

A Global Perspective



Food Security

Agriculture in a global perspective



- To understand what is happening locally, we need to understand what is happening globally.
 - We play in a global market
 - Global supply and demand influence local prices
 - We compete against government support
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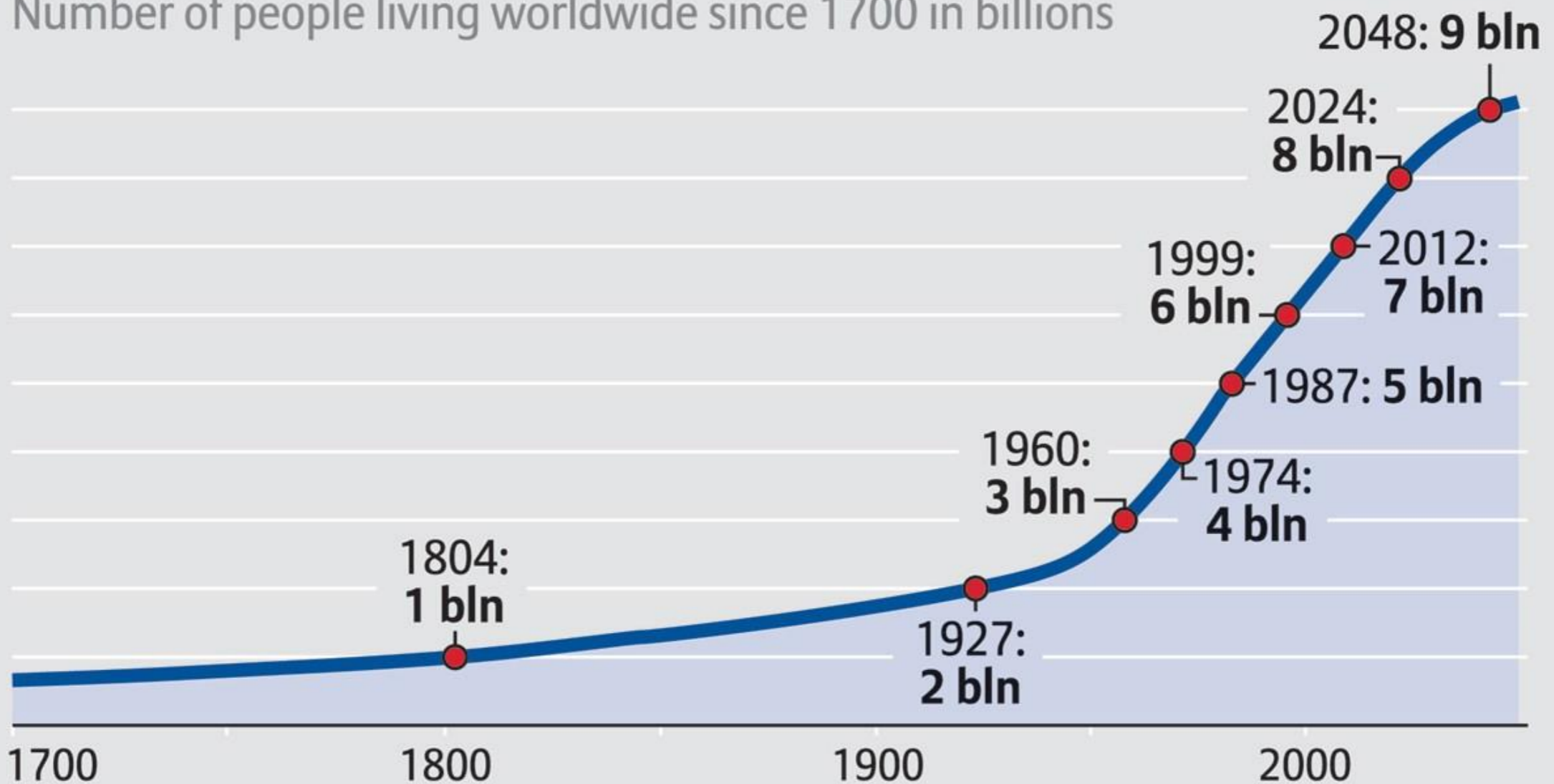
Global Reality Check



POPULATION OF THE EARTH

Allianz 

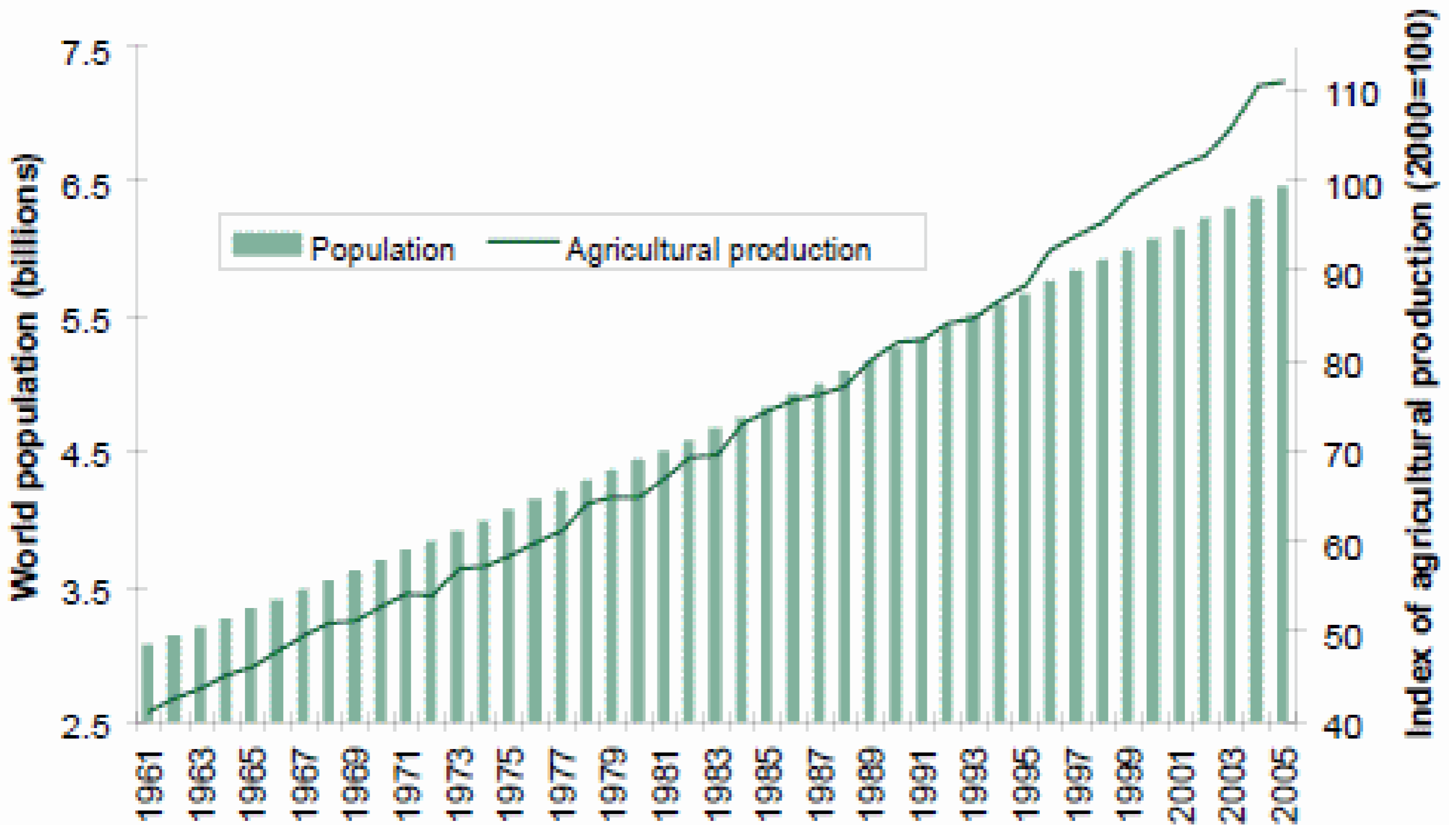
Number of people living worldwide since 1700 in billions



