

World Scientists' Warning to Humanity: A Second Notice WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries a. Ozone depletors (Mt CFC-11-equivalent per year) Freshwater resources per capita (1000 m³) Reconstructed marine catch (Mt per year) 110 0.9 90 We are not yet bending Vertebrate species oundance (% of 1970) Total forest (billion ha) environmental curves 100 600 400 200 CO₂ emissions (Gt CO₂ per year) Temperature change Population llion individuals 1.00 0.75 0.50 0.25 Ruminant livestoc 0.00 1992

The scale of the challenge



2 billion people lack key micronutrients like iron and vitamin A



155 million children are stunted



52 million children are wasted



2 billion adults are overweight or obese



41 million children are overweight



88% of countries face a serious burden of either two or three forms of malnutrition



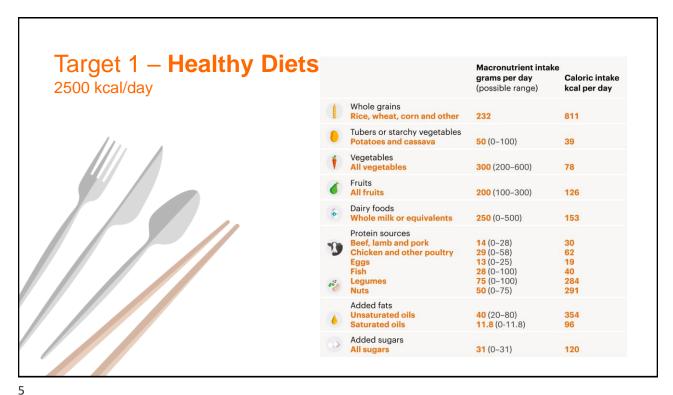
And the world is off track to meet all global nutrition targets

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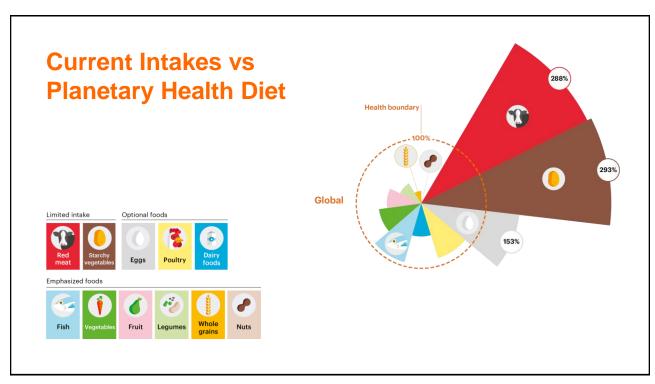
1 Goal – 2 Targets – 5 Strategies

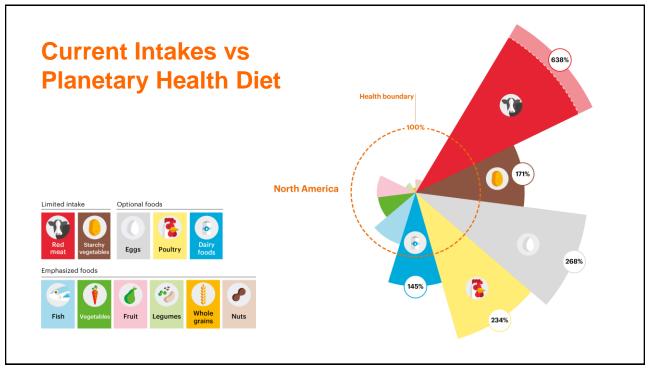
Scientific Targets for Healthy Diets from Sustainable Food Production

