Climate Change:

The Role of Food and Agriculture

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LAND AND **LAND USE** CONTRIBUTE TO CLIMATE CHANGE, AND CAN HELP SOLVE IT

Part of the problem

DEFORESTATION

AGRICULTURE

Solutions

NATURAL CLIMATE SOLUTIONS

Amplifiers

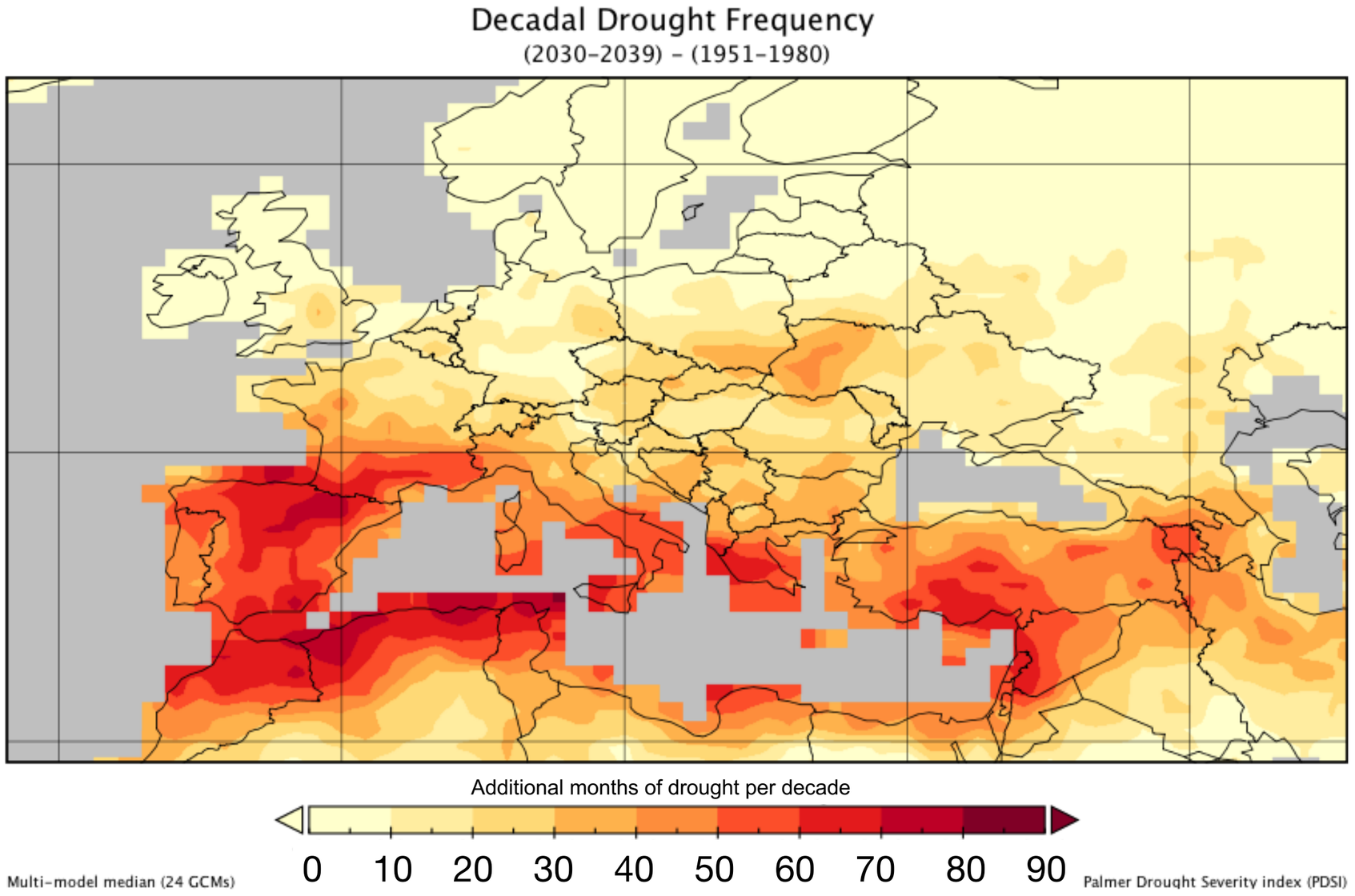
WILDFIRE

PERMAFROST THAW

DESERTIFICATION: IT'S A THING

The Sahara Desert will effectively cross the Mediterranean Sea.

