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Healthy Earth, Healthy Food, Healthy People

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Food-water security in the Middle East

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What will be shown? What questions answered?

1 Where the water to underpin MENA's rising food demand comes from.

2 That there are two contradictory narratives on water & food security. The 'true' one is destabilising and has to be back-grounded.

Questions

1 What have been the trends in the demand for food in the MENA region?

2 How has the MENA water resource deficit been addressed?

3 What version of food and water security can the MENA economies enjoy in future?

4 Is food-water security too difficult to understand? And why will "truisms" that are not "true" prevail and the critical known continue to be constructed as an unknown?

Some underlying fundamentals that are known but are backgrounded because they destabilise

Blue, Green & Virtual water ‘trade’

Water consumption in domestic use, industry and agriculture

Water consumption and the food supply chain

Global food commodity trade and the political economy of the food system

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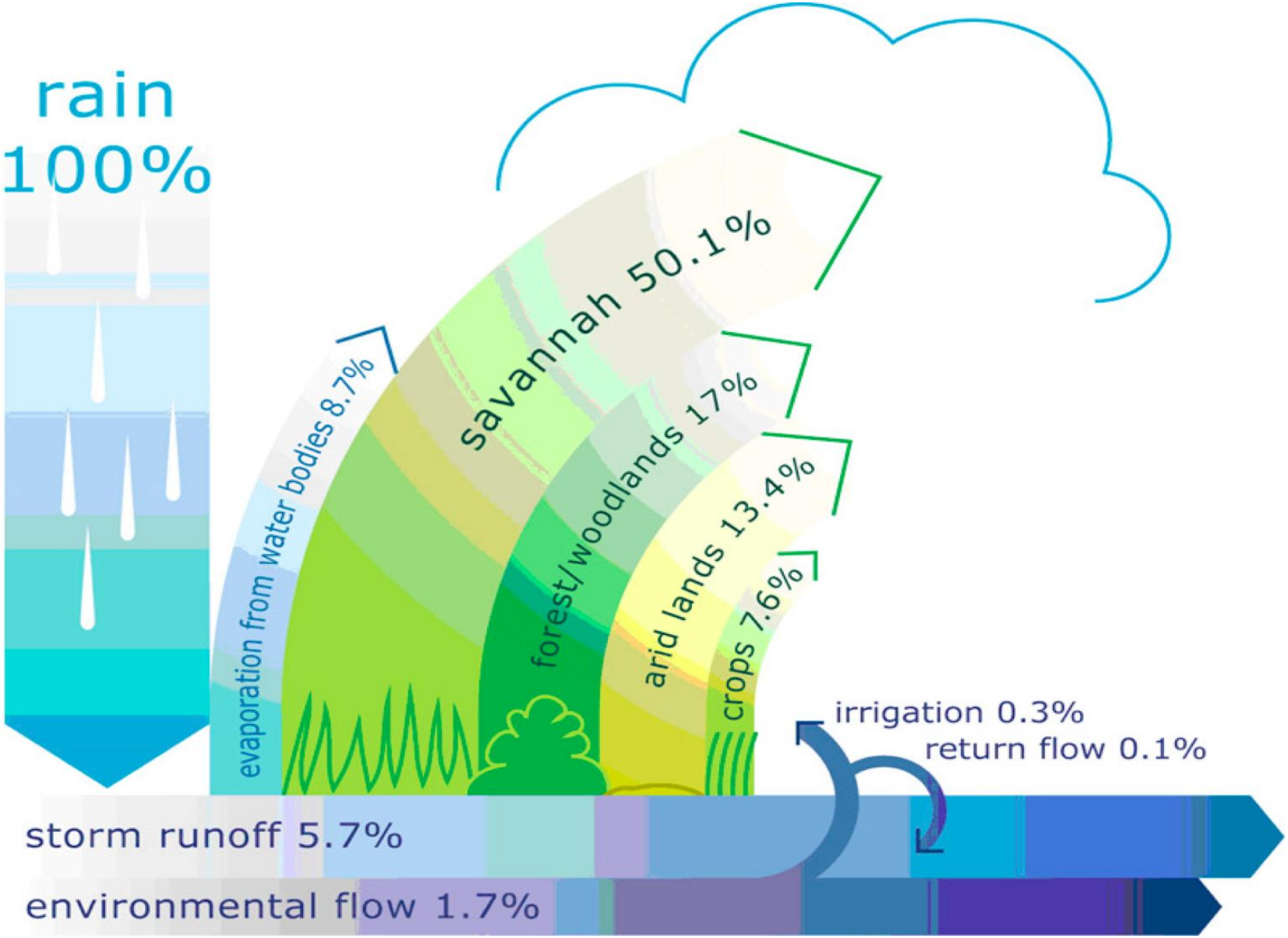
Blue, Green & Virtual water ‘trade’

Blue and green water flows in Kenya



Whitgift Foundation October 2015

Some underlying fundamentals that are known but are backgrounded because they destabilise

Blue, Green & Virtual water ‘trade’

Water consumption in domestic use, industry and agriculture

Estimated global water consumption including both freshwater [blue water] AND effective rainfall [green water].

	WASH			Farmer managed & stewarded - c88%	
Approx	4 %	4 %	4 %	26 %	62 %
Water consum -ption	Domestic / Industry / Food processing			Irrigated farming	Rainfed farming
	Surface and groundwater - Blue water				Effective rainfall - Green water

Source: Mekonnen & Hoekstra 2011

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Non-food-water → Food-water embedded in the food supply chain

