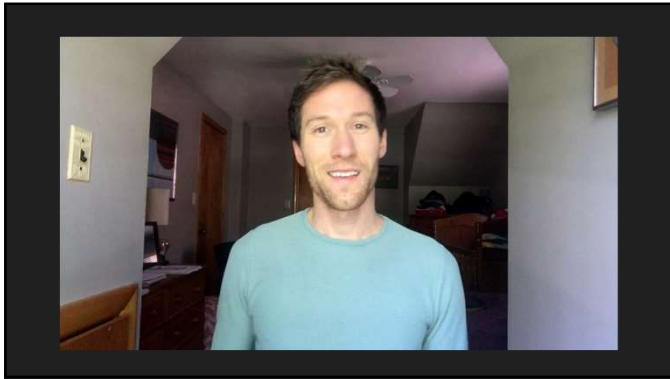




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Learning objectives

- 1 Describe how food systems integrate with the UN Sustainable Development Goals (SDGs) and The Paris Climate Accord.
- 2 List the four dimensions of sustainable diets.
- 3 Describe three similarities between healthy and sustainable diet patterns

3

Modern diets are not sustainable.

- They encourage the overconsumption of nutrient-poor and calorie-dense foods.
- Are becoming less diverse and at the same time are the leading driver of global biodiversity loss. (Nature, 2018)
- Account for 20-30% of global greenhouse gas emissions (GHGe). (FAO, 2015; EPA, 2015)
 - Livestock emissions and manure contributed nearly 2/3 of all agricultural GHGe. (FAO, 2015)
- Are linked to >50% of all zoonotic infectious diseases, which is predicted to rise under our current food system model. (Nature, 2019).



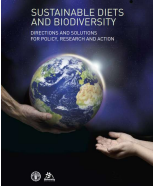
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United Nations Sustainable Development Goals (SDGs)




5

Defining “Sustainable Diets”



“Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations.
Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.”
(CABI, FAO 2012)



SDG #2 ZERO HUNGER

6

UNITED NATIONS PARIS CLIMATE AGREEMENT SIGNING CEREMONY — 22 APRIL 2016

- **Aim:** Keep global temps below 2°C of pre-industrial levels, and pursue ways to keep it below 1.5°C.
- Signed by 194 states (including China and the United States).
 - USA withdrew in 2019, making it the only state to do so.

407 US #ClimateMayors, representing 70 million Americans, have committed to adopt, honor and uphold the climate goals of the Paris Agreement

7

“Without a great food system transformation, the world will fail to deliver both on the United Nations Sustainable Development Goals and the Paris Climate Agreement.”

- Johan Rockström

8

4 Dimensions of Sustainable Diets

Socio-cultural

- Gender equity
- Culturally appropriate
- Indigenous peoples
- Animal welfare

Economic

- Profits & revenue
- Jobs
- Fair wages
- Affordability

Planetary Health

- Food loss and waste
- Greenhouse gas emissions (GHGe)
- Biodiversity loss
- Land use change

Nutrition

- Food security
- Malnutrition
- Diverse, nutrient-rich foods
- Food Safety

World health organization, 2019; BCFN 2015

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Characteristics of sustainable diets

	Socio-cultural	Economic	Planetary	Nutrition
Food production	Harness traditional knowledge and local foods.	Produce food at affordable prices, pay fair wages.	Transition towards sustainable agricultural practices.	Grow a diverse range of nutrient-dense foods.
Consumption	Safeguard traditions, honor cultures, and meet local preferences.	Ensure all people have access to a diverse, healthy diet.	Promote foods with lower GHGe, water, and land use. Reduce food waste.	Promote foods rich in nutrients, and seasonally available.

(BCFN, 2015; CABI, 2019; WHO/FAO, 2019)

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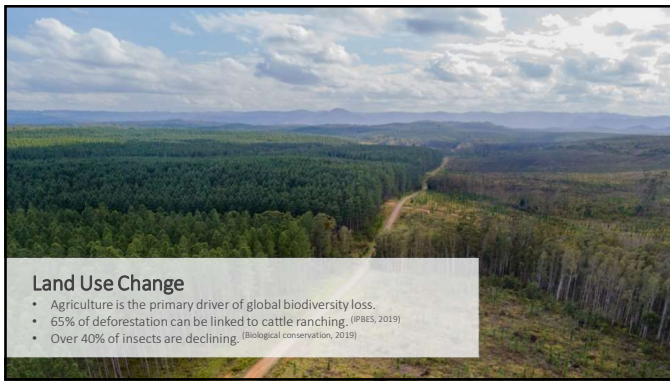


The Anthropocene: Biodiversity loss

One million animal and plant species are threatened with extinction, more than ever before in human history.

