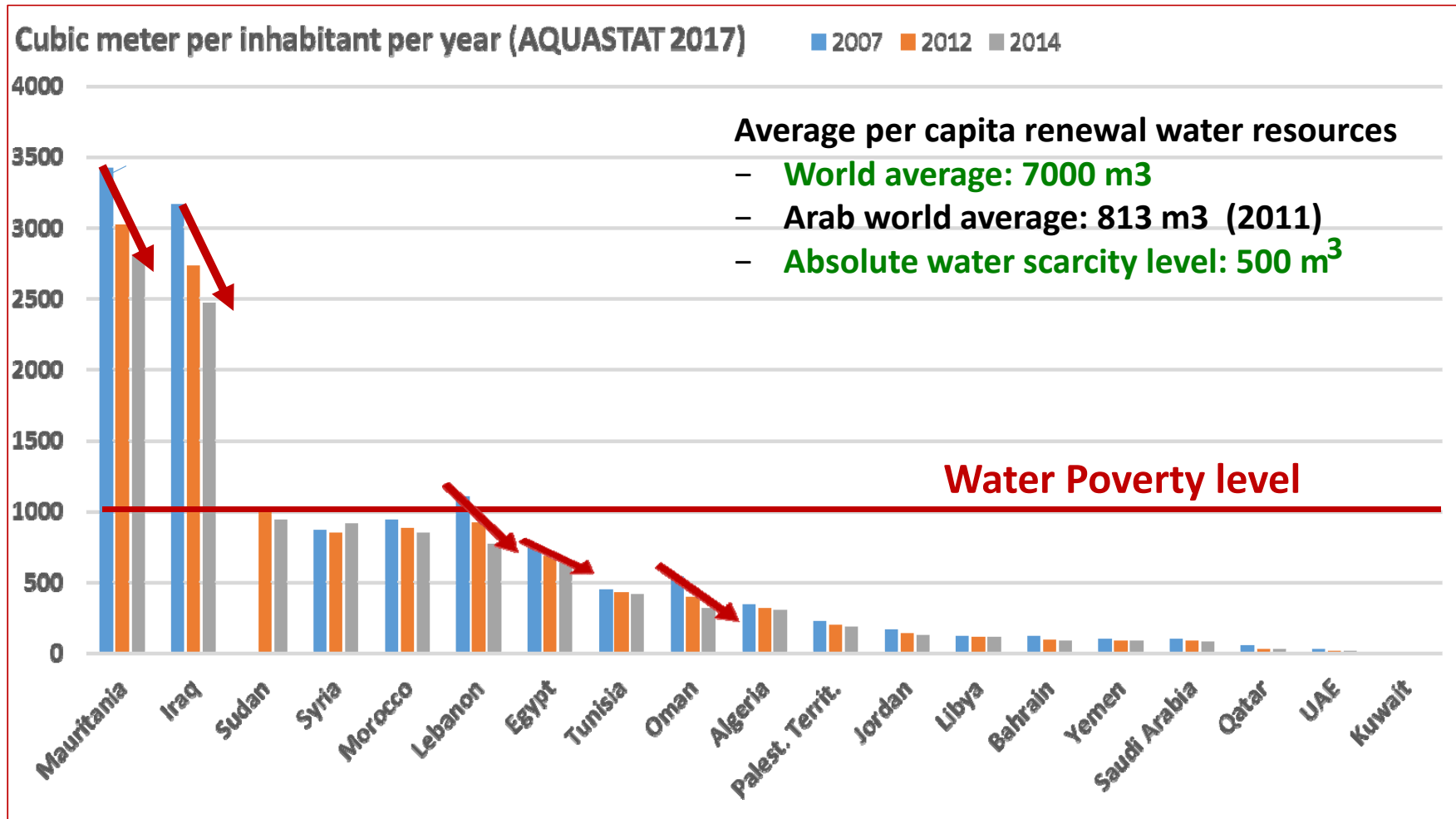


Source: World Bank, 2014.

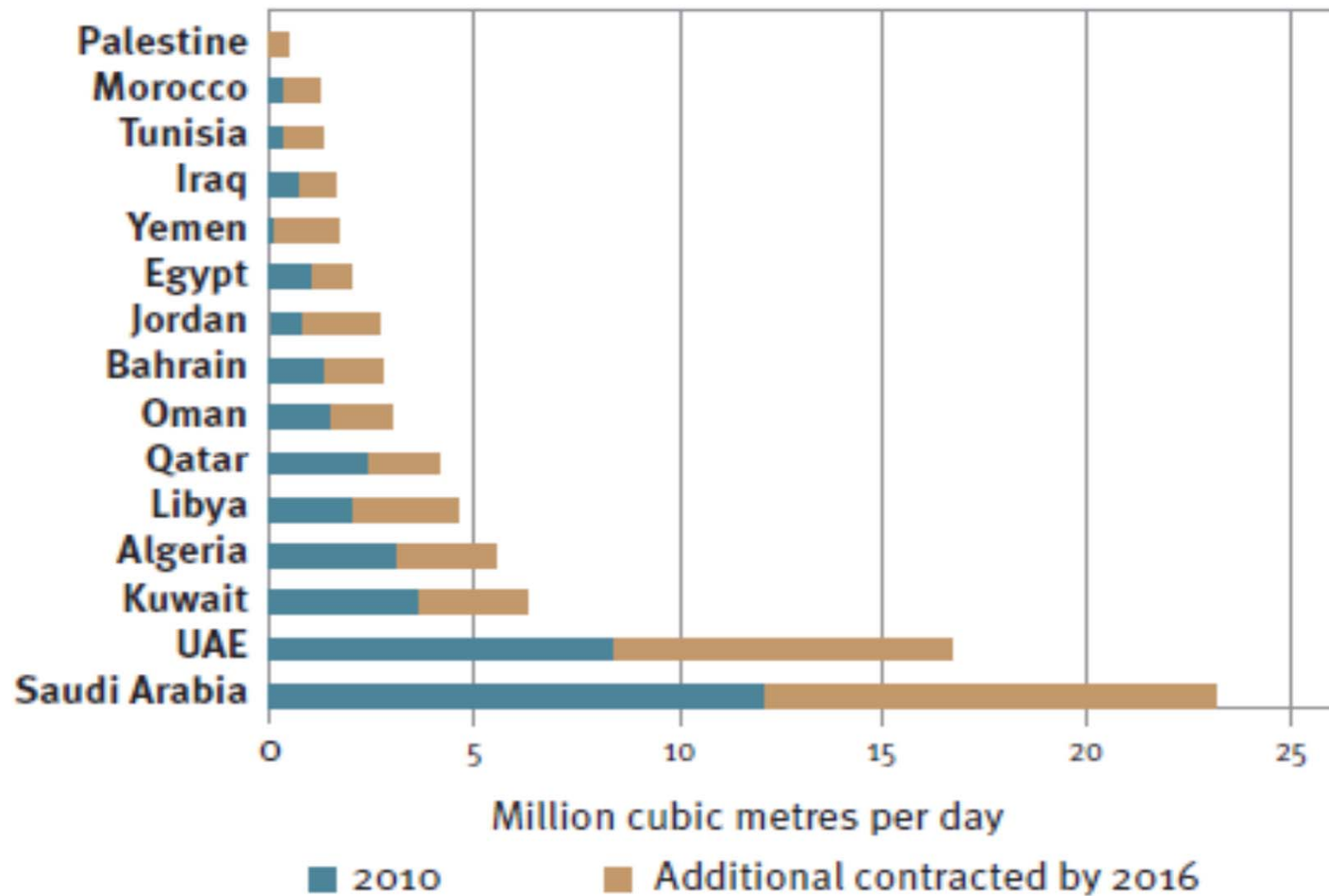
Note: Poverty defined as under USD 1.25 per day in 2005 purchasing power parity (PPP).