The heavily populated coast of Africa will be squeezed between the desert and the rising seas.



Source: Woods Hole Research Center

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Nature 4Climate

COICA
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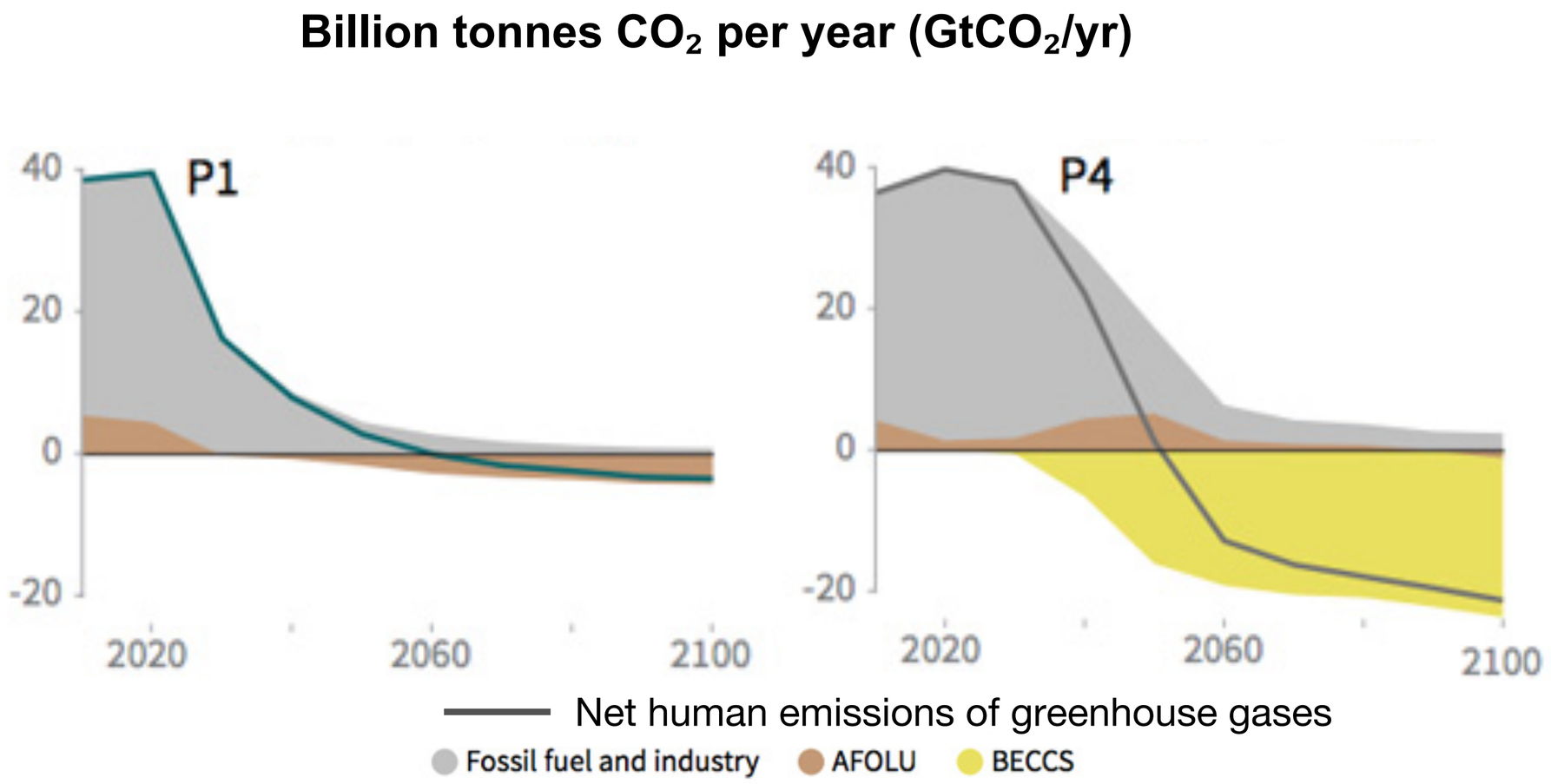
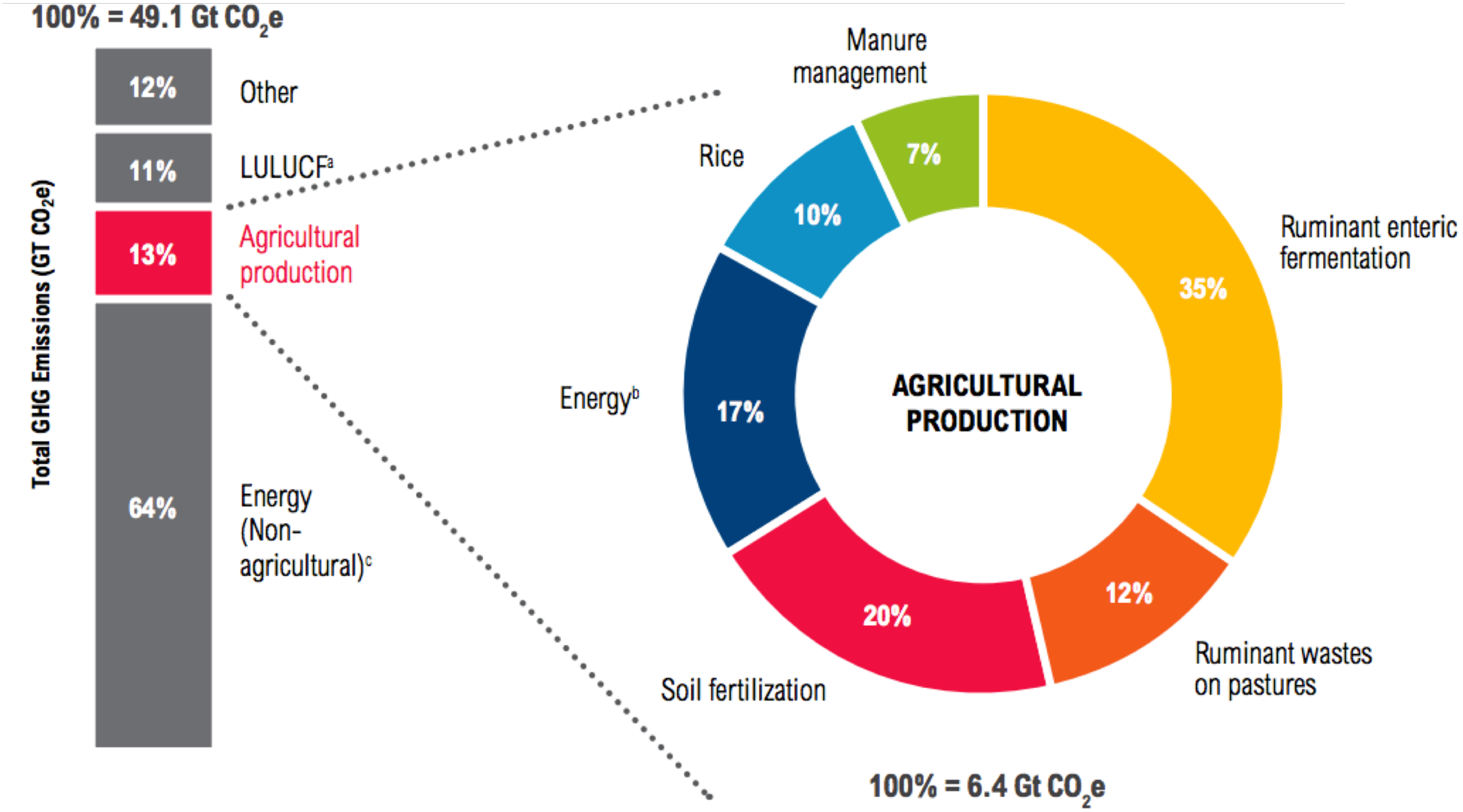
URGENCY: WE NEED TO REDUCE GLOBAL EMISSIONS TO ZERO, OR LESS, SOON