Source: Mekonnen & Hoekstra 2011

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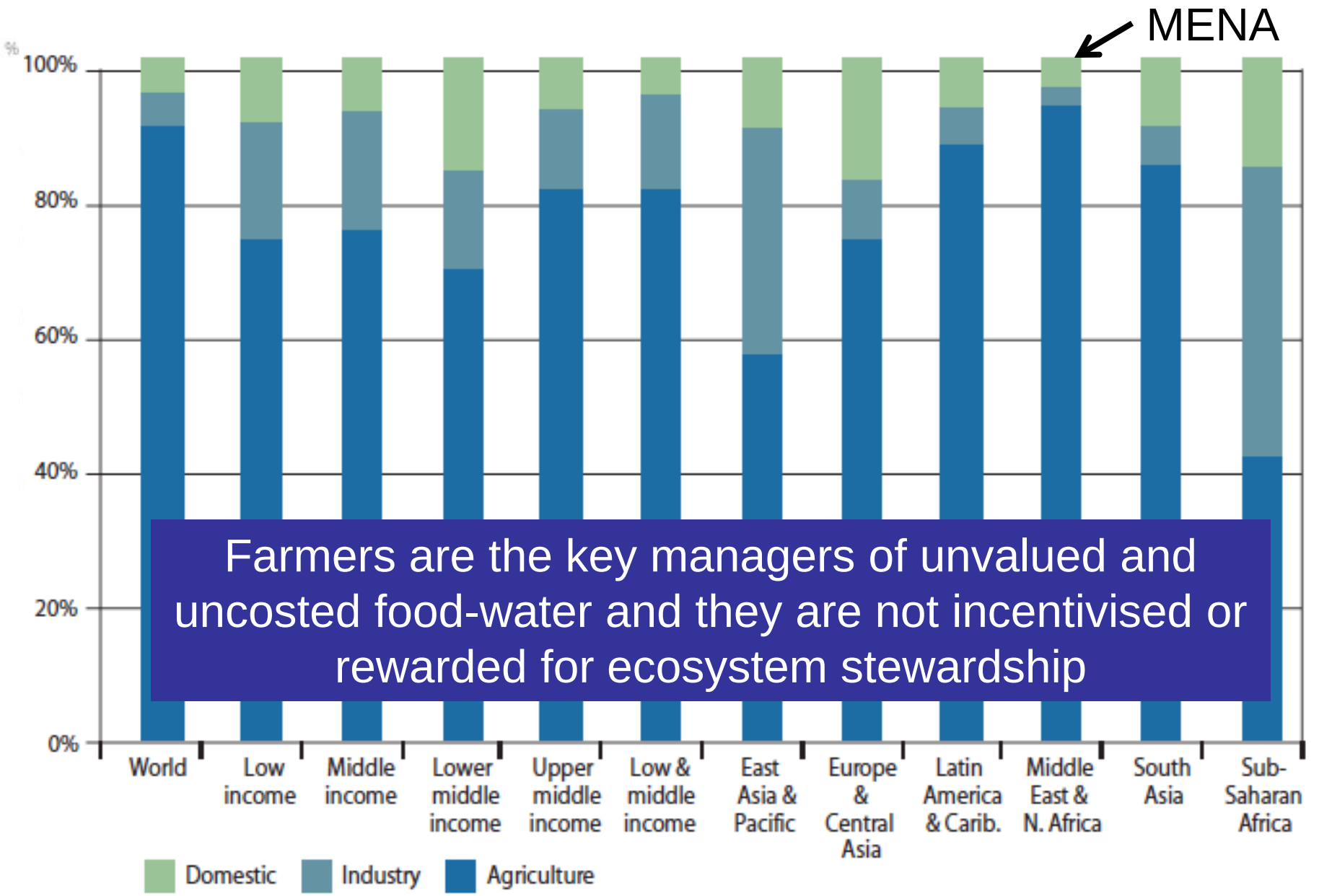
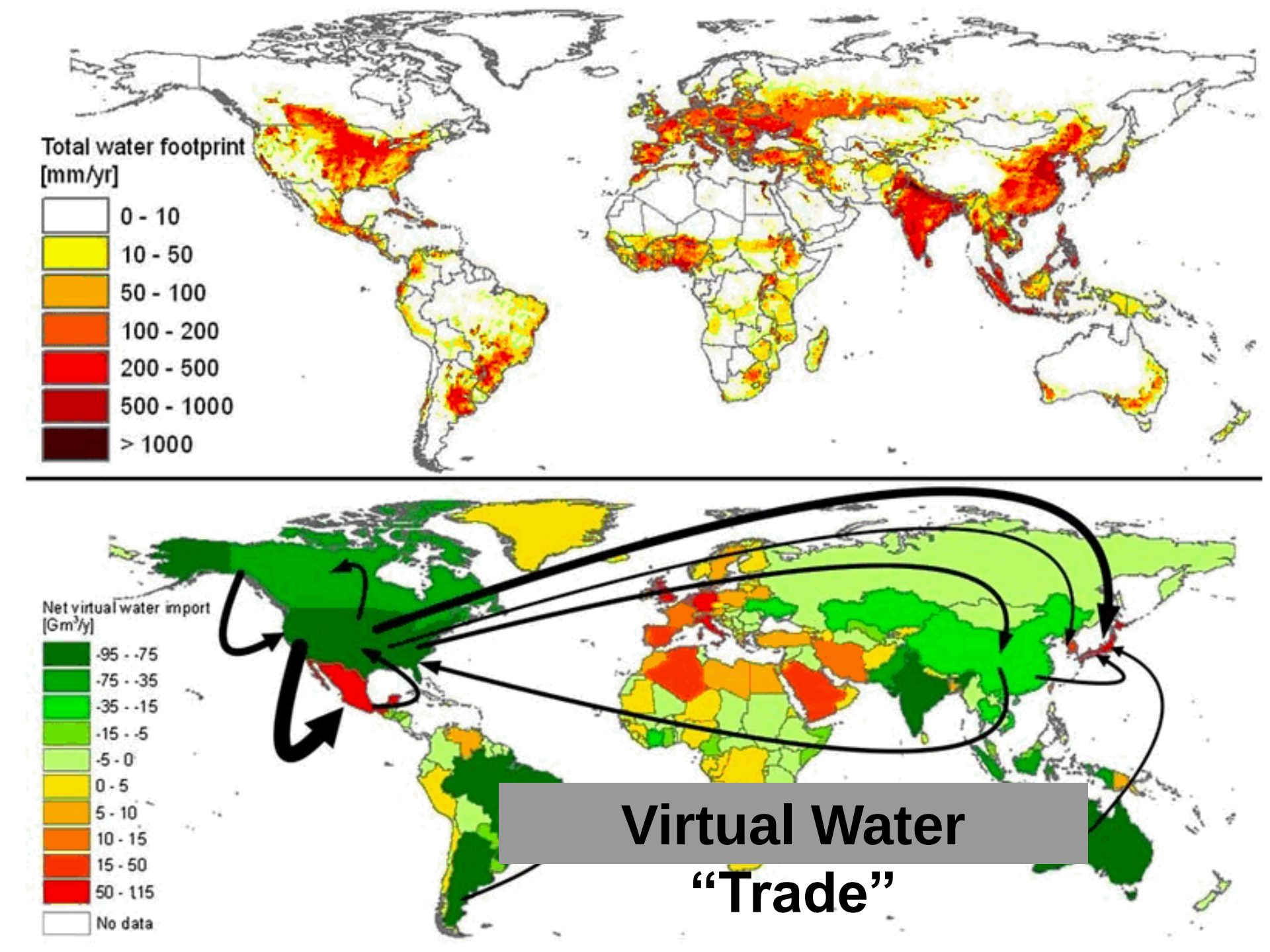
Water ‘use’ by industry, domestic ‘users’ and agriculture