IPBES Report (2019)

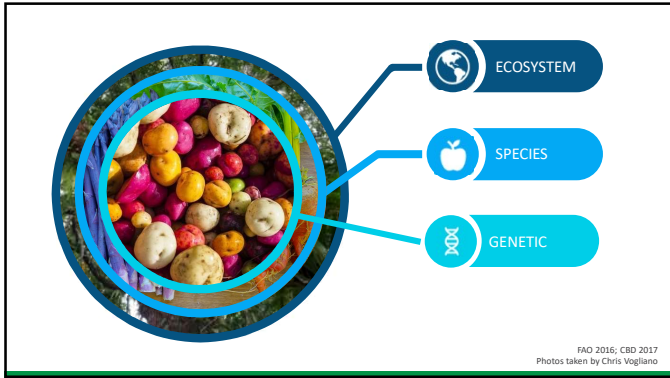
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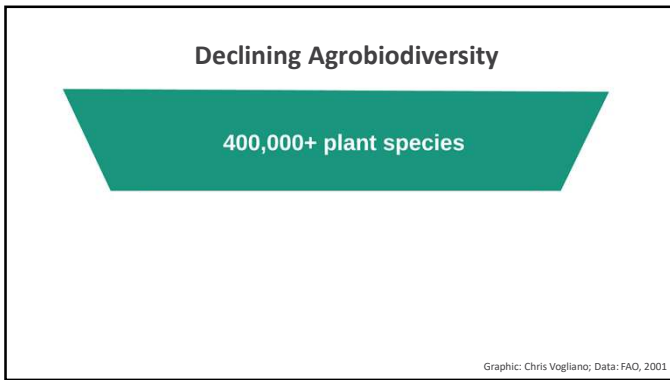
Land Use Change

- Agriculture is the primary driver of global biodiversity loss.
- 65% of deforestation can be linked to cattle ranching. (IPBES, 2019)
- Over 40% of insects are declining. (Biological conservation, 2019)

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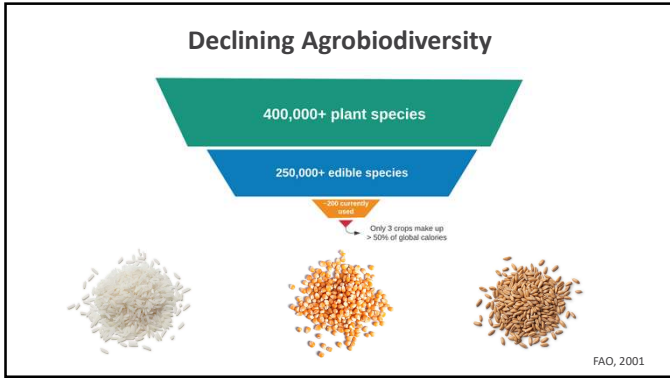


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POLL QUESTIONS

- Which three crops make up >50% of the world' calories?
 - Rice, bananas, soy
 - Soy, wheat, rice
 - Wheat, soy, canola
 - Rice, corn, wheat

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POLL QUESTIONS

- What is predicted to happen to rice and wheat as CO₂ levels continue to rise?
 - a) They will grow quicker and produce higher yields.
 - b) Become more nutritious as with agricultural improvements.
 - c) Become lower essential nutrients like protein, zinc, and iron.
 - d) Both A and C

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Rising Atmospheric Carbon Dioxide (CO₂)

A recent study found in 18 varieties of rice, CO₂ significantly reduced protein, iron, and zinc, as well as some B vitamins.
- Scientific Advances, 2018

Wheat crops have higher yields under elevated CO₂ levels.
However, researchers from Harvard's School of Public Health found 5 to 10 % reductions in nutrients like iron, zinc and protein.
- Nature, 2014