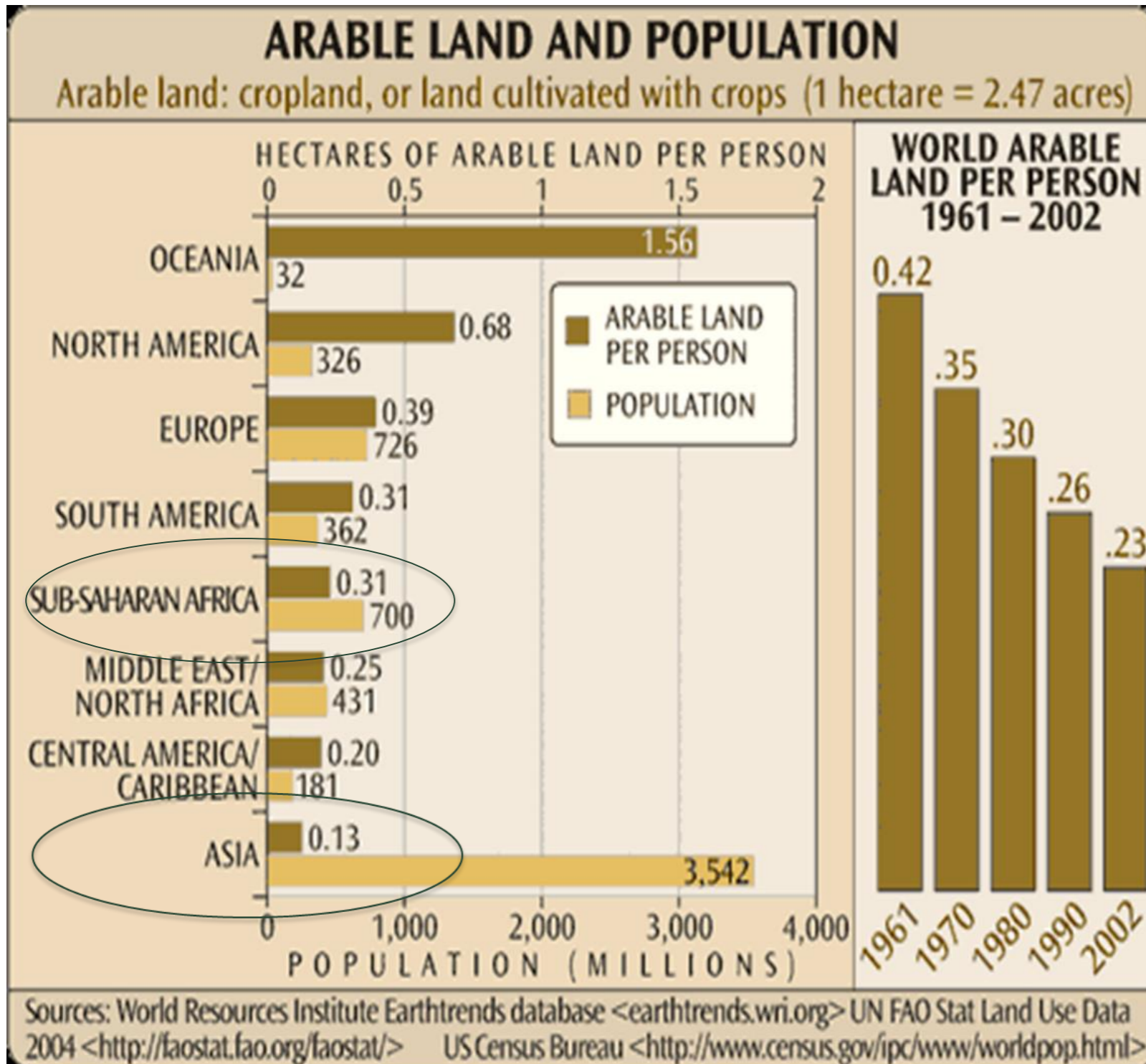
Source: United Nations World Population Prospects, Deutsche Stiftung Weltbevölkerung