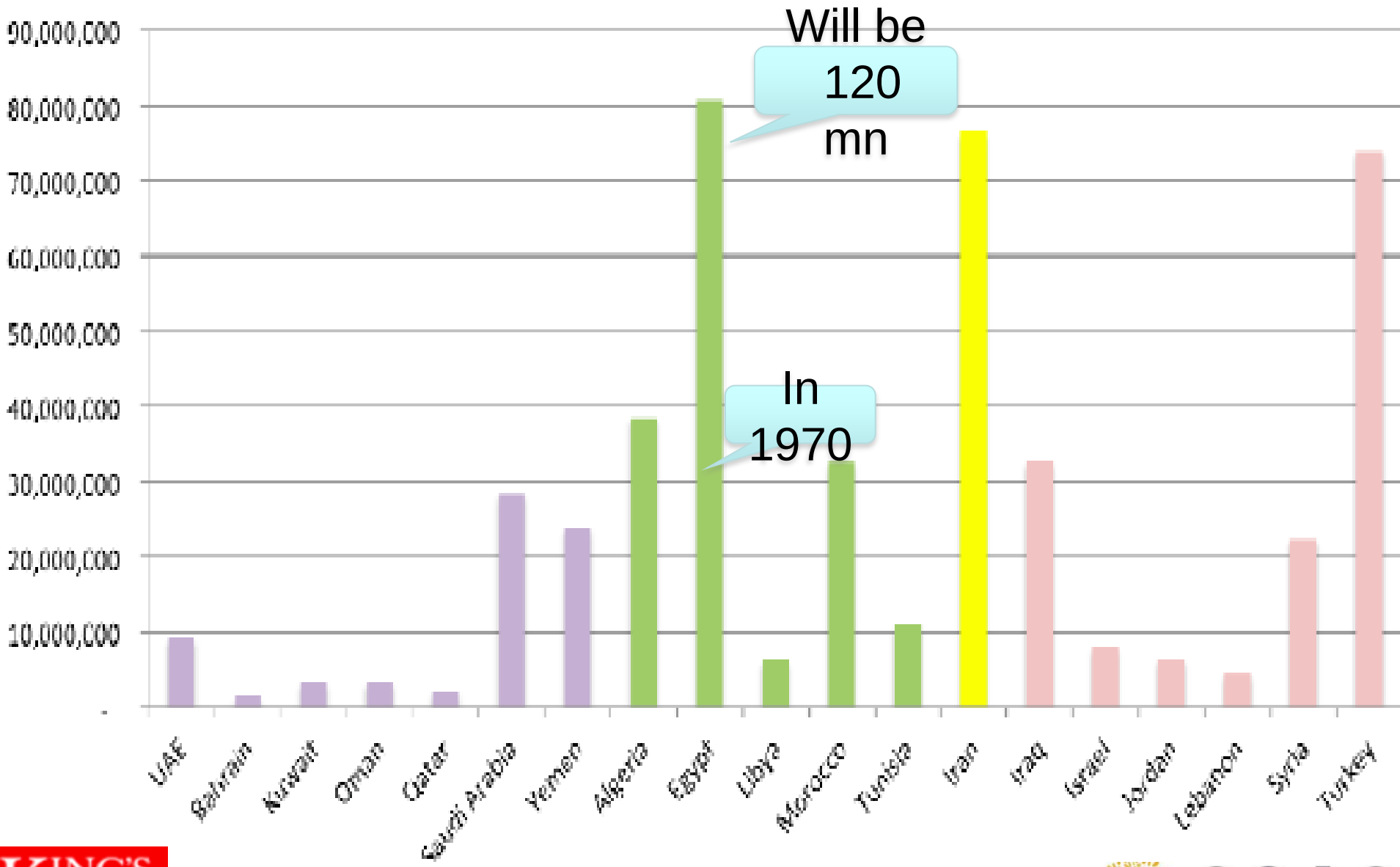
Farmers are the key managers of unvalued and uncosted food-water and they are not incentivised or rewarded for ecosystem stewardship

Source: World Water Assessment Programme, 2006, UN World Water Development Report 2: Water: A Shared Responsibility; Paris, UNESCO and New York, Berghahn Books, p. 279. Based on World Bank 2002.