Two emissions trajectories which limit warming to 1.5ºC

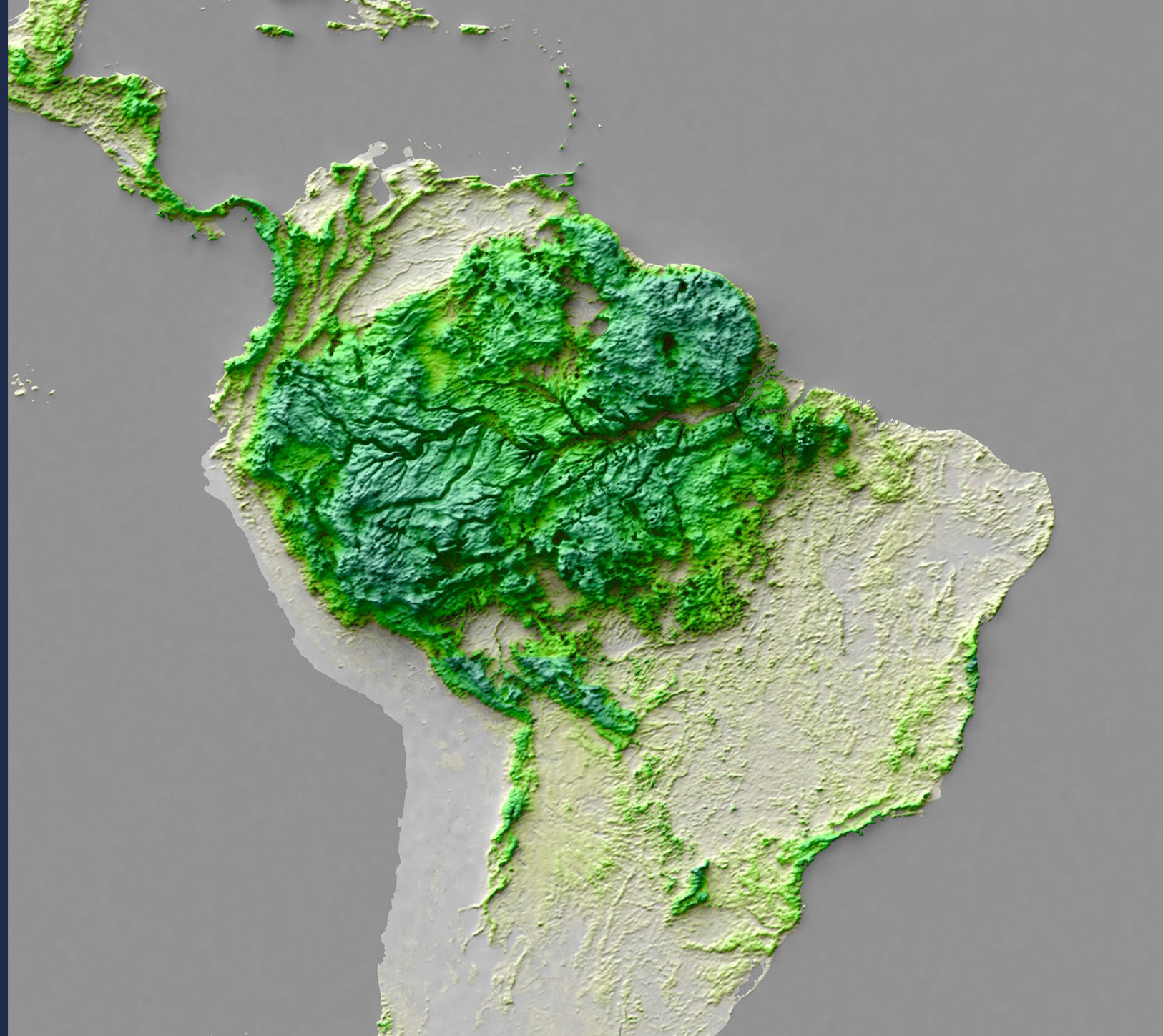


How does agriculture affect climate change?