For further information please visit: www.knowledge.allianz.com

Global Reality Check Current

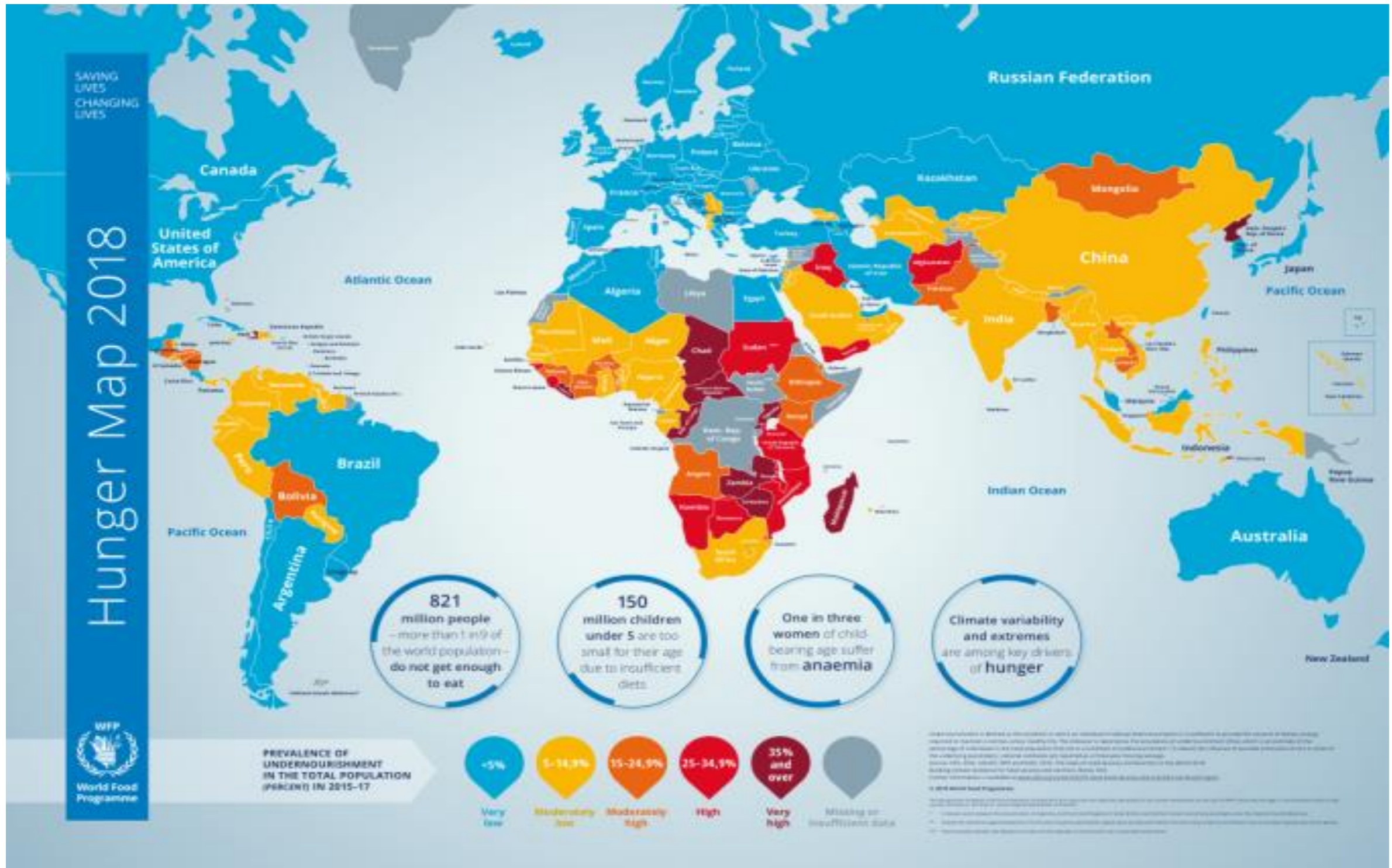


Global Reality Check Current

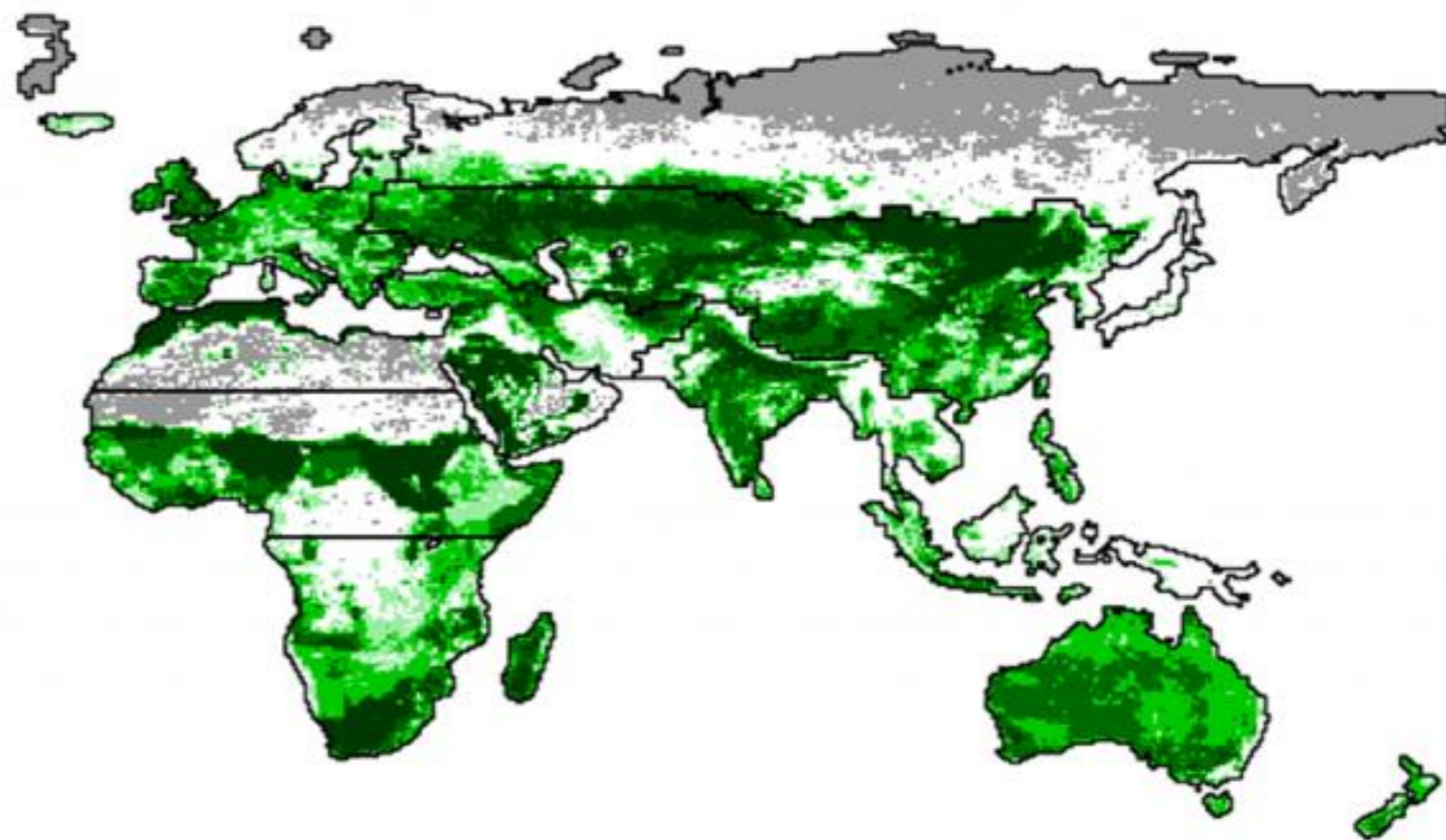
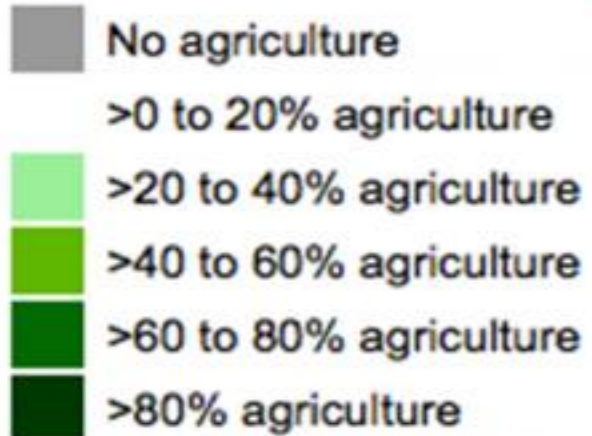
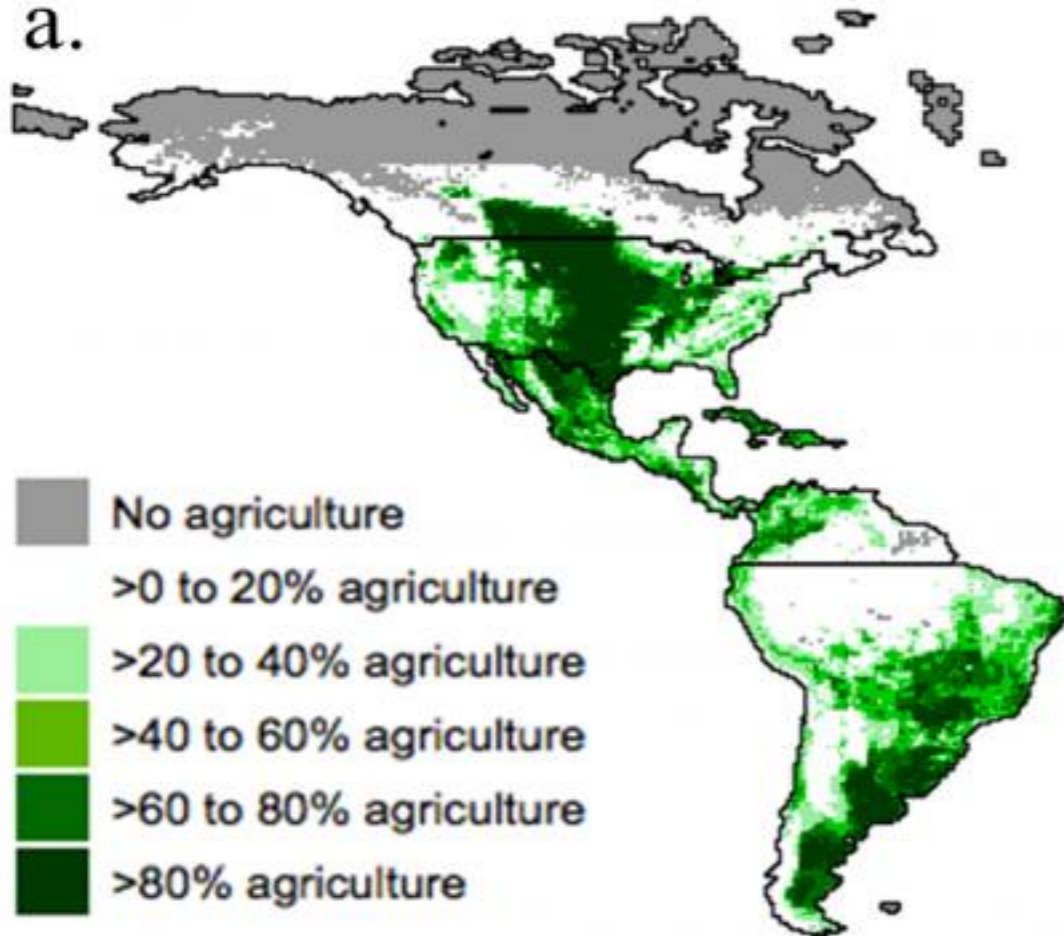