- **Hungry people** in the Arab world has **doubled** from **16.5 million** in 1990–1992 to **33 million** in 2014–2016.
- **The proportion of undernourished people** increased from **6.6%** to **7.5%** during this same period;
- **Number of stunted children** is high in **Egypt, Iraq, Sudan and Yemen.**
- **Two Arab countries** have **obesity levels among the highest in the world.**

Drop on total renewable water resources per capita in Arab countries, 2007-2014 (FAO AQUASTAT, 2017)

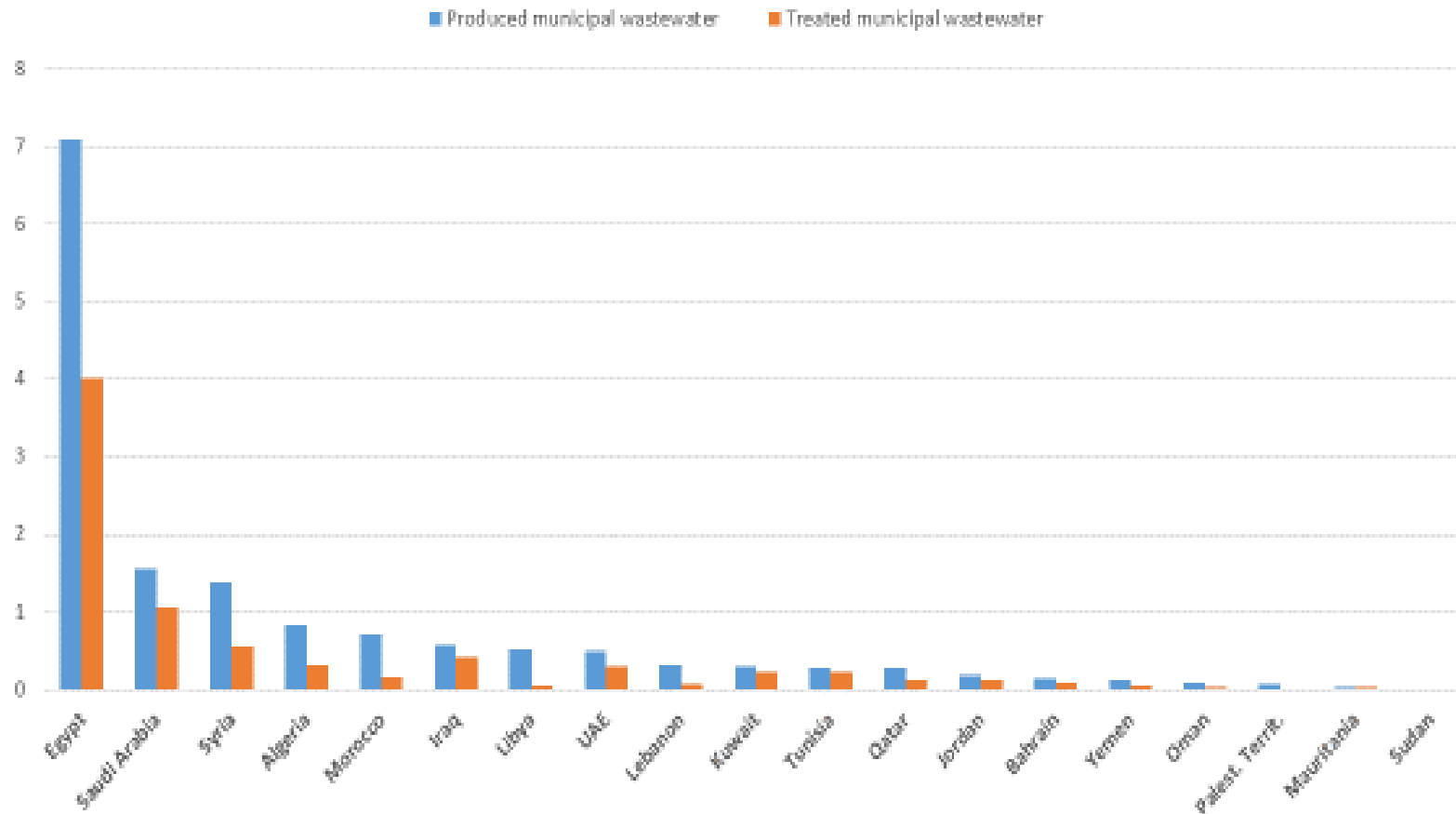


Increase in desalinated water in selected Arab countries in 2010 and contracted to 2016



Increase in wastewater produced and treated in some Arab countries, 2009-2013 (FAO Aquastat 2017).