FOOD PRODUCTION IS PART OF THE PROBLEM…

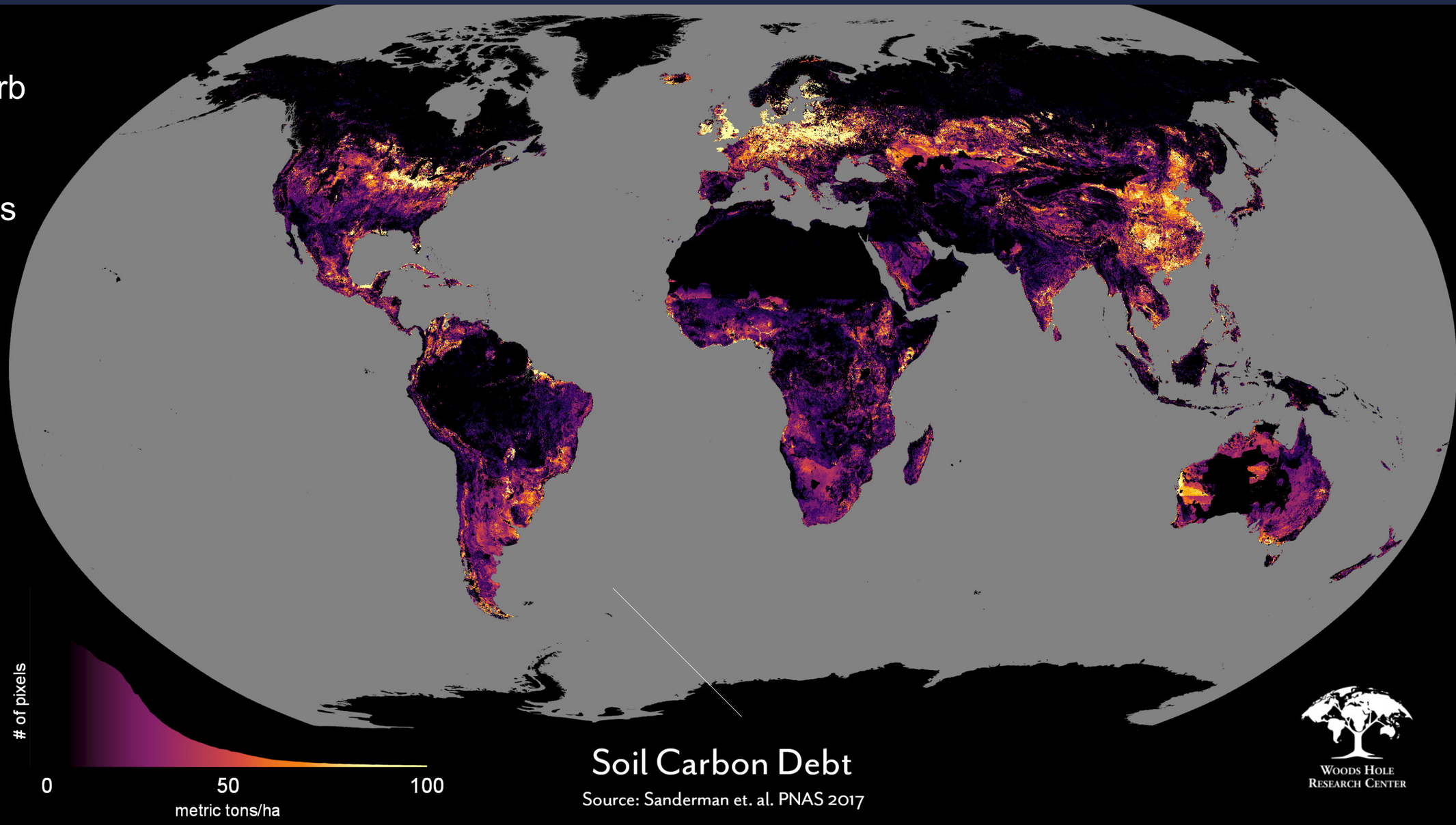


CLEARING OF FOREST FOR AGRICULTURE CONTRIBUTES TO CLIMATE CHANGE