Virtual water ‘trade’


Total water footprint
[mm/yr]
0 - 10
10 - 50
50 - 100
100 - 200
200 - 500
500 - 1000
> 1000
Net virtual water import
[Gm³/y]
-95 - -75
-75 - -35
-35 - -15
-15 - -5
-5 - 0
0 - 5
5 - 10
10 - 15
15 - 50
50 - 115
No data
Virtual Water
"Trade"

Population of Middle East & North Africa



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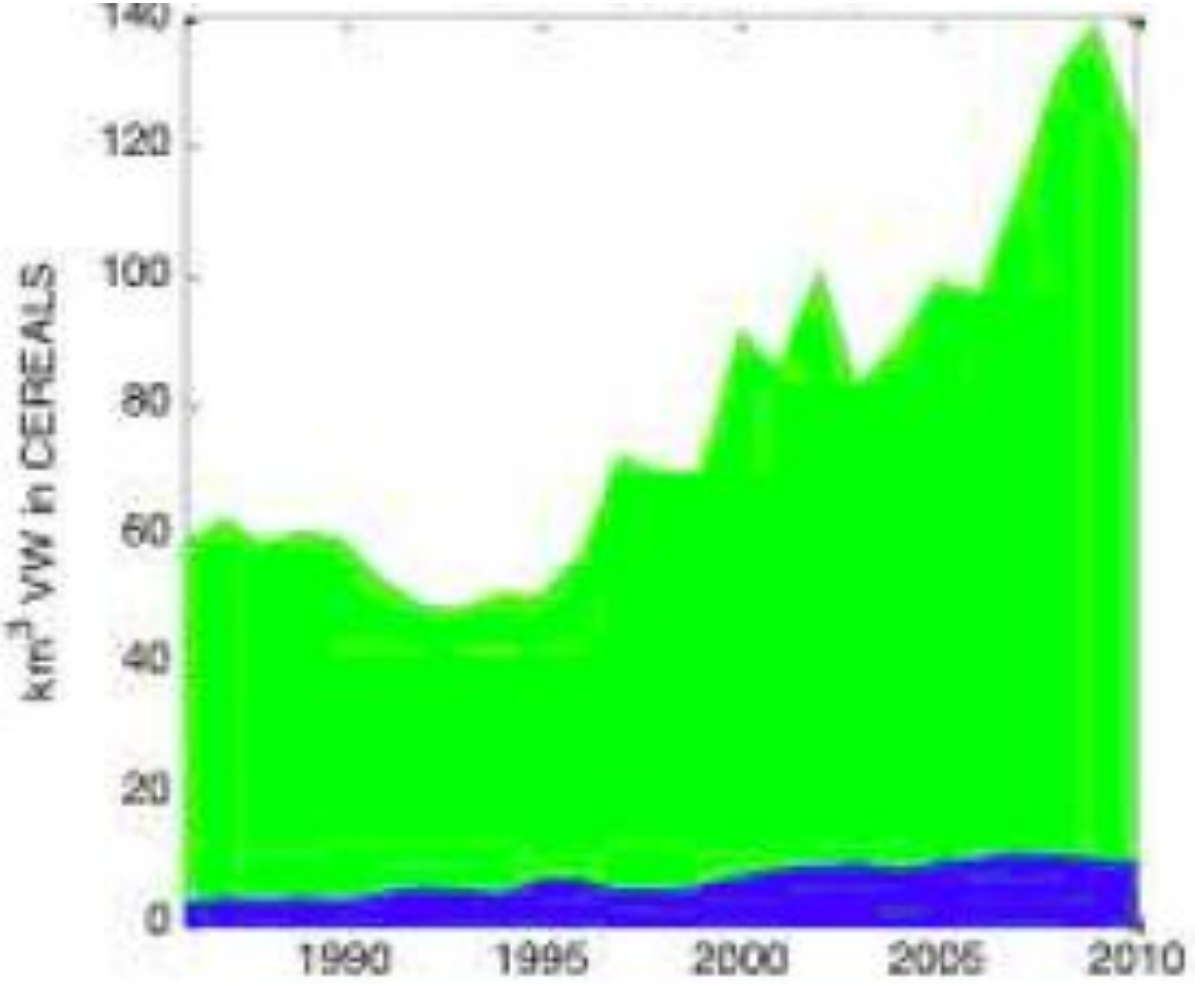
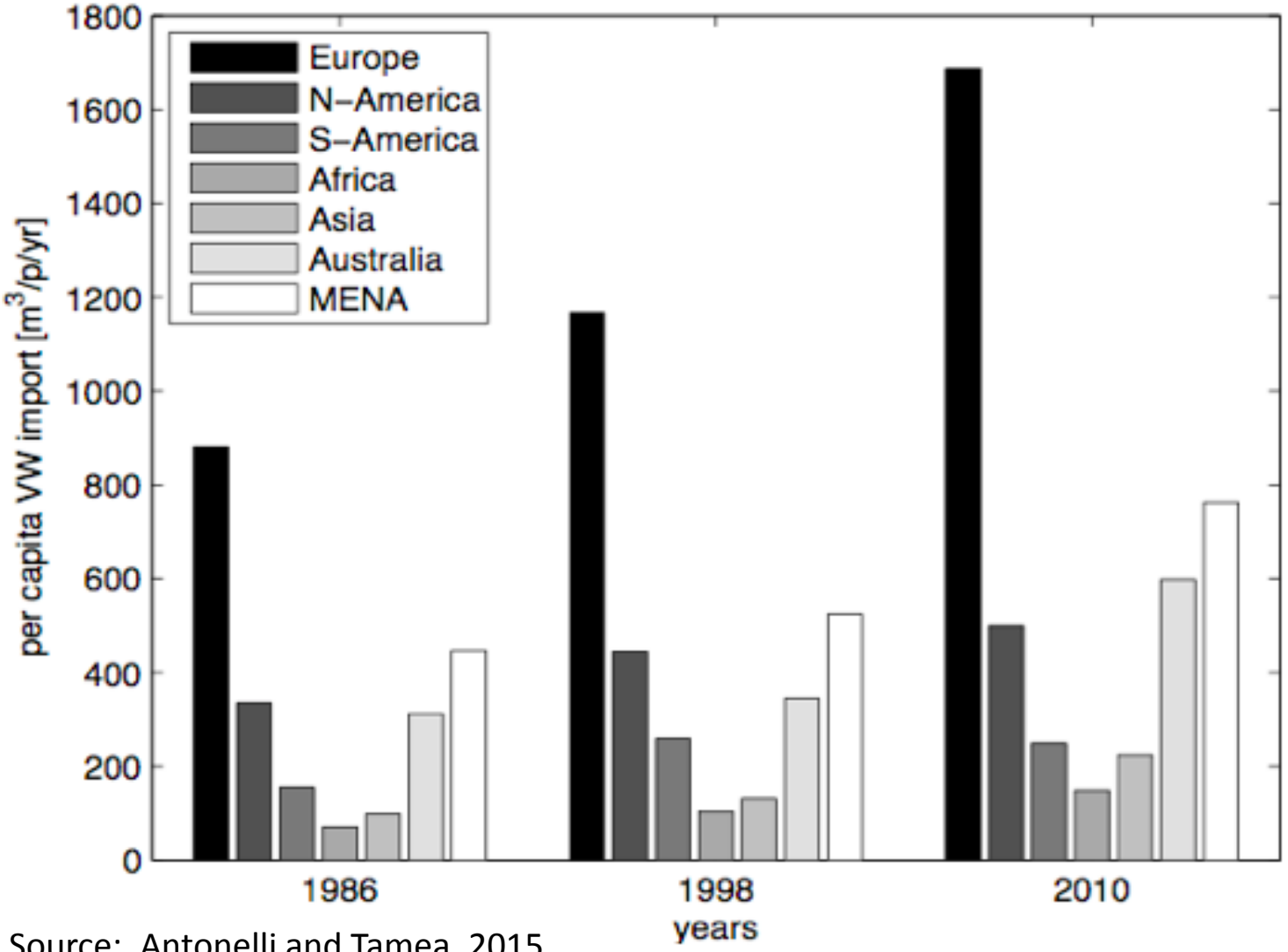
MENA - Green & blue virtual water ‘imports’ in cerals – 1986-2010