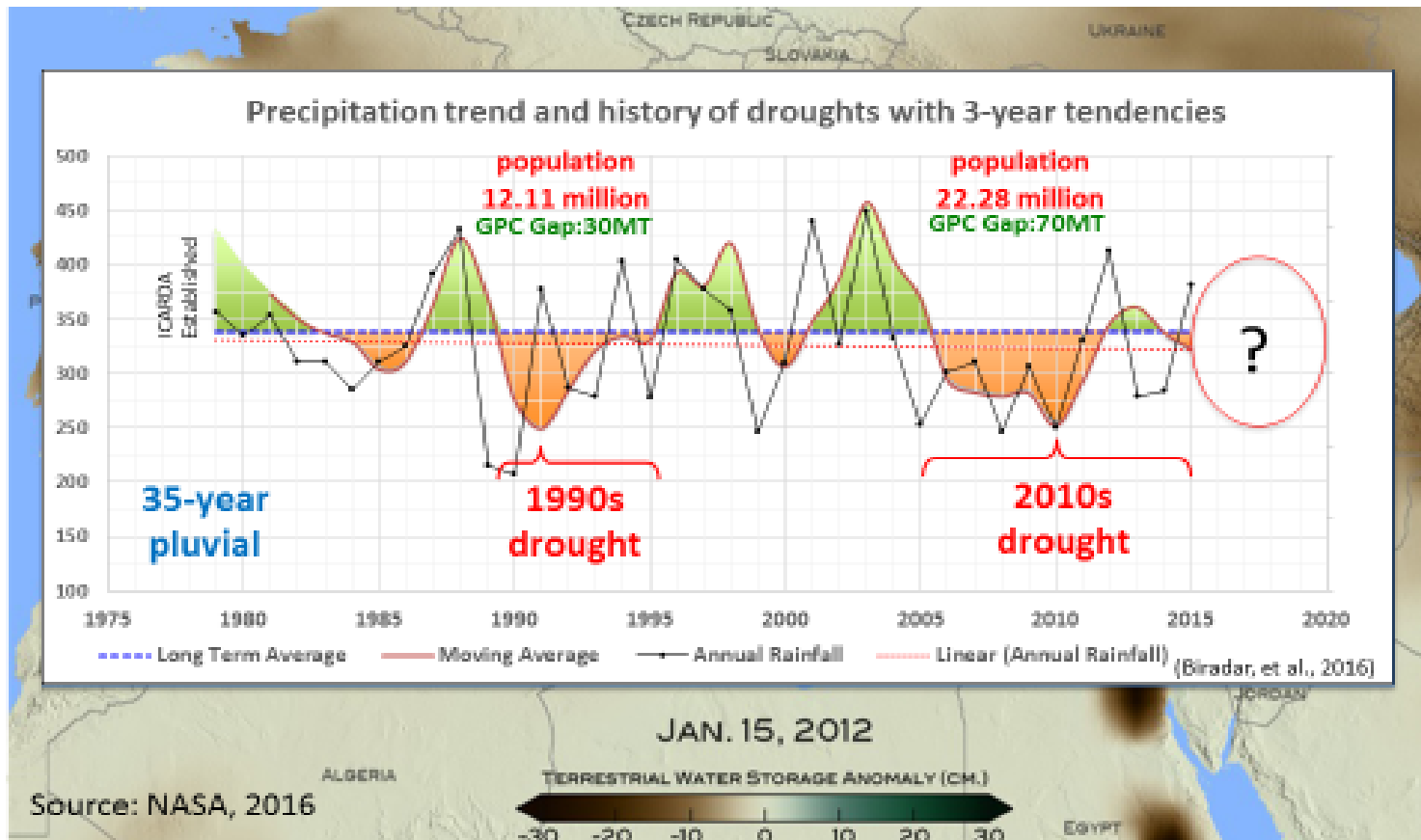
Produced and Treated Municipal waste water 10⁹ m³/year(2009-2013)



Climate Change: Precipitation trend and history of droughts in the Middle East from 1975 to 2015 (Biradar et al., 2016; NASA, 2016)