With current technology, we need 0.5 ha / person. to be sustainable on a global perspective

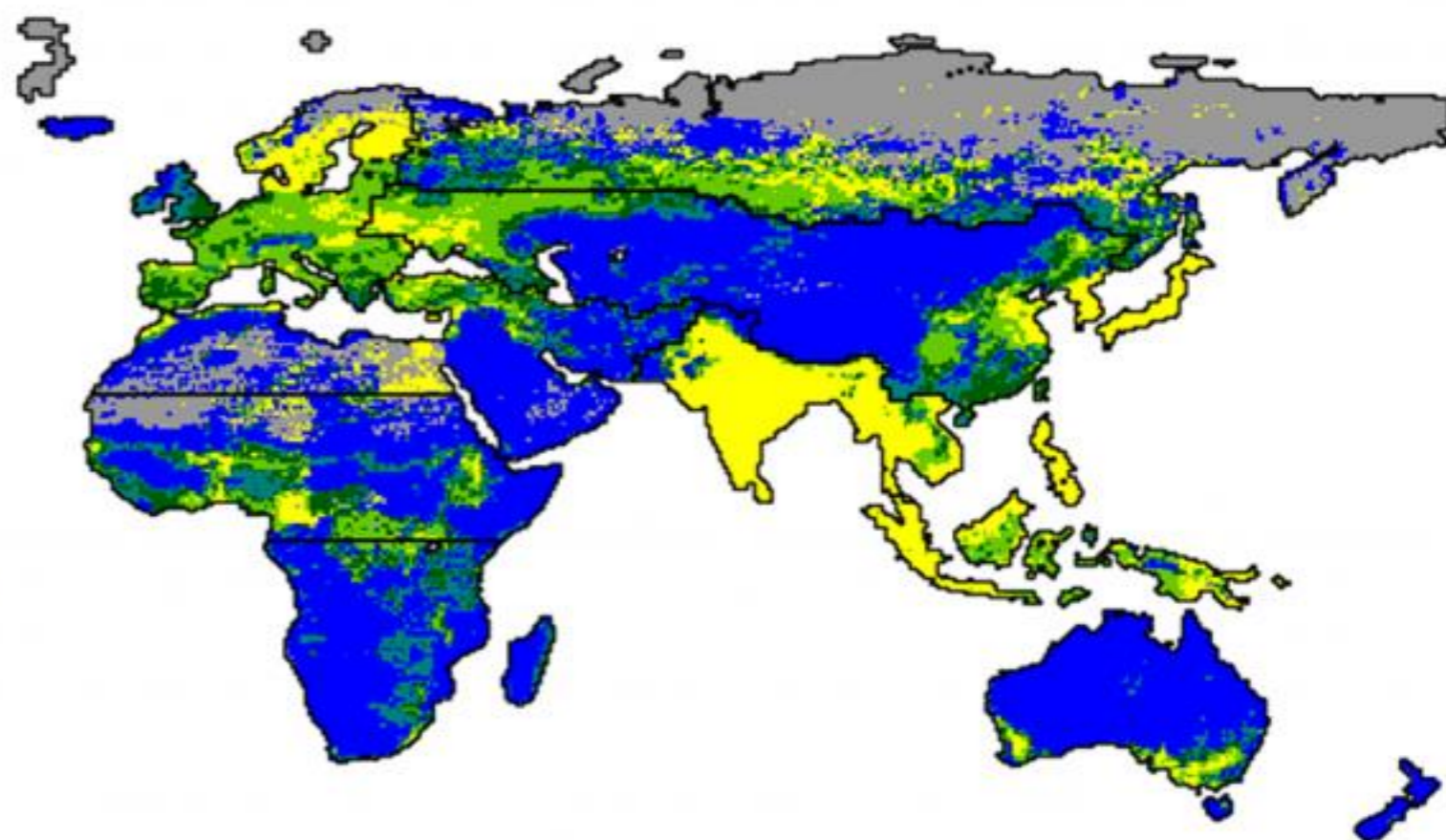
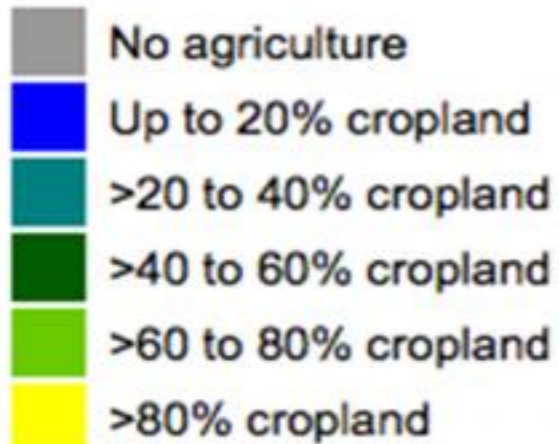
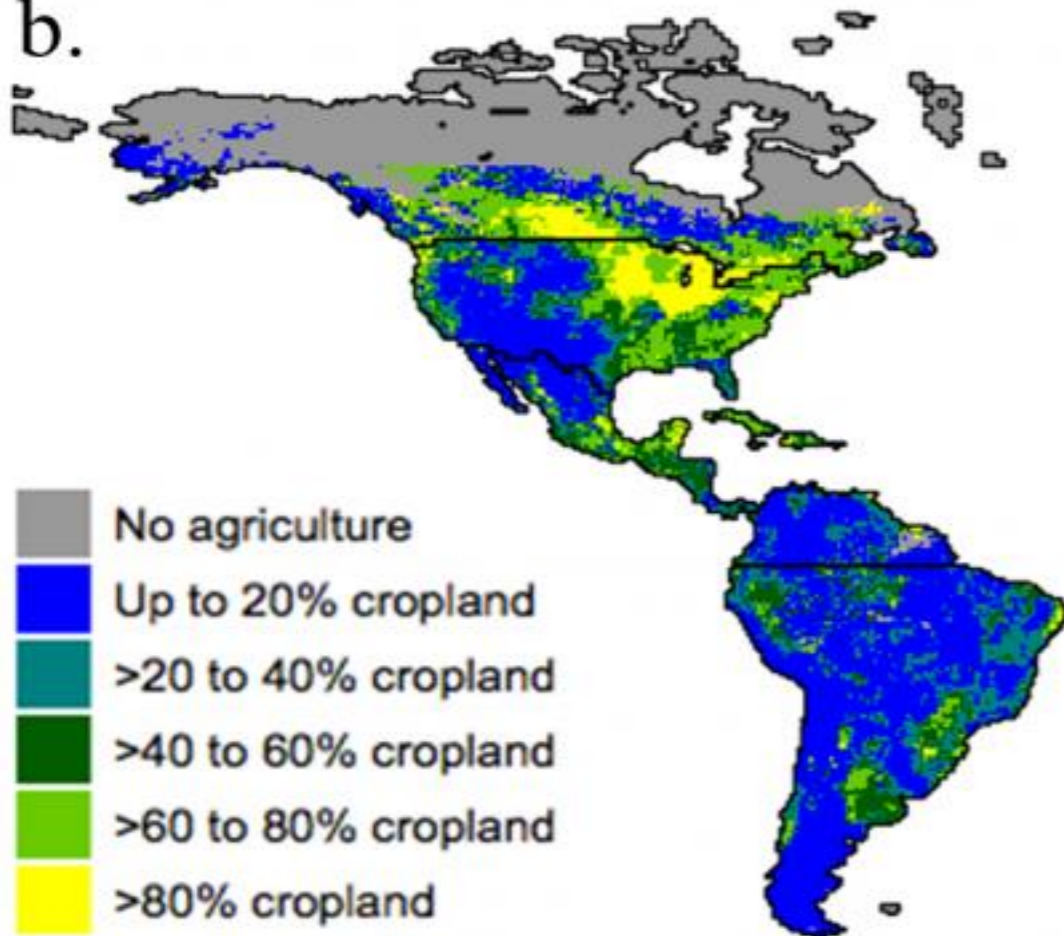
Global Reality Check Current