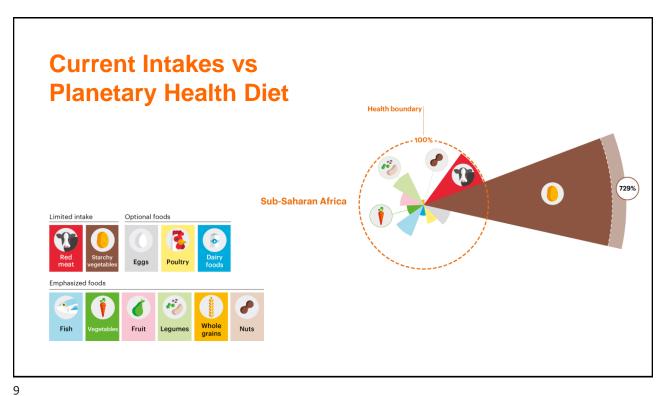


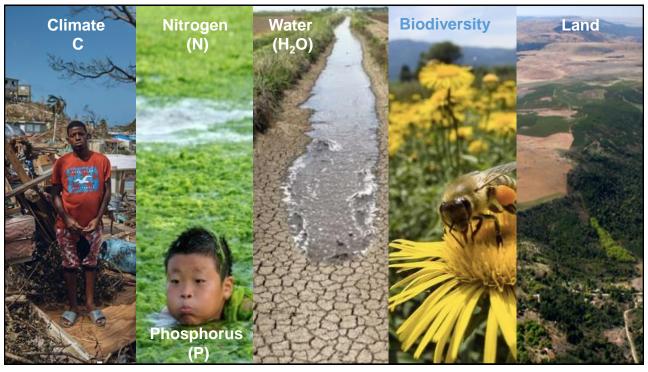






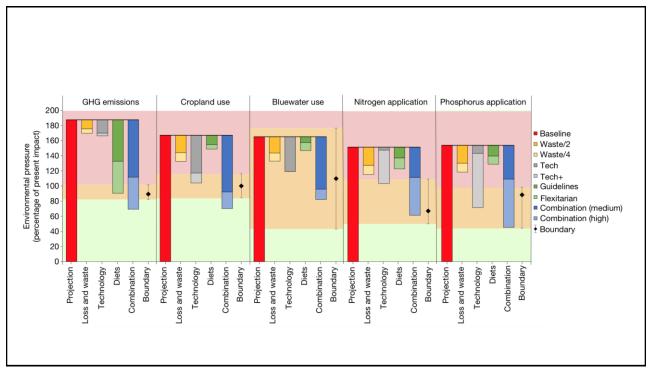






Target 2 – Sustainable Food Production Control variable Global Earth system process Boundary Implication (Uncertainty range) 5 Gt CO₂-eq yr⁻¹ No new emissions from Climate change **GHG** emissions (4.7 - 5.4 Gt CO₂-eq yr⁻¹) Agriculture 13 M km² 0 land expansion Cropland use Land-system change (11-15 M km²) 2,500 km3 yr-1 Freshwater use Water use >30% flows in basins (1000-4000 km³ yr⁻¹) 90 Tg N yr⁻¹ Pollution N application Nitrogen cycling (65-90 Tg N yr⁻¹) * <1 - 2.5 mg N L-1 (90-130 Tg N yr⁻¹)** 8 Tg P yr⁻¹ Pollution P application Phosphorus cycling (6-12 Tg P yr⁻¹) * <50- 100 mg P m⁻³ (8-16 Tg P yr-1)** 50% land intact by 10 E/MSY **Extinction rate Biodiversity loss** ecoregion (1-80 E/MSY)







Seek international and national commitment to shift towards healthy diets



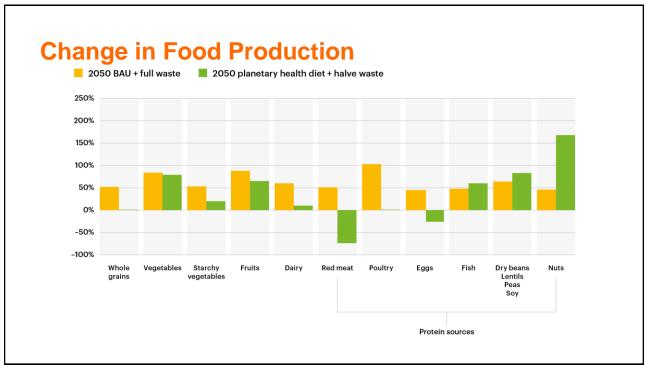
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Reorient agricultural priorities from producing high quantities of food to producing healthy food



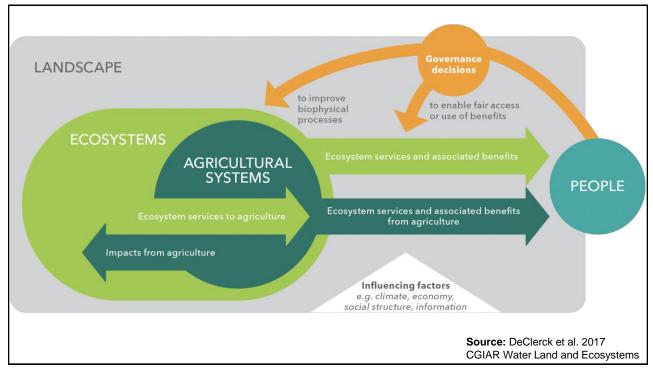
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Sustainably intensify food production to increase high-quality output



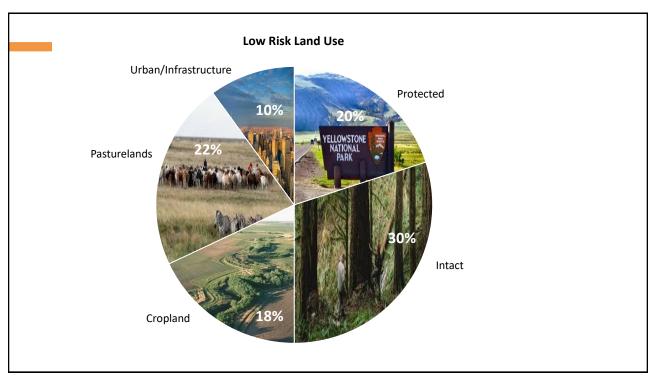
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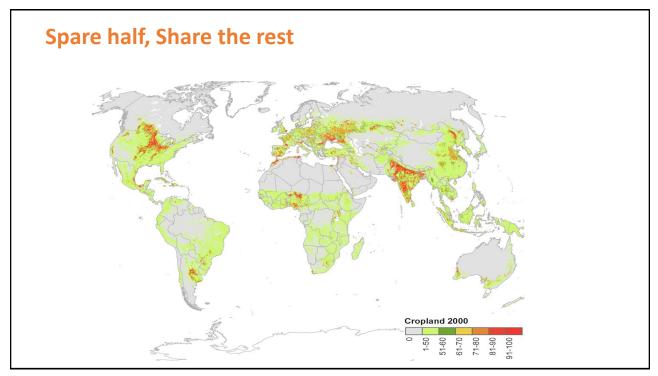


Strong and coordinated governance of land and oceans



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Strategy 5

At least halve food losses and waste, in line with UN Sustainable Development Goals



Feeding 10 billion people a healthy diet within safe planetary boundaries is possible and will improve the health and well being of millions of people and allow us to pass onto our children a viable planet.