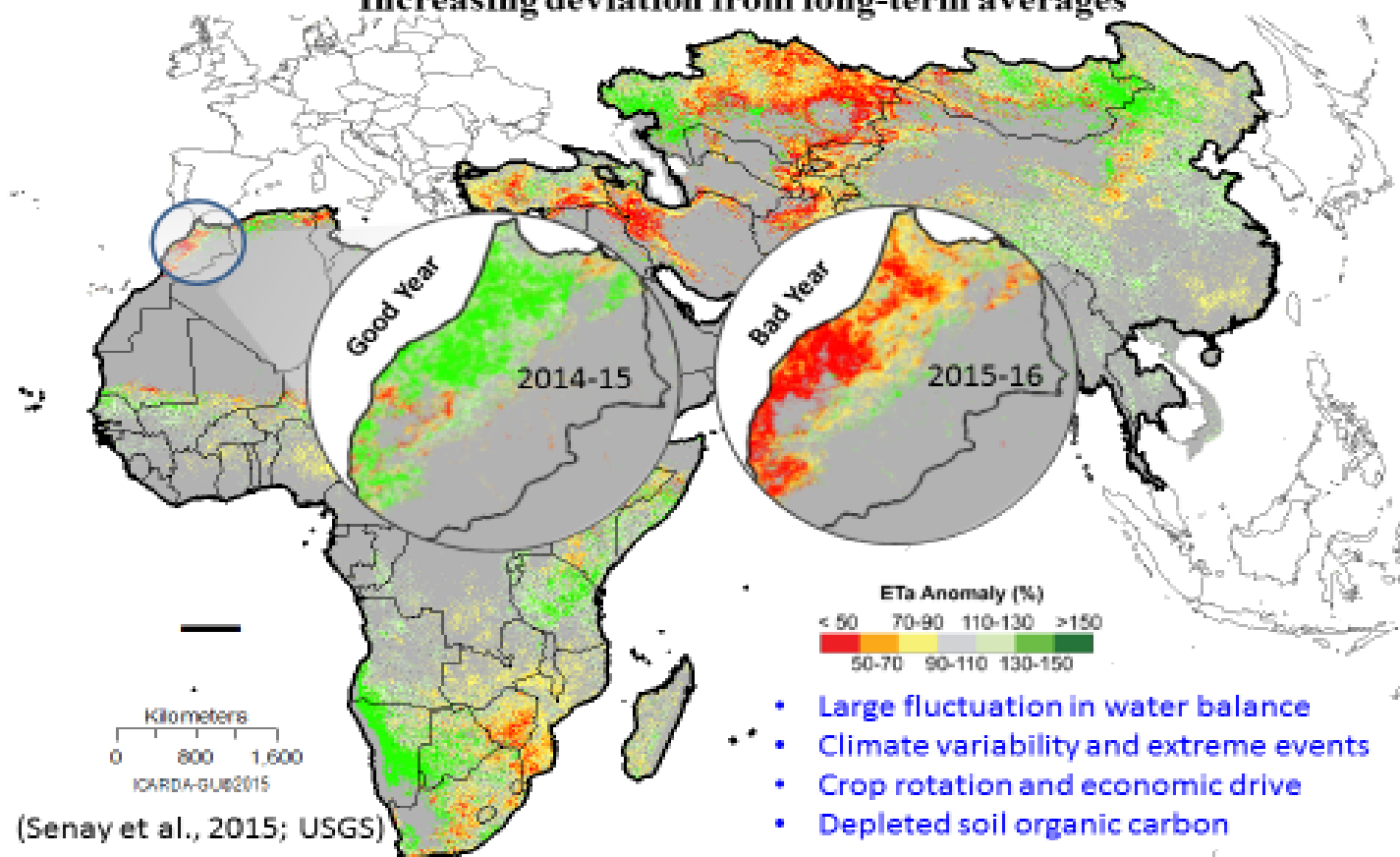
Increasing Droughts
and the consequences on conflicts and migration

Drought in Middle East is worst of past 900 year



Morocco experiencing the most serious drought in 2015/16 since the last 45 years

Changing Water Balance in North Africa and Morocco most seriously affected
Increasing deviation from long-term averages

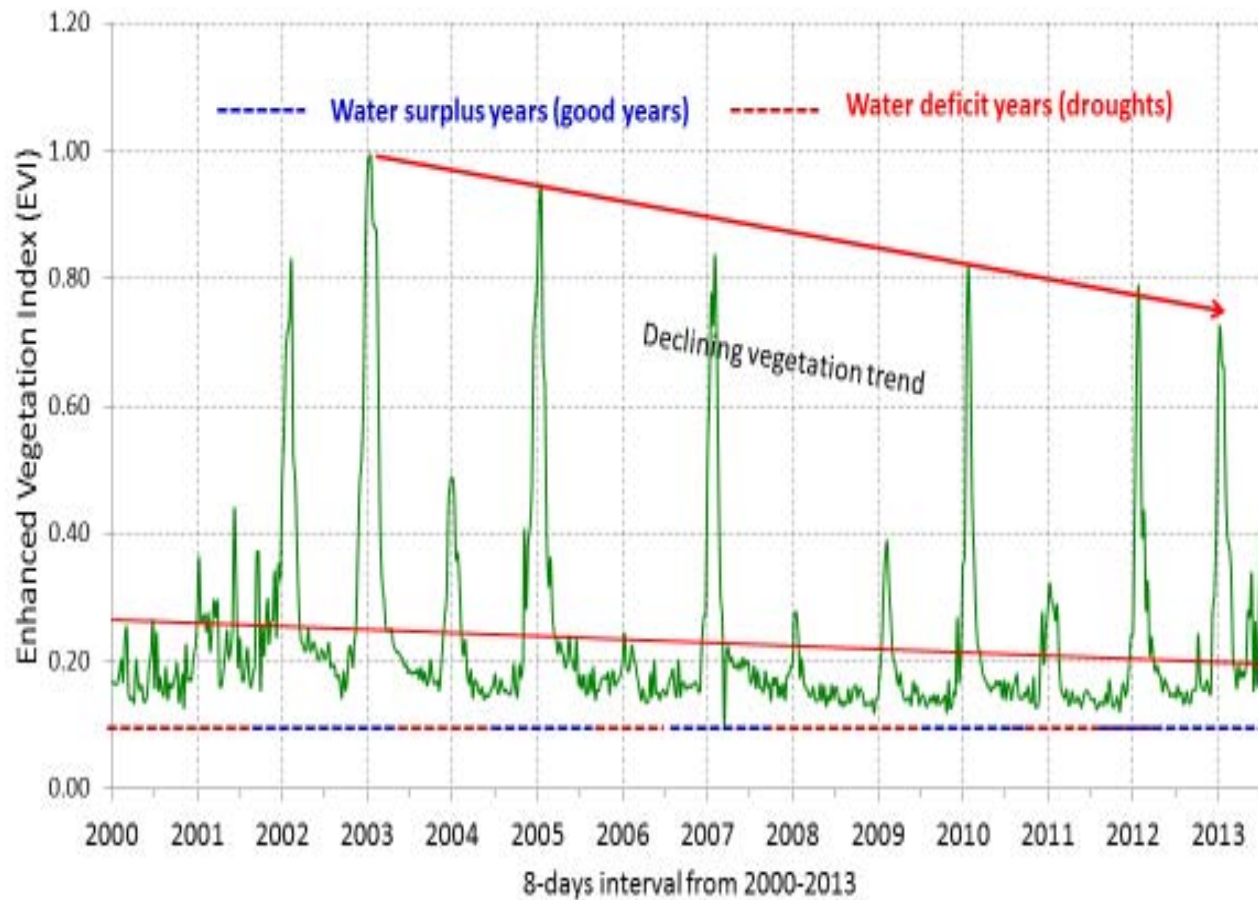


Land Degradation and Area Affected and Threatened by Desertification assessed in 2012*.