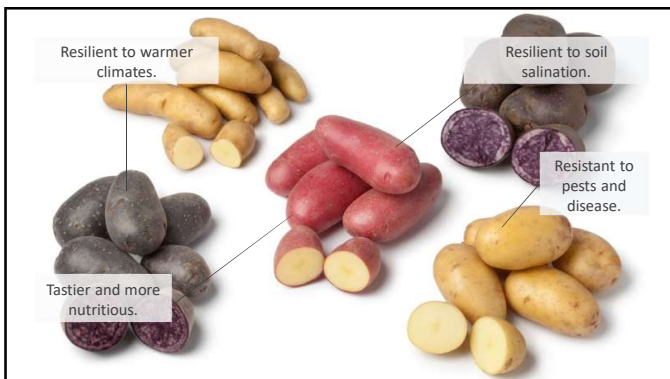
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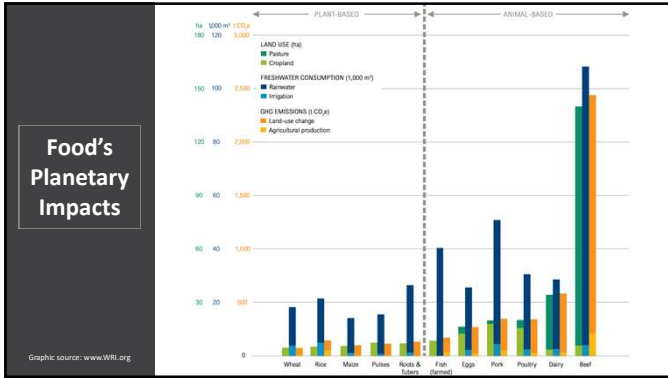
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TACKLING CLIMATE CHANGE THROUGH LIVESTOCK

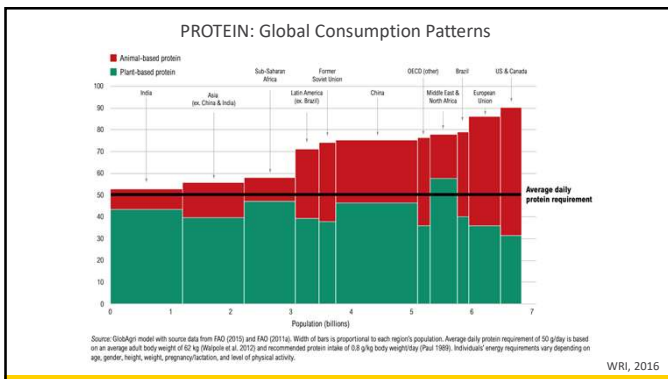
A GLOBAL ASSESSMENT OF EMISSIONS AND MITIGATION OPPORTUNITIES

Measuring agriculture's GHGe

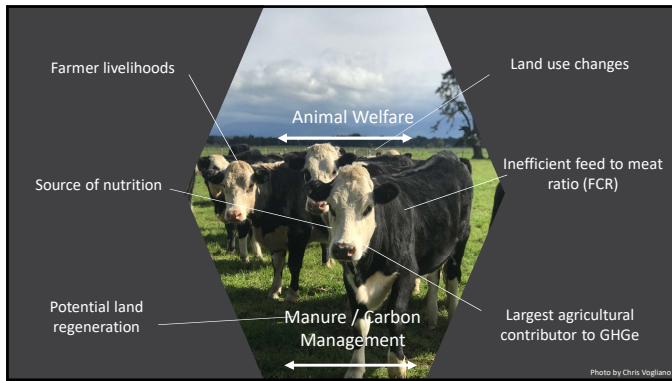
Greenhouse Gas (GHG)	Global Warming Potential (GWP)	Overall contribution	Common sources
Carbon dioxide - CO ₂	1x	Weak	Transportation
Methane - CH ₄	28x	Strong	Livestock (esp. cattle & lamb); rice production
Nitrous oxide - N ₂ O	300x	Very strong	Soil management, synthetic fertilizer

Livestock contribute 7.1 gigatonnes of GHGe (methane) yearly, or 14.5% of global emissions. (FAO, 2013)

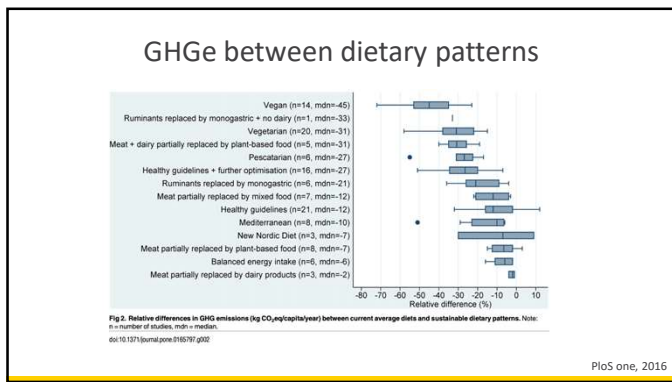
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Sustainable diets are attainable