…BUT IT COULD BE PART OF THE SOLUTION

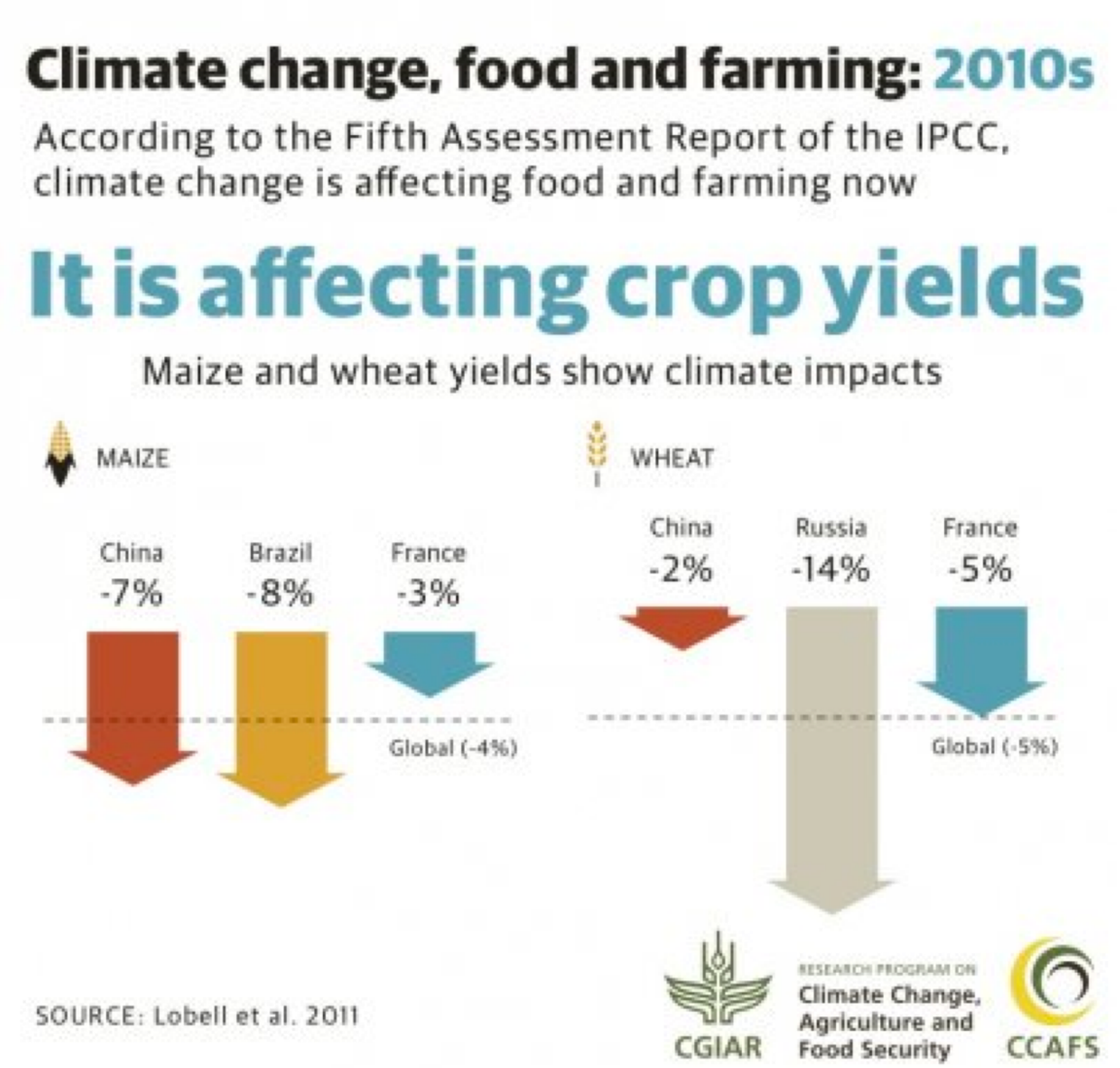
Soil could absorb carbon equal to 13 years of global emissions



How does climate change affect agriculture?