a.



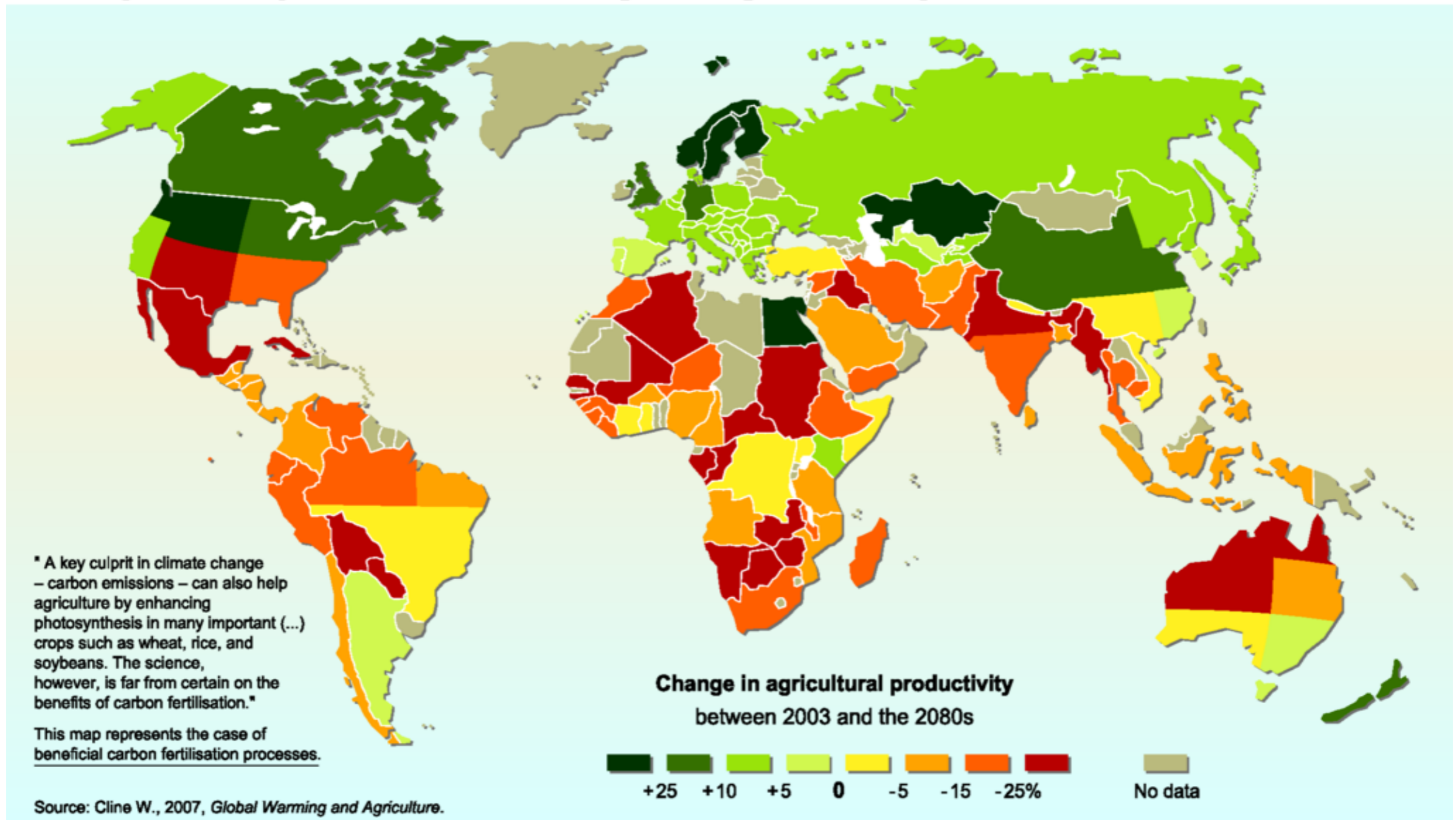
b.