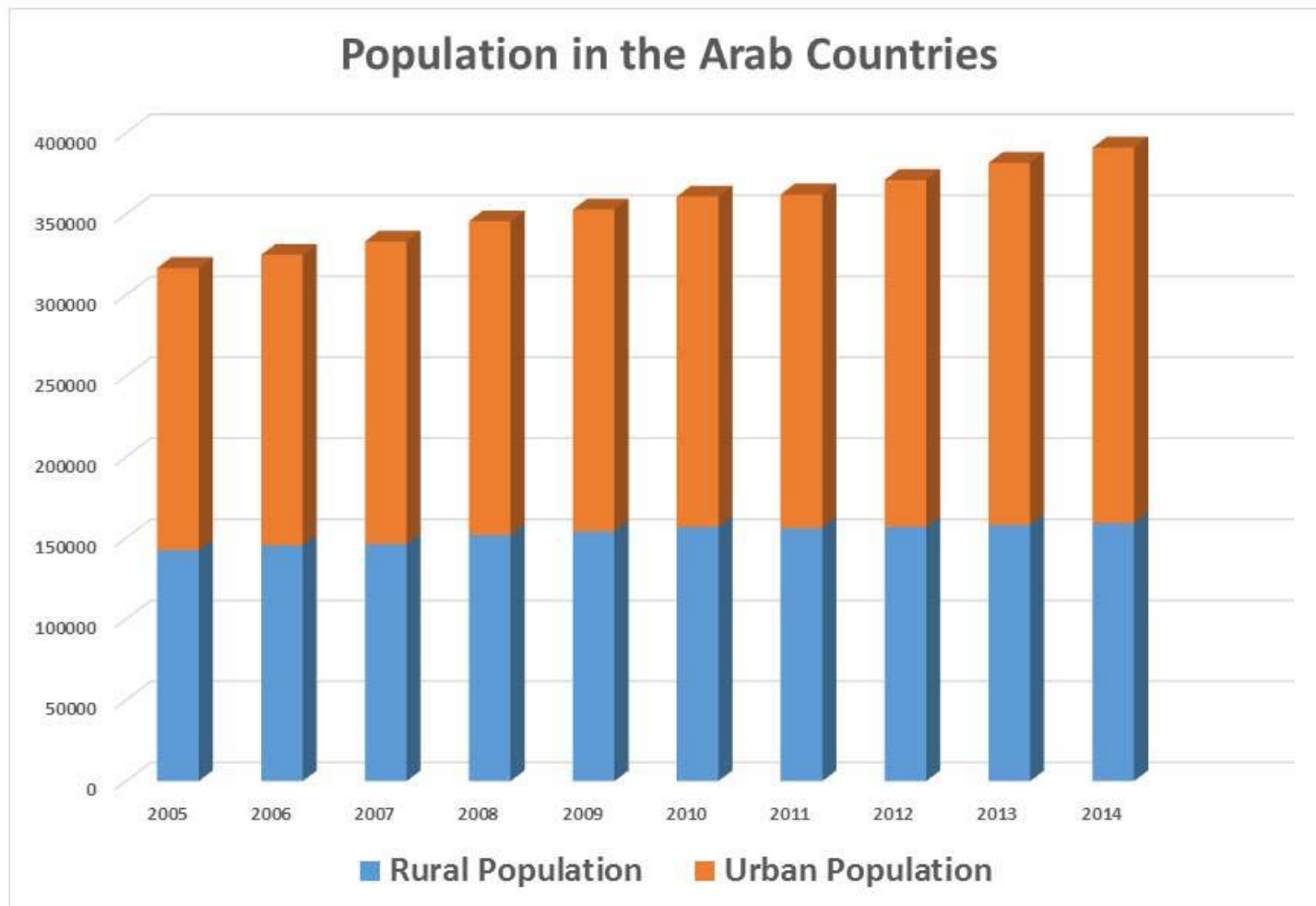
Country	Total Area (1000 km ²)	Area affected by desertification in 2012 (1000 km ²)	Percentage of Total Area (%)	Area threatened by desertification	
				1000 km ²	Percentage %
Sudan	2506	725	29%	650	26%
Saudi Arabia	2382	1970	83%	230	10%
Algeria	2150	1182	55%	860	40%
Libya	1807	1589	88%	381	21%
Mauritania	1031	636	62%	343	33%
Morocco	711	455	64%	195	27%
Yemen	566	405	72%	90	16%
Tunisia	164	-	-	105	64%
Kuwait	18	5	28%	4	22%
Qatar	11	11	100%	-	-
Total/Average	11346	6978	62%	2858	29%

*Source: Unified Arab Economic Report, 2016 (Arab Monetary Fund)

Loss of Biodiversity: Declining Vegetation Index (EVI) from 2000 to 2013 of rangelands in Muwaqqar in Jordan



Migration: The change in rural and urban population between 2005 and 2014



Wars and Conflicts !!!!!!!