CLIMATE CHANGE REDUCES CROP YIELDS

Effects of climate change on crop yields, 1980-2008



Source: David Lobell et al. *Science*, 2011

IN A WARMER WORLD, SIMULTANEOUS MULTI-REGION CROP FAILURES ARE MORE LIKLEY

Future warming increases probability of globally synchronized maize production shocks

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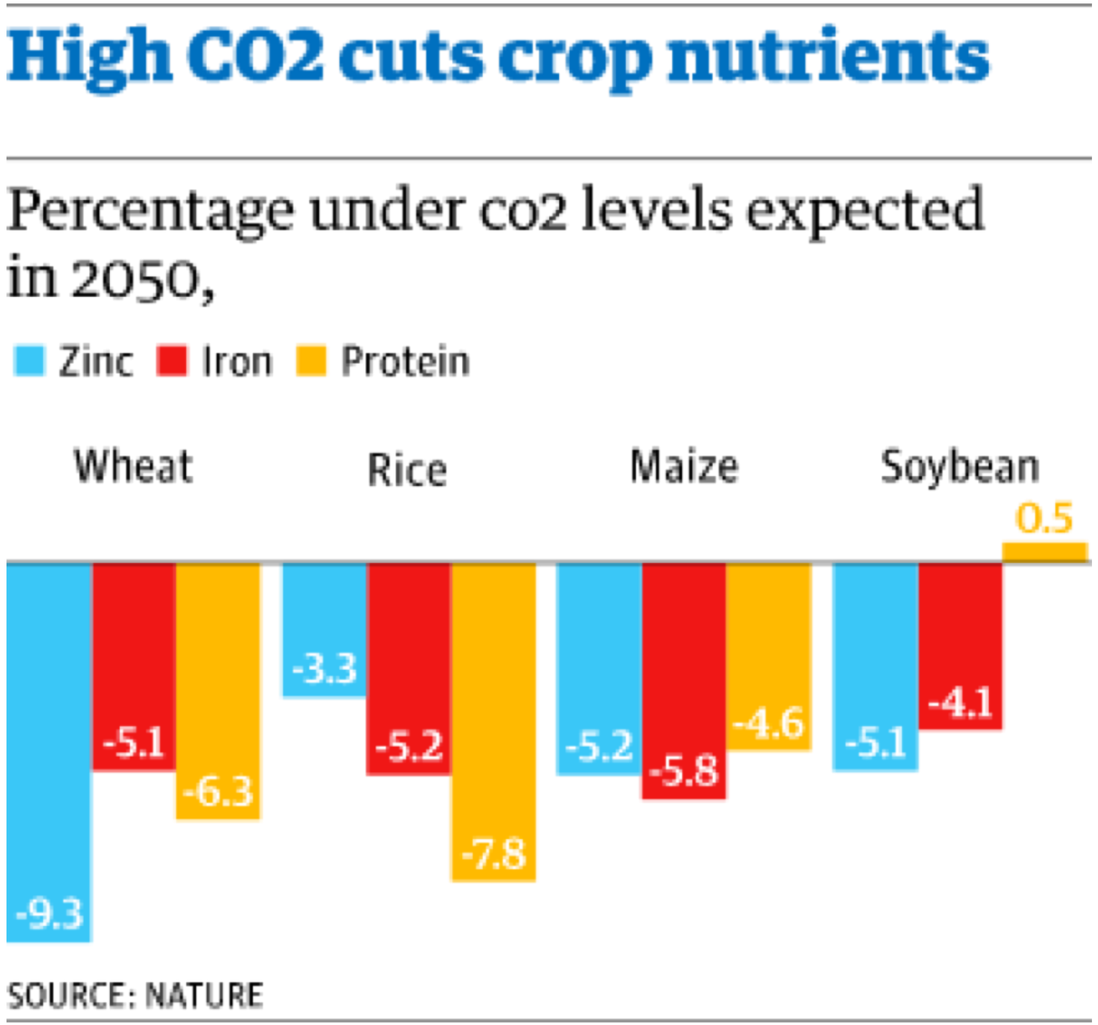
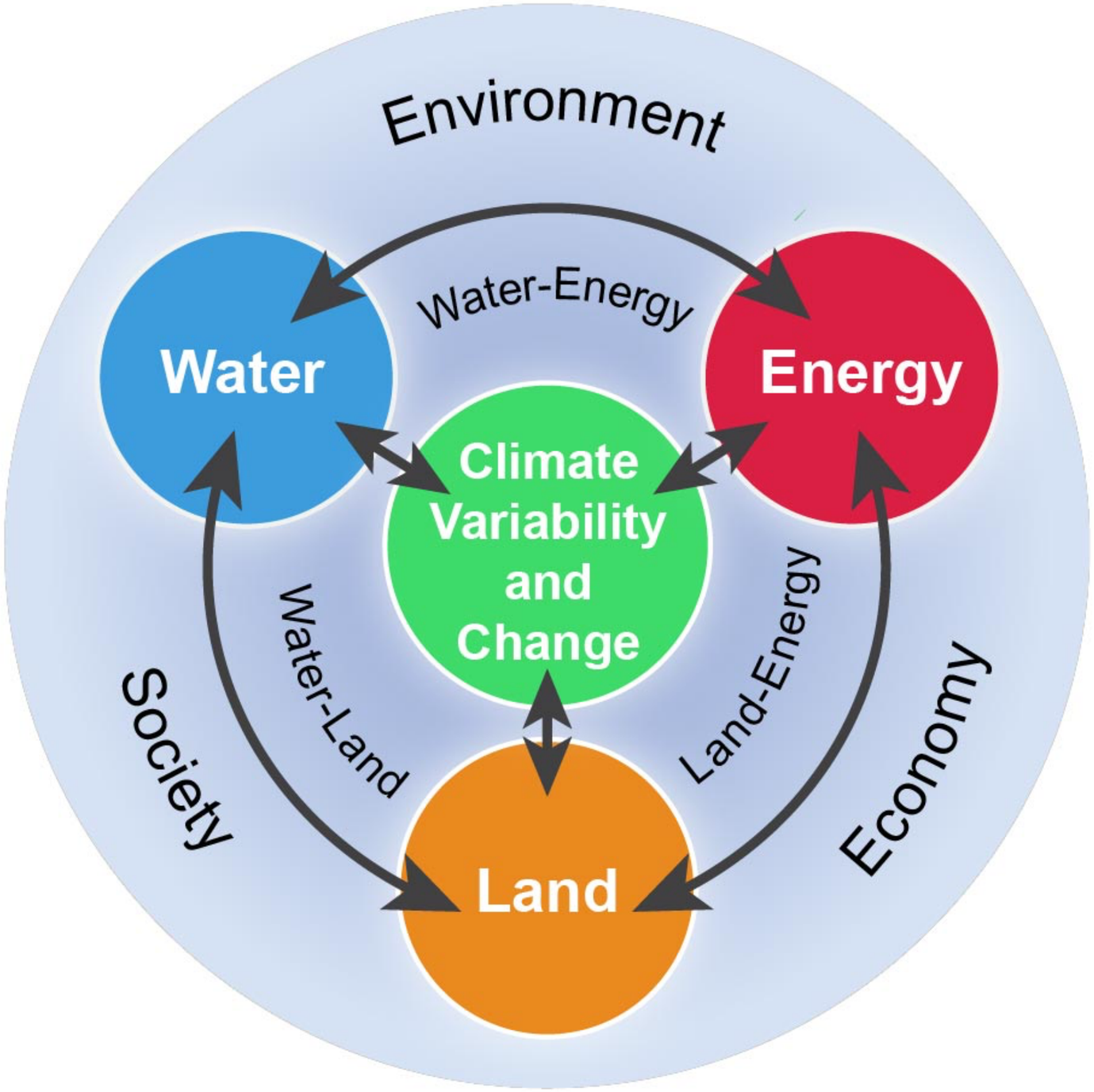
	Present-day climate, %		2 °C warming, %		4 °C warming, %	
Country	>10%	>20%	>10%	>20%	>10 %	>20%
Top four producing*	0.0	0.0	6.1	0.0	86.6	48.1
Top four exporting†	0.0	0.0	6.9	0.1	86.1	45.8
Top export + import‡	0.0	0.0	1.1	0.0	68.9	21.2

Probability of 10% or 20% yield decreases

HIGHER CO_2 REDUCES CROP NUTRIENT CONCENTRATIONS

Increases risk of nutritional deficiencies




Environment
Water-Energy
Water
Energy
Climate Variability and Change
Water-Land
Land-Energy
Society
Economy
Land


Thank you.
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