Global Reality Check - 2050



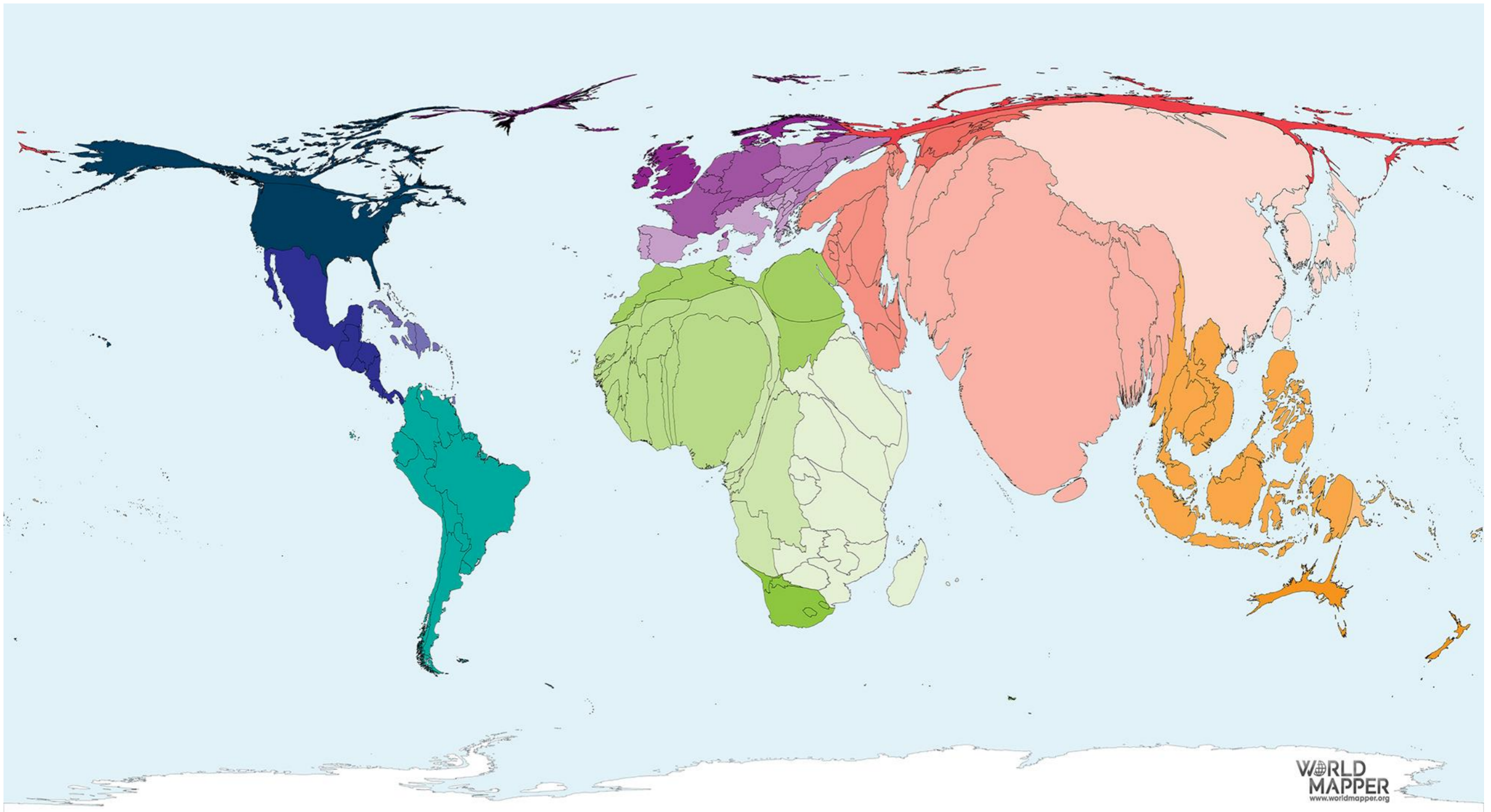
Projected impact of climate change on agricultural yields



Global Reality Check - 2050



Global Reality Check - 2050



Global Reality Check



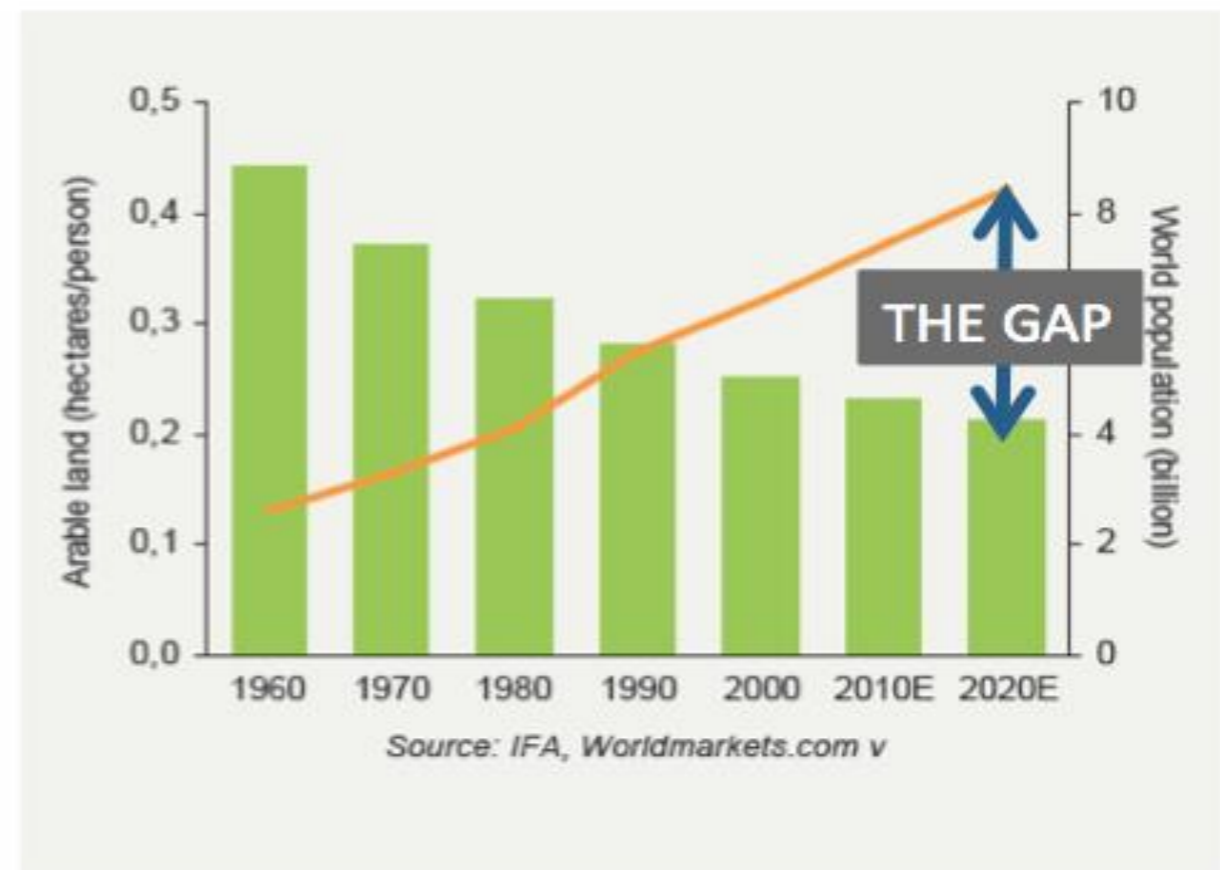
The Challenge: Feed more people using less land and water: CLOSE THE GAP!