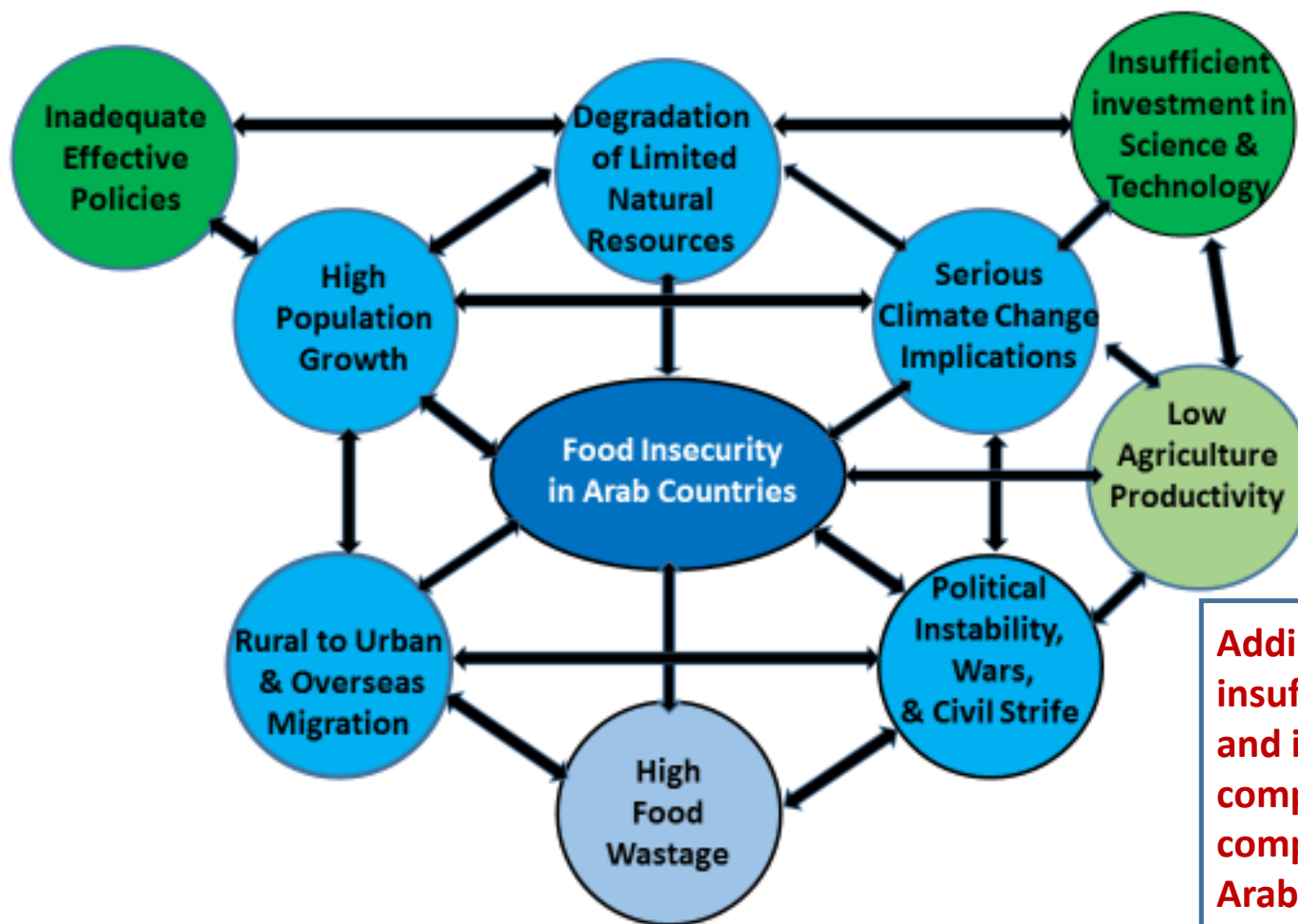


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Overseas Migration from MENA region crossing the Mediterranean Sea to Europe

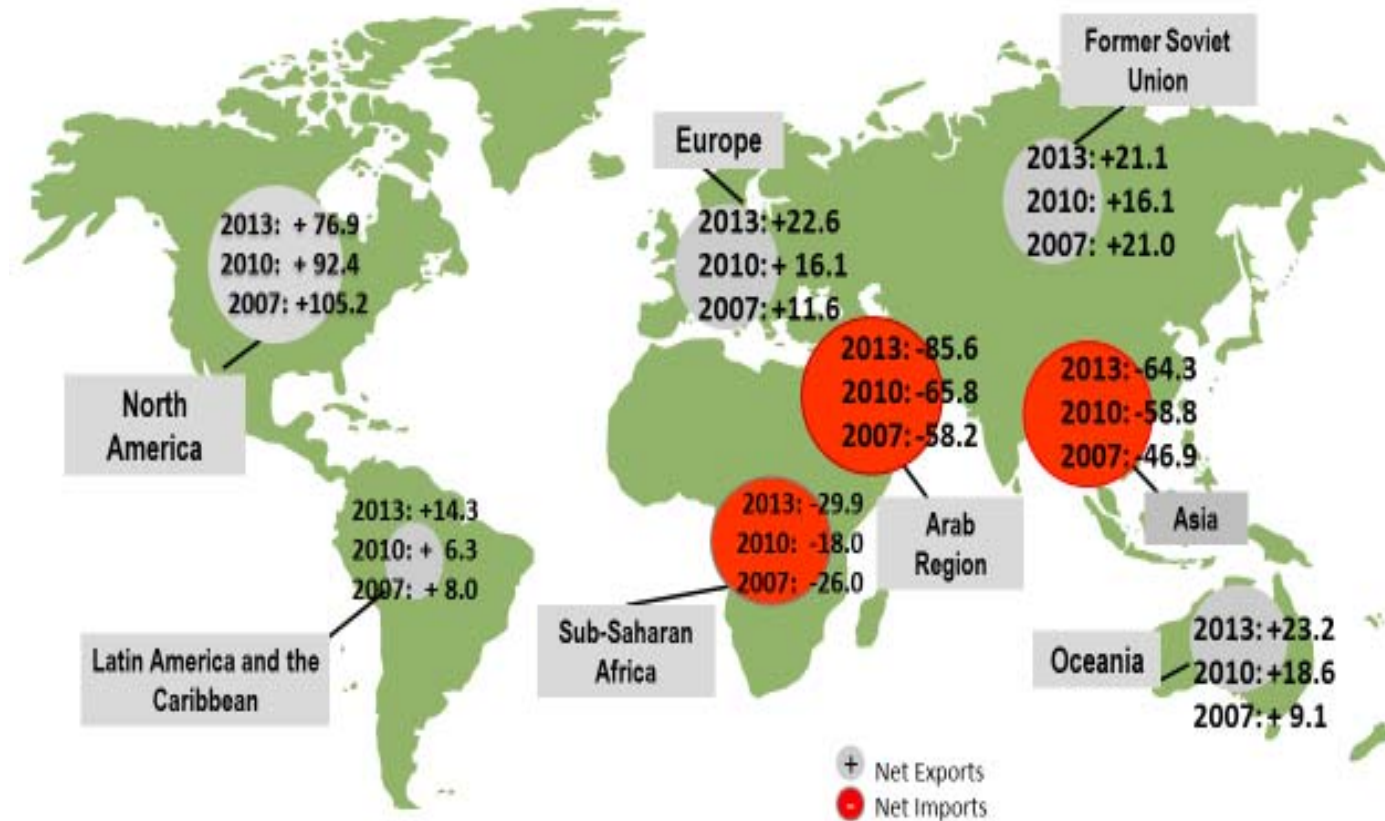


Factors contributing to food and nutritional insecurity in the last ten years in the Arab World, 2006 – 2016.