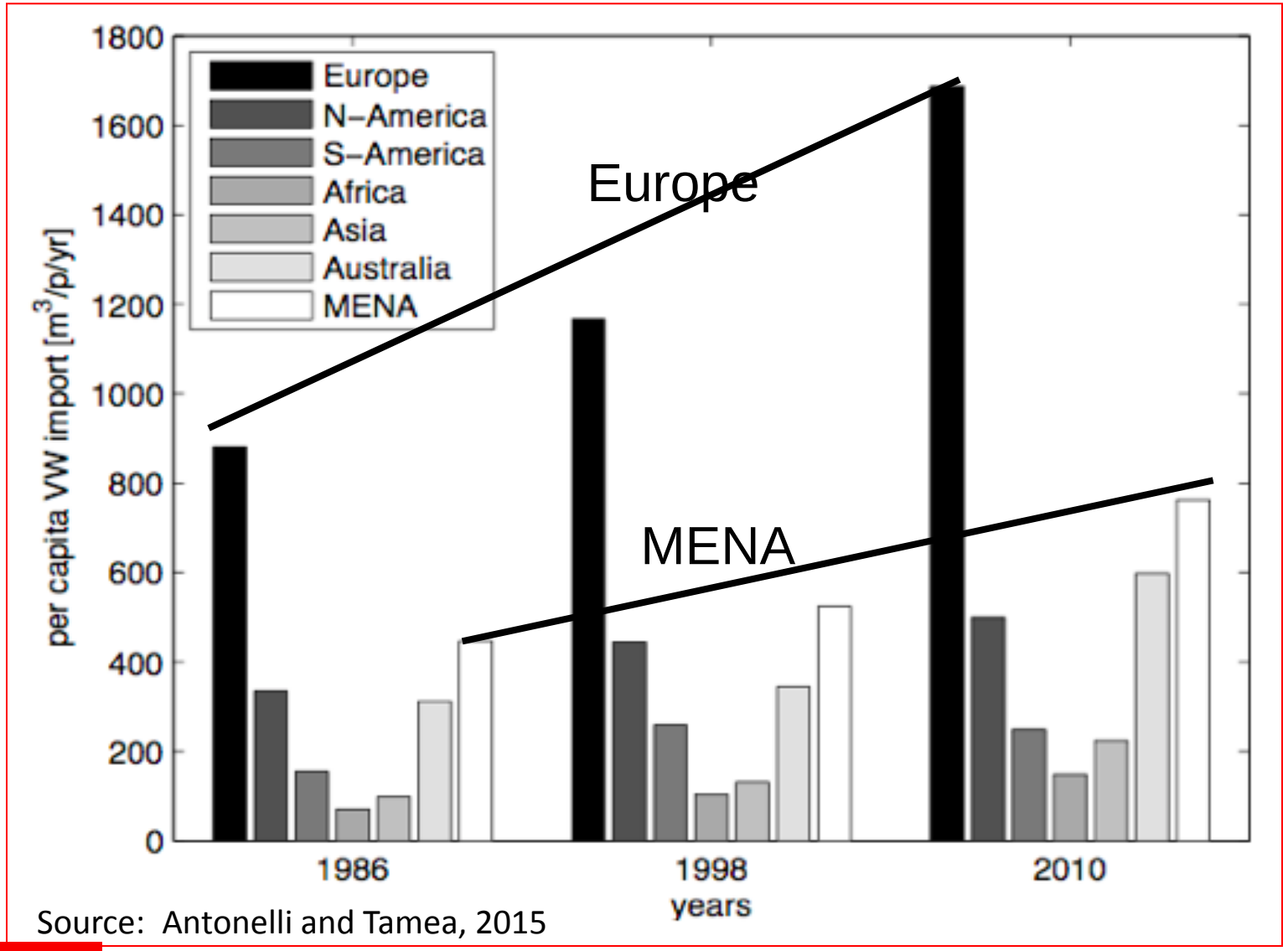
Source: Tamea et al 2013, Carr et al 2013