Reduction of $\leq 30\%$ dietary GHGe is compatible with:

- Nutritional adequacy
- Affordability
- No food group elimination
- Cultural acceptability

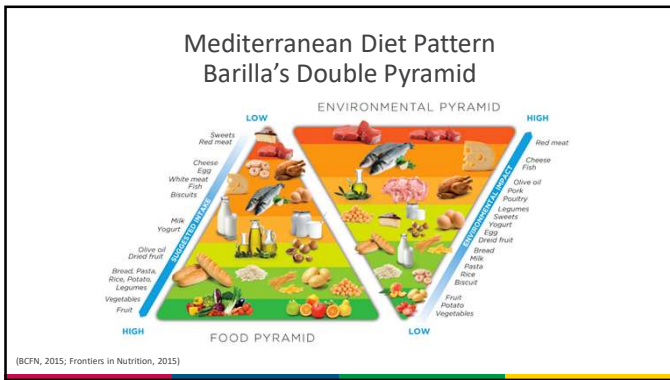
Photo by Chris Vogliano

(National Academy of Sciences, 2016; Public Health Nutrition, 2016)

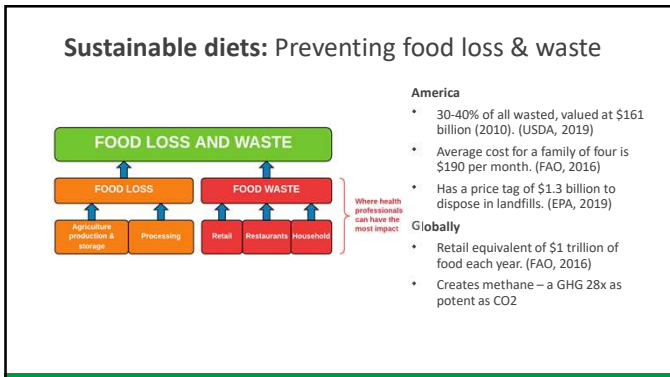
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Sustainable diet patterns

Red meat Red meat > 70g/week or >100g/100g (cooked weight)	Processed meats	Fruit and vegetables Seasonal & locally produced vegetable/fruit or use frozen/frozen	All fried, pre-packed and prepared fruit and vegetables
Plant proteins Prioritise beans and lentils, soy, beans, mince, nuts, tofu, mycoprotein (Quorn™), nuts and seeds.	Portion control	Animal proteins Dairy produce	High Fat, Sugar and salt (HFSS) foods
Fish From sustainable sources and follow oily fish recommendations.	Hydration	Reduce food waste	Especially perishable fruit and vegetables. Any food waste should be recycled.
Dairy Moderate dairy consumption. Use calcium fortified plant-based alternatives where needed.			
Potatoes, bread, pasta and other staple carbohydrate foods Recommend wholegrain. Recommended tubers such as potatoes.			

✗ Avoid ▼ Reduce ▲ Moderate ▲ Increase

BDA The Association of UK Dietitians

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Position of the Academy of Nutrition and Dietetics

“It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan diets, are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases.”




+

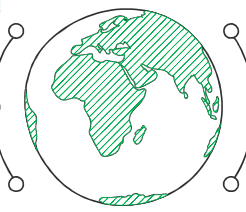
“Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage.”


Journal of the Academy of Nutrition and Dietetics, 2016

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Who's promoting sustainable diet patterns?




Academy of Nutrition and Dietetics
 Council on Future Practice



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Who's promoting sustainable diet patterns?

Future Visioning Report 2017
 "Mediterranean, pescatarian, and vegetarian diets have the potential to reduce chronic disease rates, global greenhouse gas emissions, and land clearing."
 (JAND, 2017)

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3 Actions for Change

- 1 Encourage consumption of a wider diversity of minimally processed grains, legumes, fruits, vegetables, nuts and seeds.
- 2 Promote sustainable protein sources, such as swapping beef for beans.
- 3 Reduce levels of food waste within food service operations or within consumer's homes.

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