Adding to all the above is the insufficient regional cooperation and investment based on complementarities and comparative advantages of all Arab countries

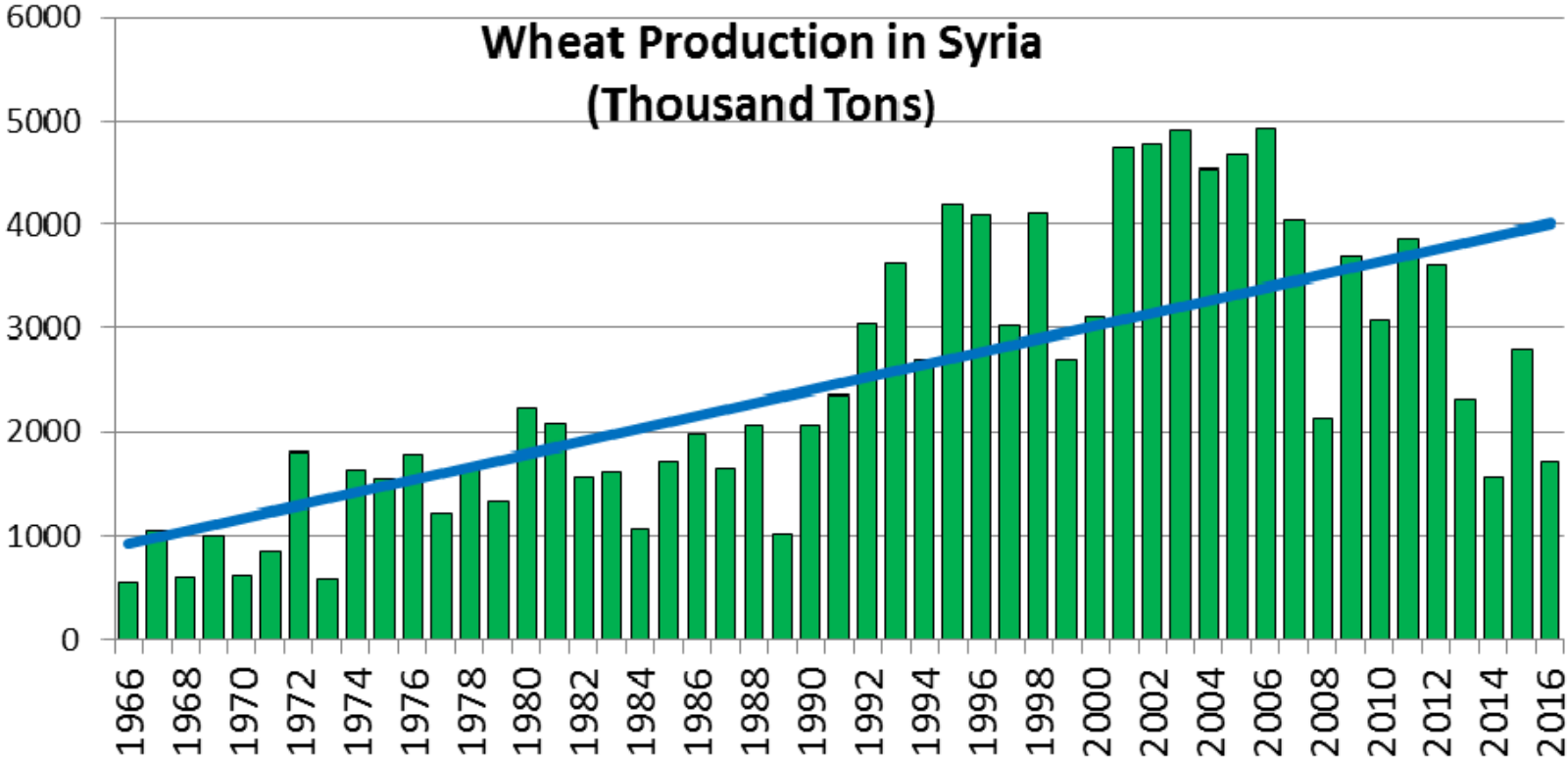
Global Cereal Trade: Cereal imports and exports (in million MT) in different parts of the world in 2007, 2010 and 2013.



Sources: data from FAOSTAT 2016

**The Power of Science and Technology to
Enhance Food Security
and Protect the Natural Resource Base**

Changes in wheat production in Syria from 1966 to 2016 (MOA/ICARDA)



Grain wheat yield (t/ha) as an average of six seasons (2010/2011-2015/2016) seasons in the farmers' fields versus farmers' traditional fields (El Solh, et.al. 2017).