Virtual water ‘imports’ by region (m3/capita/year) 1986-2010



Source: Antonelli and Tamea, 2015

Virtual water 'imports' by region (m3/capita/year) 1986-2010



Source: Antonelli and Tamea, 2015

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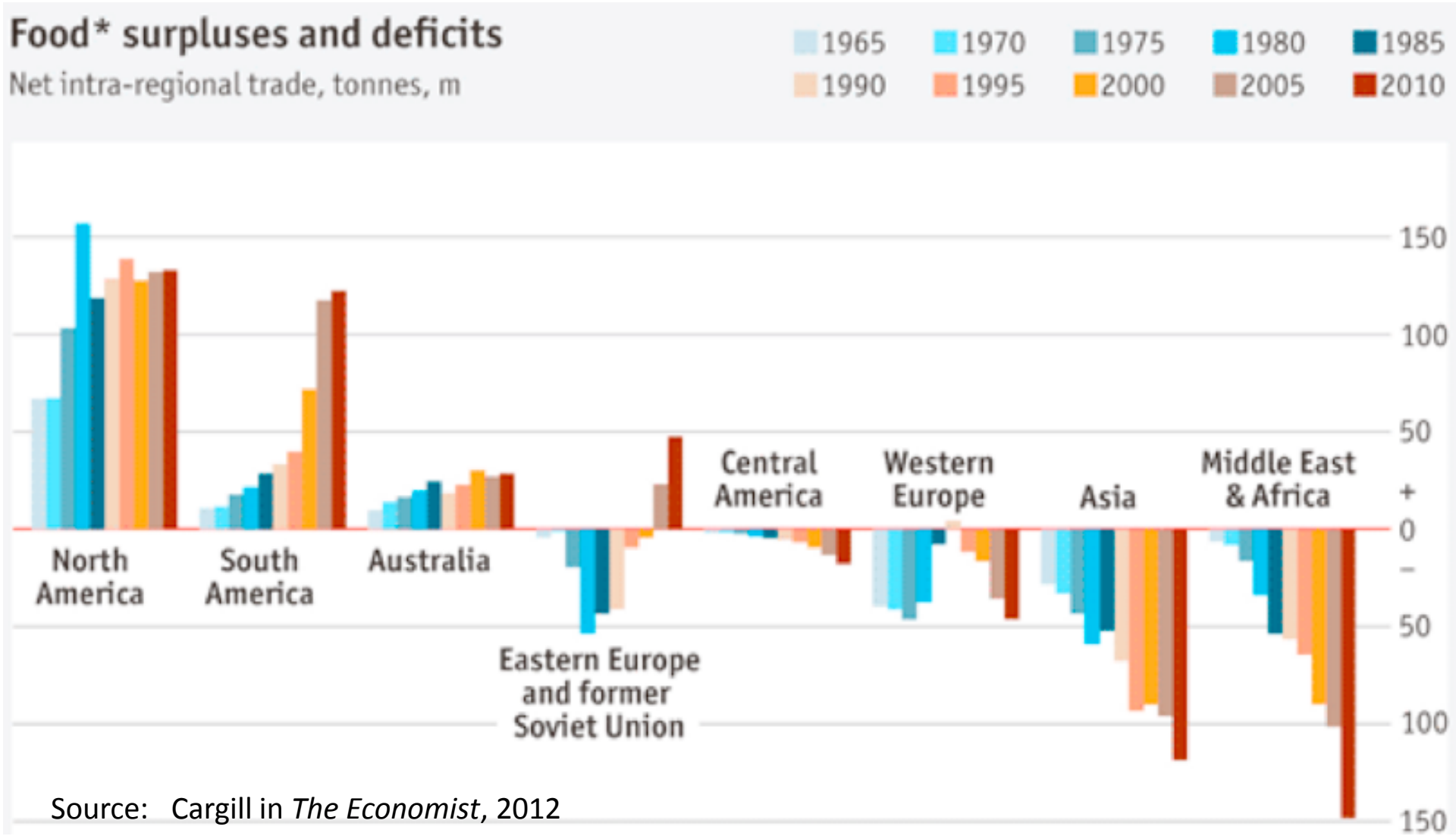
Global cereals trade 1965-2010 – important shifts in the exporting capacity of major exporters



Source: Cargill in *The Economist*, 2012

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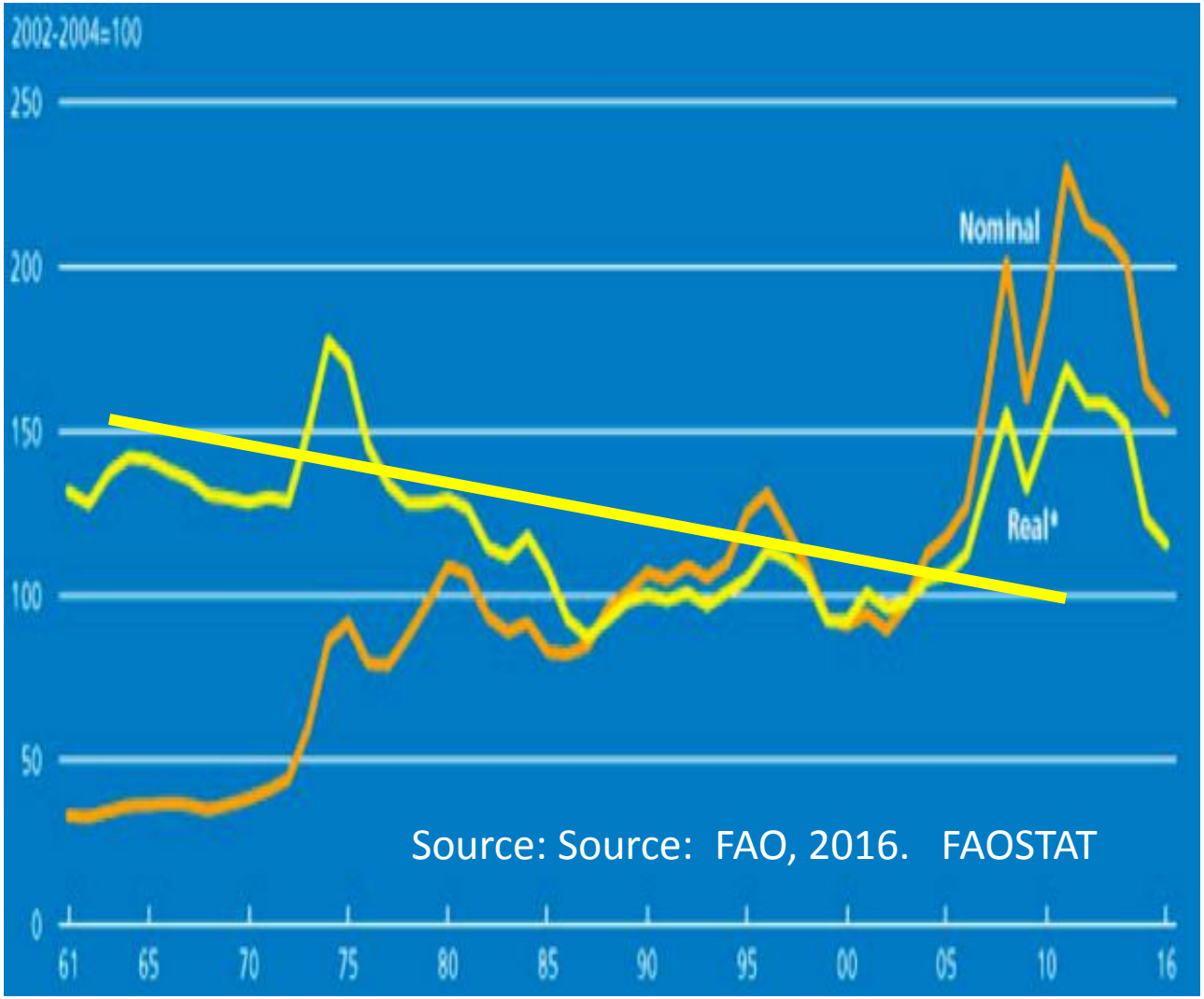
Another very important unknown