Very limited potential to
increase arable land

Improved living standards
increase protein consumption
per person requiring more
grain for animal feed



**The only solution is to
increase agricultural
productivity**



Source: Norman Borlaug statement on the basis of 2005 food production level.

Global Reality Check



In the year **2050**,
the world **population**
will require

▶ **100%**
more **food**,¹ and

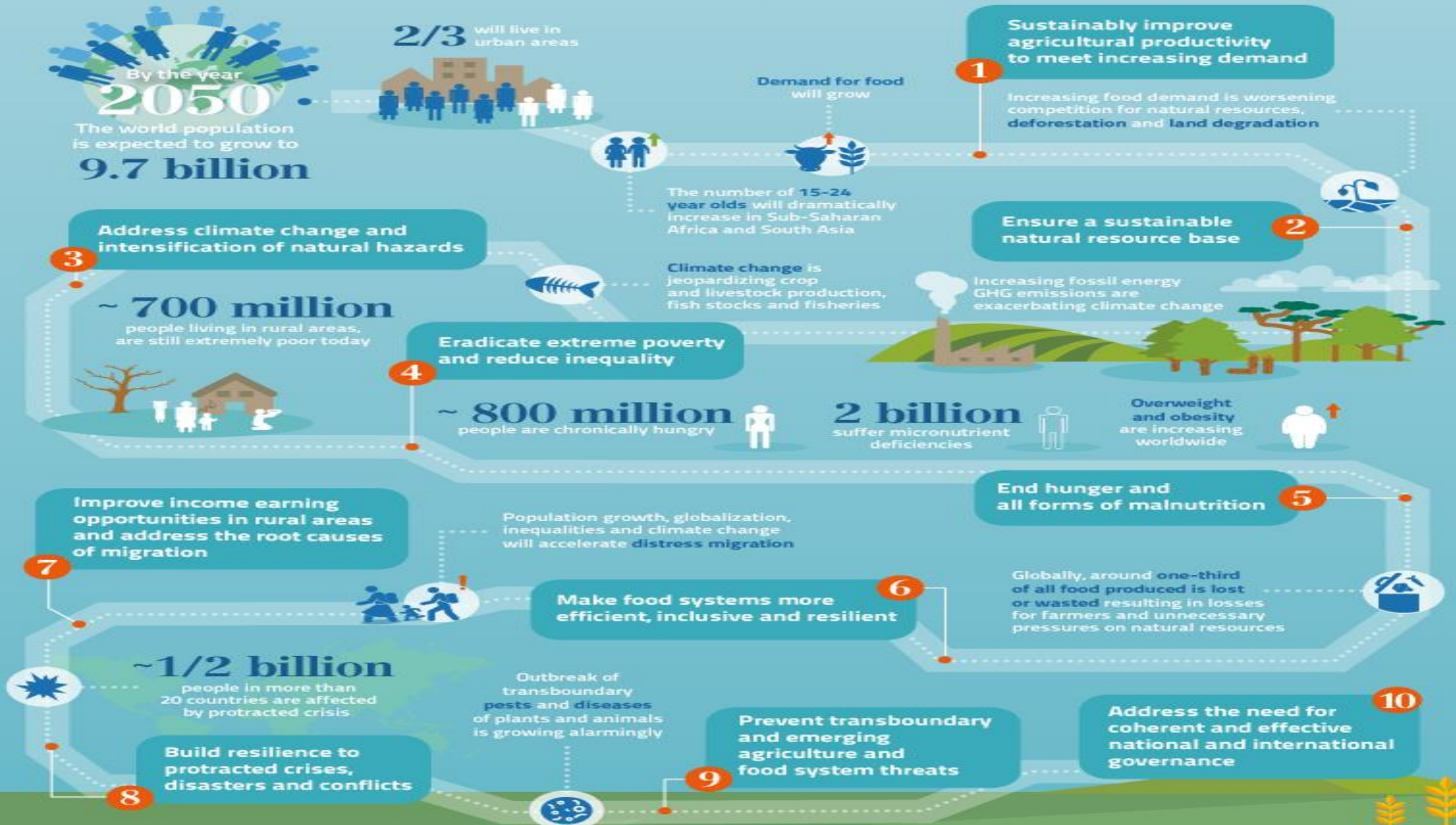
▶ **70%**
of this food must come from
efficiency-improving **technology**²