Country	Egypt	Iraq ****	Jordan *	Morocco		Palestine ***	Sudan	Syria		Tunisia		Yemen **	Overall mean
Production system	I	I	R	R	SI	R	I	R	SI	R	SI	SI	
Participating Farmers	8.51	5.50	2.52	3.63	6.56	2.48	3.89	2.33	5.40	3.14	5.35	3.36	4.39
Non-Participating Farmers	6.87	4.30	2.03	3.17	5.20	2.09	2.44	1.75	4.84	2.49	4.11	2.31	3.47
Average increase (%)	24	28	24	15	26	19	59	33	12	26	30	45	28
Maximum yield	10.29	6.20	3.64	5.15	7.98	2.97	5.48	3.23	7.39	4.40	7.39	4.53	5.72
Potential max increase %	50	44	79	63	53	42	124	84	53	76	80	96	70

Average Yield Increase: 28 %

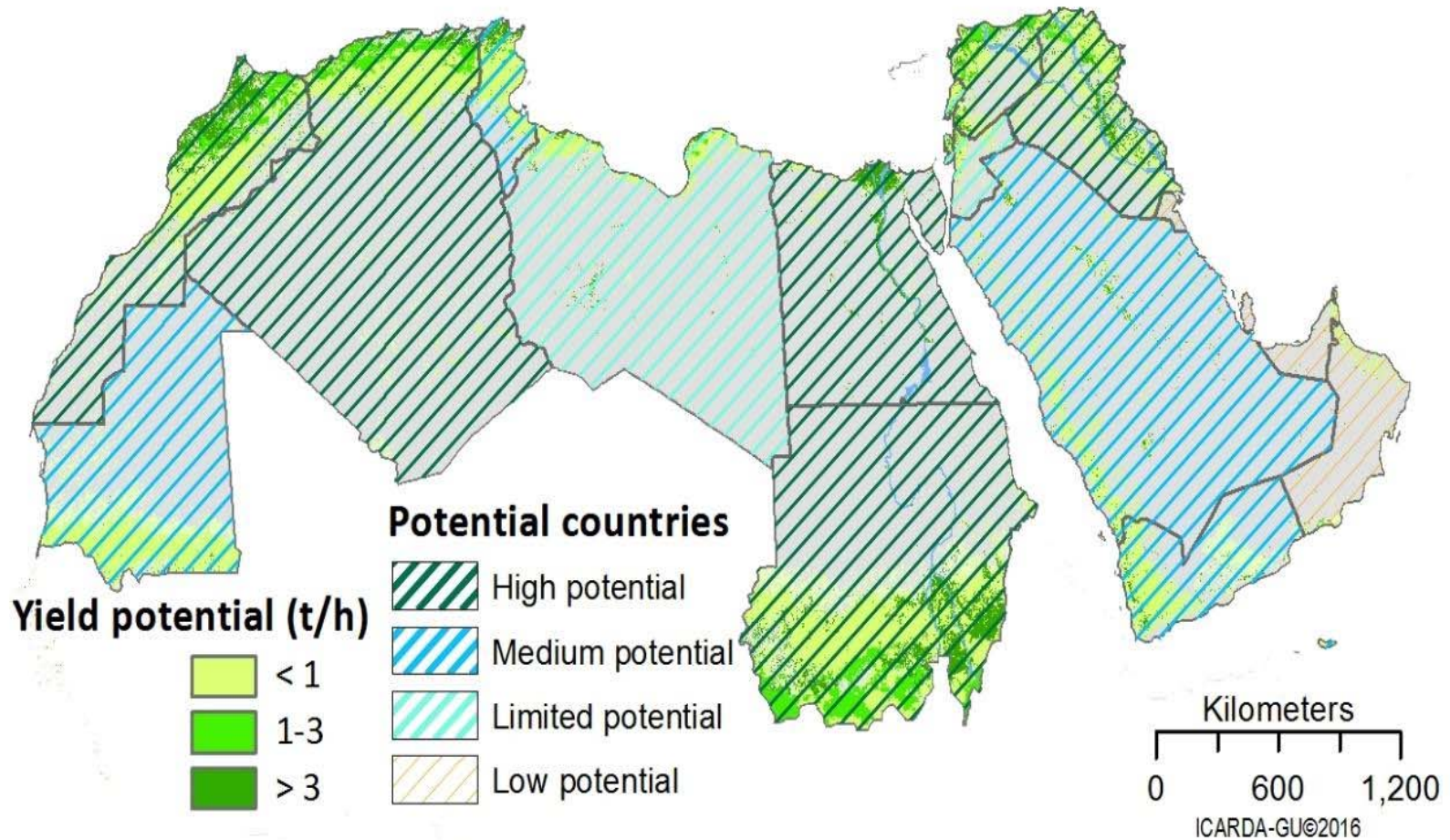
Maximum Yield Increase: 70%

Total agricultural R&D spending in Arab countries, 2009 and 2012*.

Country	Total spending, 2009 (in million 2005 PPP dollars)	Total spending, 2012 (in million 2005 PPM dollars)	Spending as a share of Ag GDP (%), 2012
Algeria	68.6	81.7	0.21
Egypt	379.3	471.0	0.44
Jordan	34.0	32.3	1.84
Lebanon	21.7	34.1	0.95
Mauritania	11.2	8.9	0.80
Morocco	127.4	131.2	0.49
Oman	81.4	97.0	6.51
Sudan	52.4	30.0	0.19
Tunisia	49.4	55.9	0.64
Yemen	47.6	34.5	0.56

*Source: Stads, Gert-Jan, ASTI 2015. Agricultural R&D in West Asia and North Africa: Recent Investment and Capacity Trends. May, 2015.

Potential of Arab countries to enhance food security based on agricultural potential (renewal water resources, arable land area, soil fertility and irrigated area)



CONCLUSION

- What can make a difference in the Arab world to address all the adverse environmental changes and enhance food security?
 - **Strong political will and enabling policy environment;**
 - Much more investment in S & T and agricultural research;
 - **Protecting the environment and natural resources;**
 - More investment in agricultural development;
 - **Greater priority to enhance sustainable water productivity;**
 - Sustainable intensification of production systems ;
 - **Enhancing adaptation and resilience to climate change;**
 - Creating job opportunities for the youth;
 - **Minimizing food waste;**
 - Capacity development and institutional support.



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CONCLUSION (cont'd)

- **Peace and prosperity in the Arab world should be pursued through much more investment in sustainable development at national and regional levels including investment in sustainable agriculture development to enhance food and nutritional security;**
- **To achieve this noble goal, it is critical to enhance regional cooperation and investment based on complementarities, comparative advantages and potential of Arab countries.**



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Thank you