International food prices have been falling.

And they will continue to fall?

FAO food price index in nominal and real (constant) terms 1961-2016. Long term real prices fell; nominal prices rose. Consumers are aware of nominal prices



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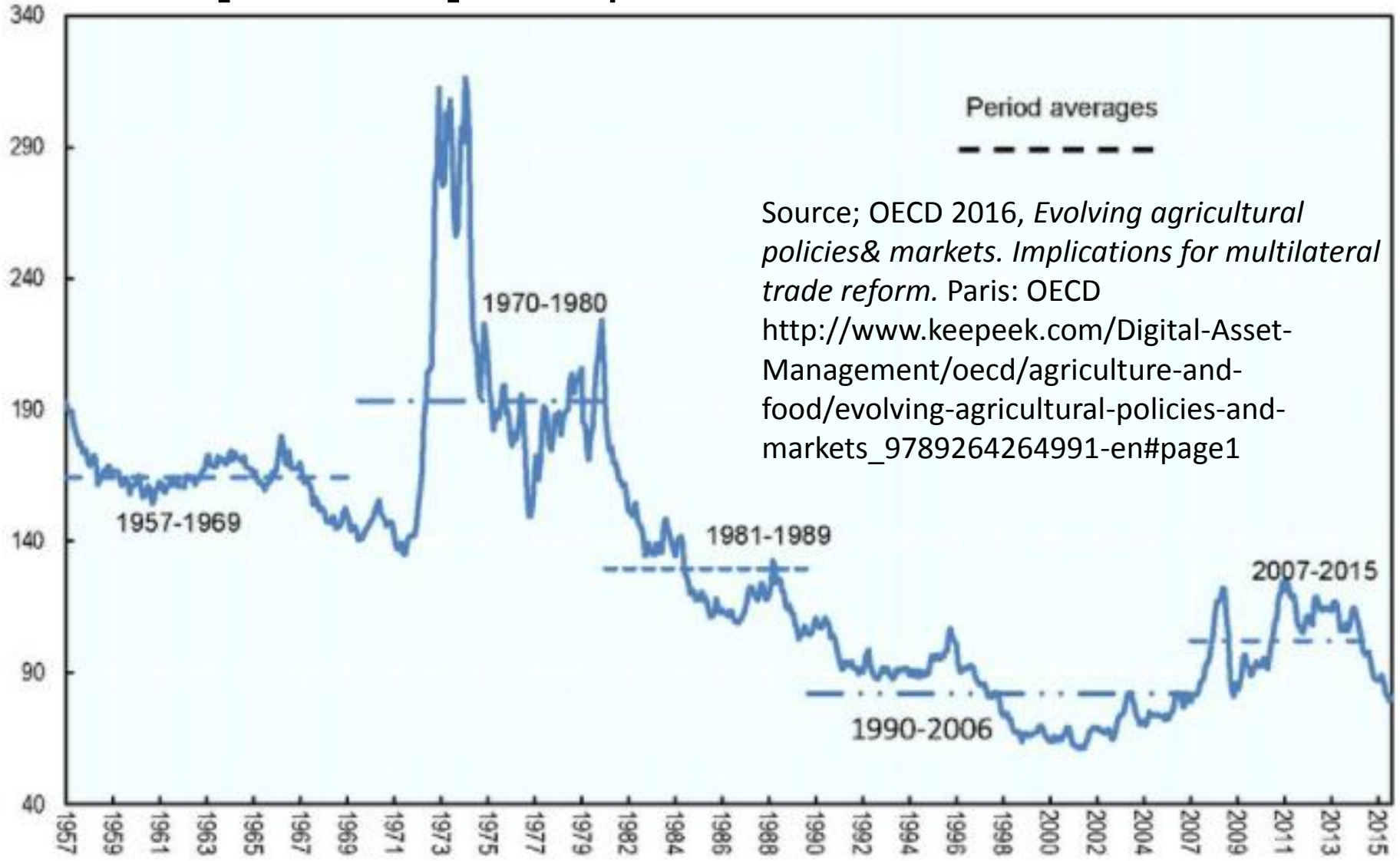
Real [constant] food prices. Index real 1957-2015. OECD 2016