Global Reality Check



The future of food and agriculture

The global trends and **challenges** that are shaping our future



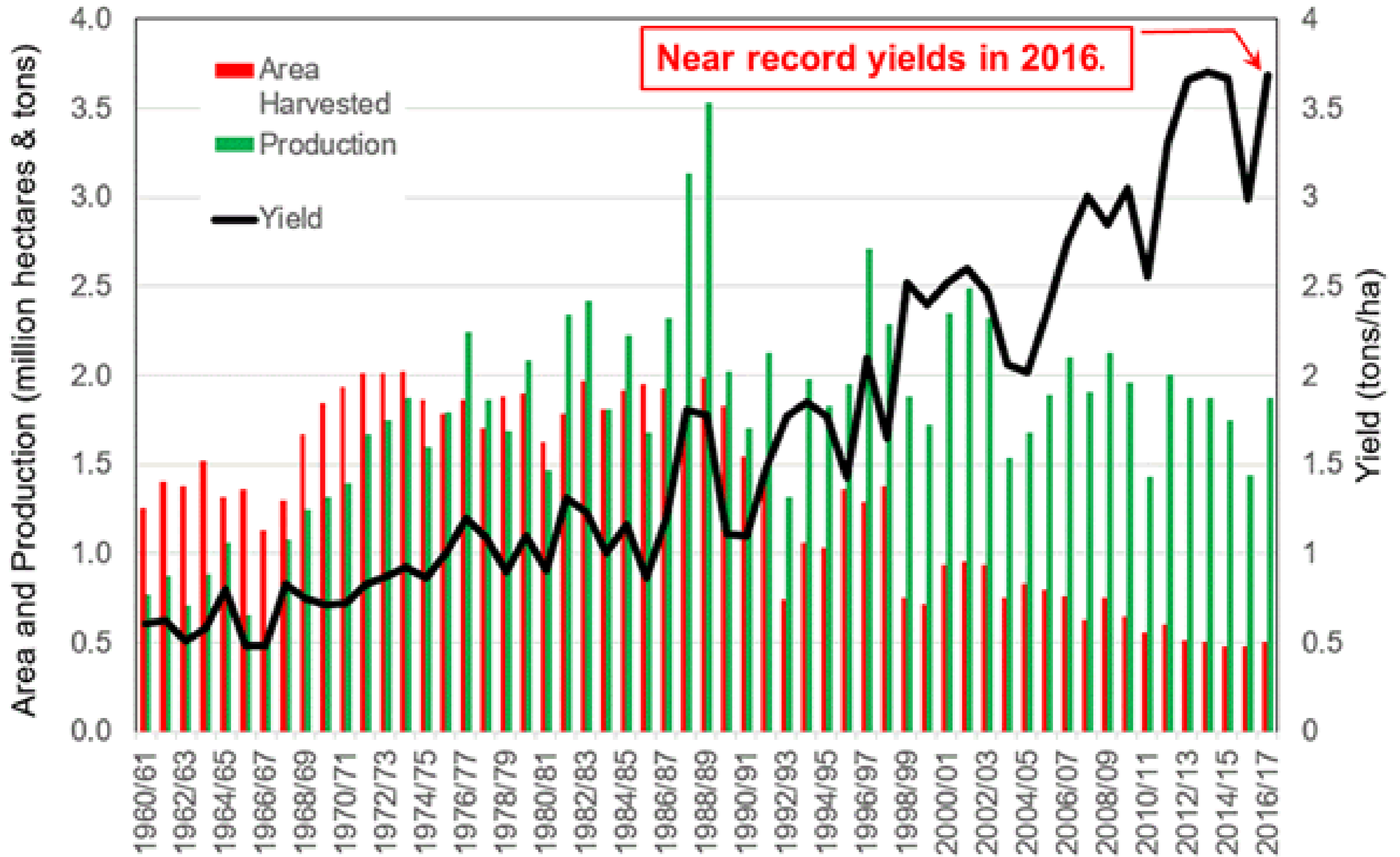


Conservation Farming



“A local perspective”

South Africa Wheat



Source: PSD Online

<https://apps.fas.usda.gov/psdonline/app/index.html#/app/home>

Sustainable Agriculture / Conservation Farming

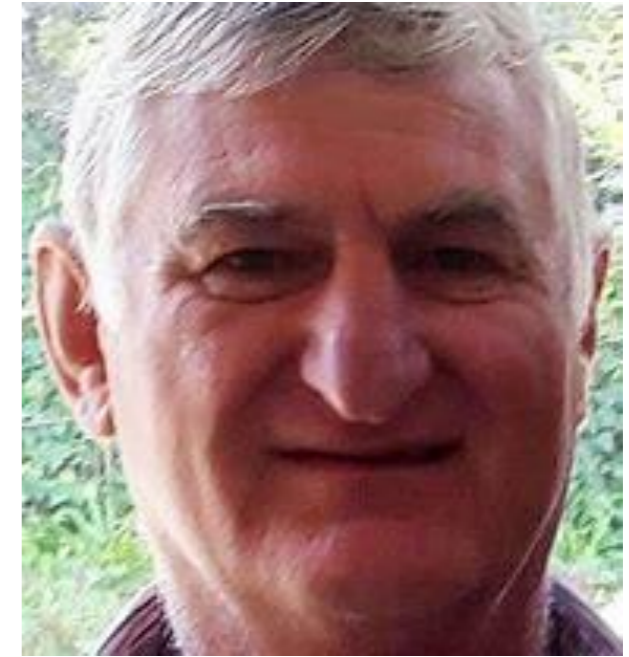


- A more sustainable way of farming is more an economic reality than an environmental issue
 - The goal of **sustainable agriculture** is to meet society's food and textile needs in the present without compromising the ability of future generations to meet their own needs.
 - Practitioners of **sustainable agriculture** seek to integrate three main objectives into their work:
 - a healthy environment,
 - economic profitability,
 - and social and economic equity.
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Conservation Farming



- Started in the 1970's
 - Jack Human
 - Bertie Eksteen
- Conservation Farming Committee
 - Department of Agriculture
 - Farmers
 - Coops
 - Extension officers



Conservation Farming



Conservation agriculture (CA) offers an alternative system which allows for agricultural intensification while improving soil health.

CA builds on three cornerstones:

- Minimal mechanical disturbance of the soil (no-till and zero-till);
 - Maximum diversity in crops grown, including cover crops and rotations;
 - Year-round organic cover on the soil, either with living plants or with plant residues.
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Conservation Farming

- Minimum Tillage
- Stubble retention
- Crop rotation



Crop Rotation



TABLE 1: WESTERN CAPE WHEAT PRODUCERS' PERCEPTION OF THE IMPACTS OF CONSERVATION AGRICULTURE.

IMPACT	INCREASED/ IMPROVED		DECREASED		CONSTANT		CHI- SQUARE VALUE	PROB- ABILITY VALUE	COMMENTS REGARDING THE RESPONSES OF 51 PRODUCERS
	#	%	#	%	#	%			
									Majority of the producers reported
CA impact on total production	41	83,67	1	2,04	7	14,29	56,98	<0,01	Increased total production
Total income per hectare	44	93,62	1	2,13	2	4,26	76,89	<0,01	Increased total income per hectare
Total income	41	87,23	1	2,13	5	10,64	61,95	<0,01	Increased total income
Non-agricultural income	10	33,33	1	3,33	19	63,33	16,2	0,0003	Constant non-agricultural income
Labour costs	3	6,52	32	69,57	11	23,91	29,6	<0,01	Decreased labour costs
Planting equipment price	37	82,22	7	15,56	1	2,22	49,6	<0,01	Increased specialised planning equipment prices
Equipment costs	24	63,16	4	10,53	10	26,32	16,63	0,0002	Increased equipment costs
Weed control	26	59,09	12	27,27	6	13,64	14,36	0,0008	Increased weed control
Credit costs	6	15,38	16	41,03	17	43,59	5,69	0,058	Constant credit costs
Total labour needed	5	11,36	24	54,55	15	34,09	12,32	0,002	Decreased labour required
Hired labour	12	27,27	16	36,36	16	36,36	0,73	0,695	Tie: Decreased and constant regarding hired labour
Soil quality	46	95,83	1	2,08	1	2,08	84,38	<0,01	Increased soil quality
Soil moisture	44	93,62	1	2,13	2	4,26	76,89	<0,01	Increased soil moisture
Soil micro-organism	46	95,83	1	2,08	1	2,08	84,38	<0,01	Increased soil micro-organism
Temperature	5	11,63	21	48,84	17	39,53	9,67	0,008	Decreased temperature
Compaction	6	12,50	37	77,08	6	12,05	41,38	<0,01	Decreased compaction level
Human health	21	58,33	5	13,89	10	27,78	11,17	0,001	Increased human health
Fertiliser costs	3	6,67	32	71,11	10	22,22	30,53	<0,01	Decreased fertiliser costs
Pest control costs	20	43,48	13	28,26	13	28,26	2,13	0,345	Increased pest control
Insect/pest attack	16	43,24	13	35,14	8	21,62	2,65	0,266	Increased insect attack
Production disease costs	3	6,52	37	80,43	6	13,04	46,22	<0,01	Decreased production disease costs
Crop disease	10	27,78	19	52,78	7	19,44	6,50	0,039	Decreased crop disease
Water quality	26	65	1	2,50	13	32,50	23,45	<0,01	Improved water quality

Water



Water

- Quality
 - Theewaterskloof dam
 - Small-stock-units increase from 600,000 to 2,400,000
 - Dairy farming / Sheep
 - Cost of water
 - Dairy farming
 - Move to coastal areas
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Agriculture and the environment



Economic reality **vs** Environmental sustainability

or

Economic reality **&** Environmental sustainability

“I have learned that farming systems that are not environmentally sustainable, are not economic viable”



NUWEJAARS
Wetlands ^{SMA}