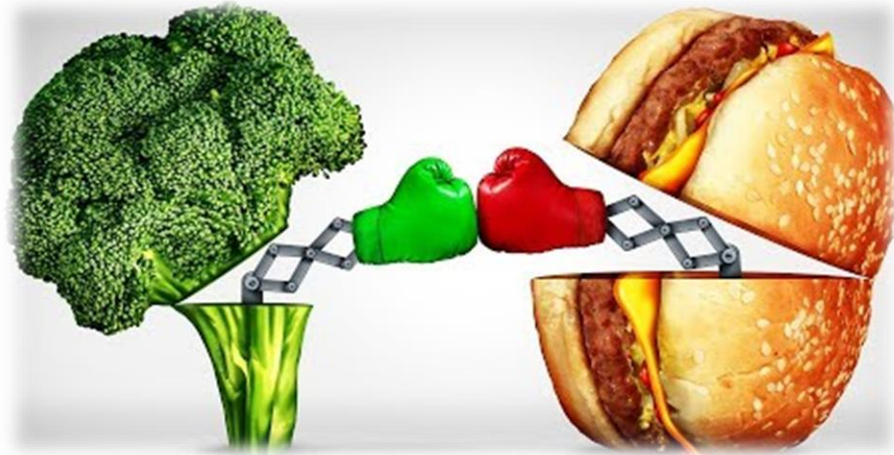


Sustainable Diets

The complex nexus of food, health and climate



Dr Sinéad McCarthy

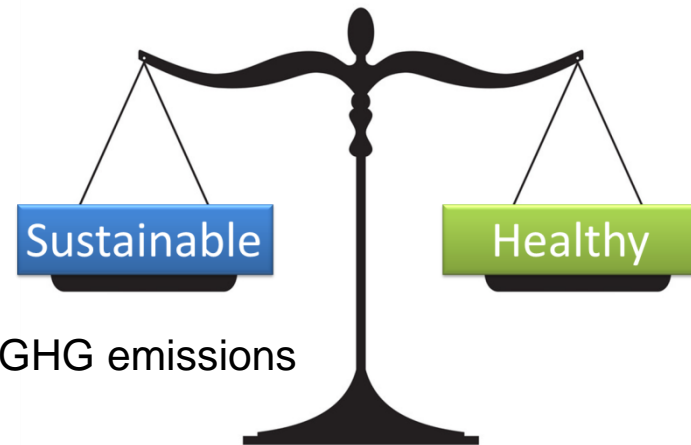
Teagasc Food Research Centre, Ashtown, Dublin 15

Bridging Science and the Consumer

19th November 2019

Climate change, health & the food system

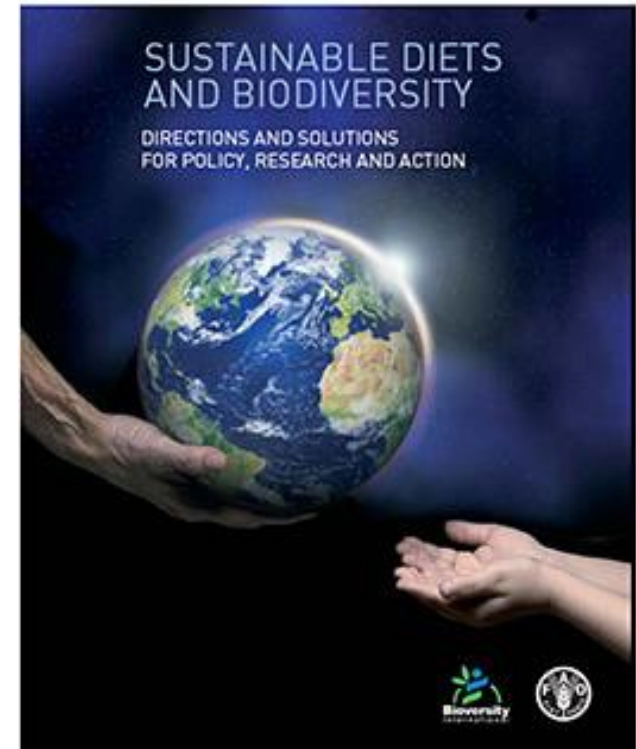
- Human health influenced by food consumption
- Planetary health impacted by food consumption
- Food consumption contributes towards 30% of total EU GHG emissions (EC, 2006)
- Food consumption therefore has a strong effect on the climatic impact of the food system
- Need for sustainable consumption and production of food while getting the balance correct for health



Sustainable diets

- FAO calls for the recognition that the health of humans cannot be isolated from the health of ecosystems.
- Sustainable diets have been defined as:

*“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”*



FAO, 2012

Complexity of sustainable and healthy diets



- Diets are composed of individual foods that are aggregated to form dietary patterns
 - Trade-offs of one food for another can make adherence to certain nutritional requirements more difficult
- Healthy diets are not necessarily lower in GHGEs
- It is often assumed that plant based diets are beneficial for both health and the environment
- Making recommendations on sustainable diets is complicated:
 - Many foods which are particularly low in emissions are energy-dense and have a poor nutritional profile
- Therefore, diets beneficial for the environment could lead to diminished nutrient intakes

Sustainability vs. health credentials

9kg CO₂ per kg cheese
vs.
3kg CO₂ per kg chocolate



vs.