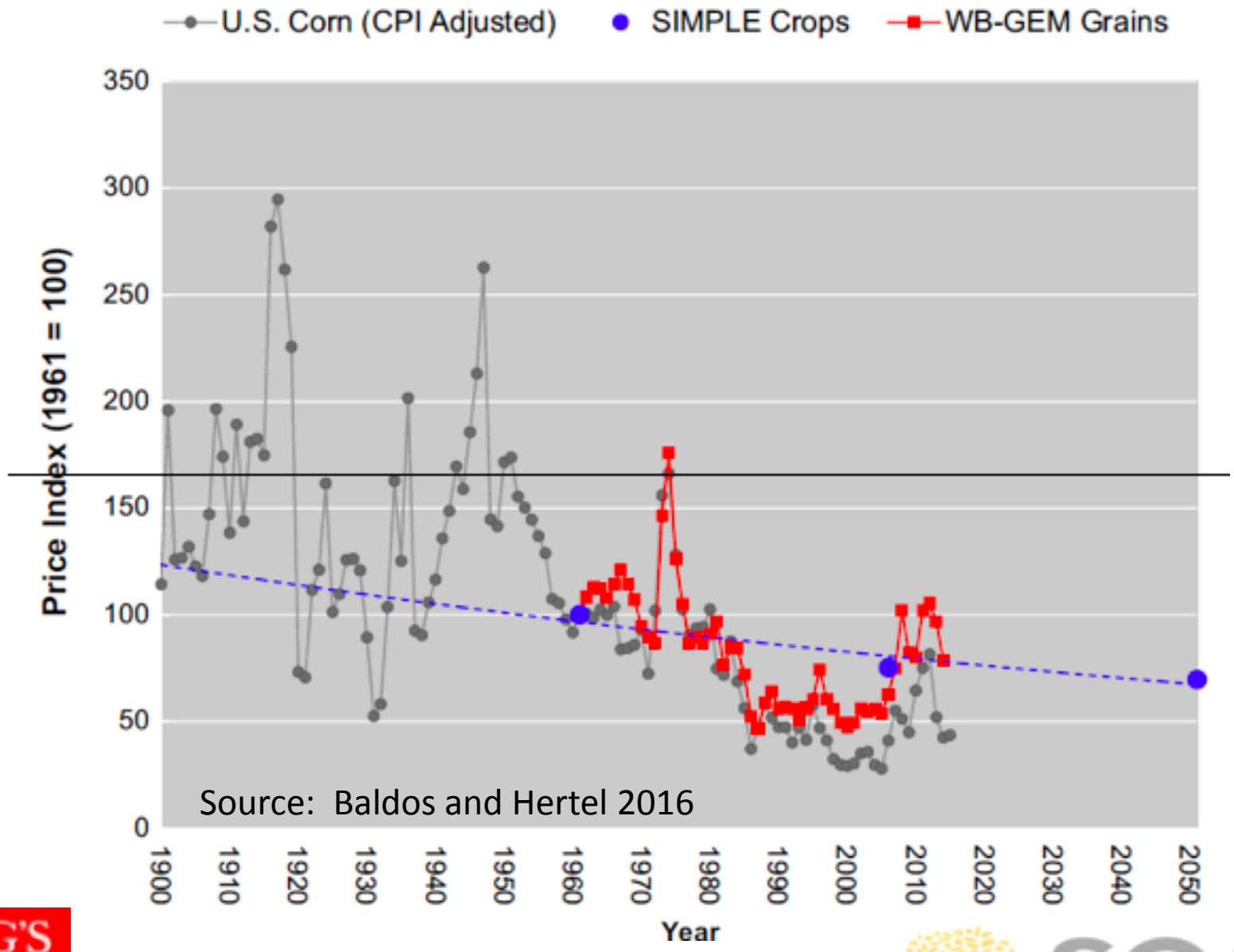


Source; OECD 2016, *Evolving agricultural policies& markets. Implications for multilateral trade reform.* Paris: OECD http://www.keepeek.com/Digital-Asset-Management/oecd/agriculture-and-food/evolving-agricultural-policies-and-markets_9789264264991-en#page1

Notes: Nominal food prices were deflated by the United States GDP deflator. To convert to real prices, the average annual United States GDP deflator was applied to each monthly observation. The horizontal bars depict average price levels for selected periods.

Source: Author calculations based on IMF IFS database (http://data.imf.org/).

Past international food price trends & estimate future trends



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Two contradictory narratives

1 The **socially and politically stabilising narrative** that is promoted and believed by MENA legislators and by MENA water and food consumers.

2 The **unacceptable destabilising narrative** based on sustainable hydrological and economic fundamentals that has to be backgrounded by political processes.

The comfortable stabilising first narrative that backgrounds the destabilising knowledge based on water resource endowments & agricultural economics

There is food on the shelves of our shops and supermarkets and it is essential that this food be affordable for low-income families.

Food insecurity has been kept at bay so there must be enough water to raise the nation's food.

National water resources that currently underpin essential domestic, industrial and irrigation water services are secure but limited.

No water can possibly be shared with neighbouring economies. Nor can existing water resources be decreased by the actions of neighbours that increase their water consumption.

Serious water conflict is a risk but it is a future problem. Not an immediate problem.

The 2nd narrative – the known that must be unknown

The economies of the Middle East overall are about 50% dependent on imported food. Some are over 90% dependent. **Their** food security and water security depend on the availability of food from water surplus economies.

MENA economies benefit from the global food system in in two ways. **First,** they avoid the environmental costs and the political stress associated with the over-use of their own scarce water resources. **Secondly,** they have benefitted from the long-term downward trend in global food commodity prices.

There is no prospect of access to significant volumes of *new low cost wate*r locally to meet the needs of a doubled population.

The MENA economies have diversified sufficiently to meet the costs of the rising levels of under-priced food imports.

Future water & food security needs more economic diversification. and expert engagement in the *political economy of global food commodity trade.*

Peace/Trade/Water & Food Security/Peace

Effective global food commodity **trade** enables
water and food security

Effective trade is only possible in a world **at peace**

But

Without food security there can be no peace

Governments have to ensure access to affordable food

The knowns that should be foregrounded

1. The limited capacity of the region to meet the food-water needs of a doubled population.
2. The global population dynamics and future patterns of global demands for food. Understand AFRICA!!!
3. The global food system and where food production systems are already placing unsustainable demands on water resources. This system has an extraordinary capacity to trade food internationally enabling water scarce regions such as the Middle East and North Africa to enjoy a version of food and water security - albeit a dependent one.
4. Recognise the extent to which the diversification of the region's economies have for the past forty years successfully underpinned the current version of MENA food and water security. Future increased demand for food can only be met by an acceleration in the diversification of national economies.

Thank you

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