2 kgCO₂ per kg of beverage

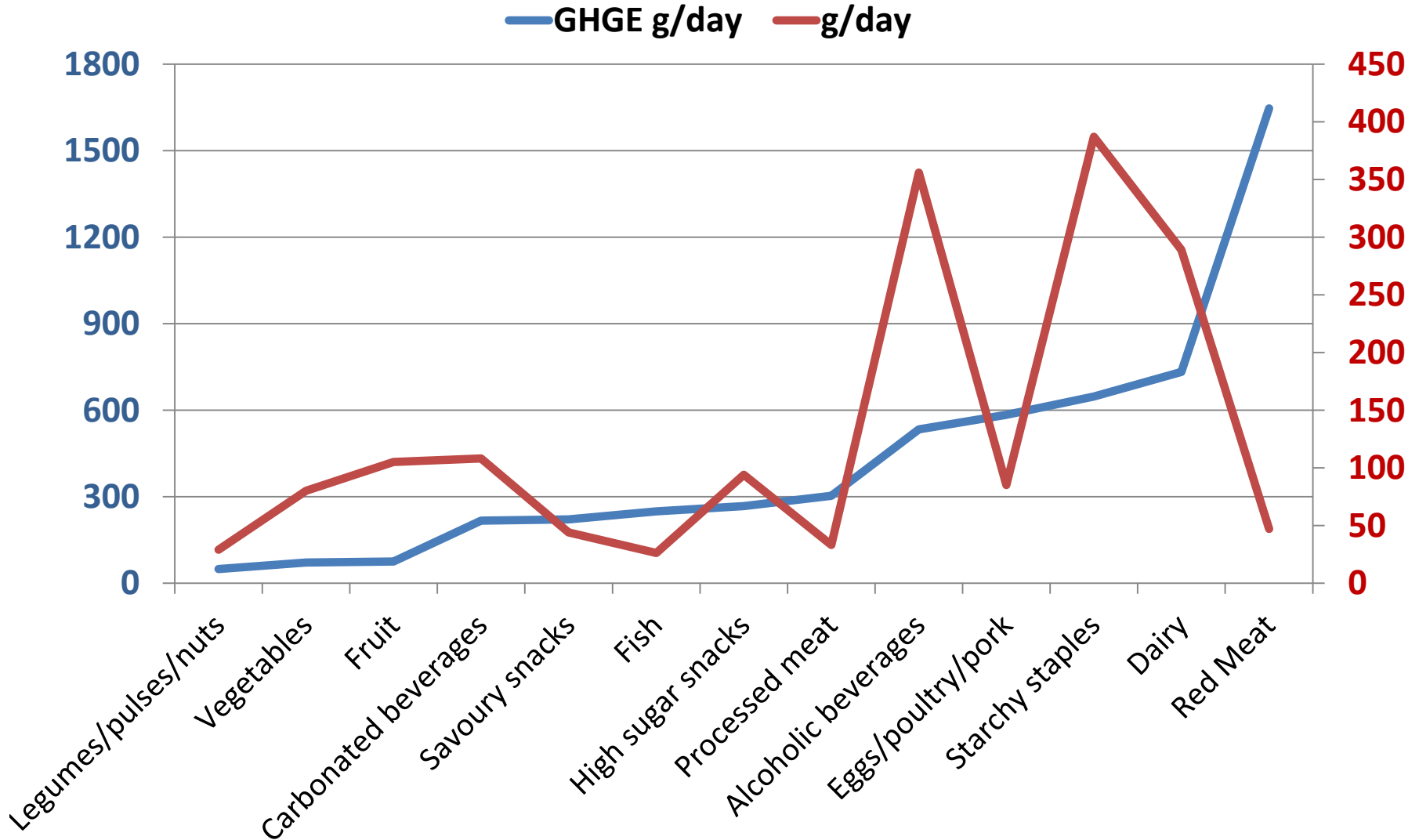
13kg CO₂ per kg bolognese
vs.
5kg CO₂ per kg pizza



IS THE IRISH DIET SUSTAINABLE?

Hyland et al, 2017

Daily food consumption & emissions Irish Adults NANS data



Dietary patterns & emissions in Irish adults

Three distinct patterns of dietary emissions based on emissions from food consumption

- Distinguishing food groups:
 - Processed meat
 - Savoury snacks
 - Alcohol

Unsustainable
25%



9 kg/day
6 kg/day

- Distinguishing food groups:
 - Fruit & veg
 - Fish
 - Low red meat
 - Dairy

Nutritionally Sustainable
26%



7.7 kg/day
5 kg/day

- Distinguishing food groups:
 - Red meat
 - Dairy
 - Starchy staples

Culturally Sustainable
48%



7.4 kg/day
5 kg/day



HEALTHY & SUSTAINABLE DIET

Is a diet free of animal protein more sustainable?

Authors	Study type	Outcome/recommendations
Vieux et al. (2012)	Habitual diet based on French national nutrition survey	Greenhouse gas emissions associated with quantity and calorific intake. Replacing fruit and vegetables for meat not the best approach to reducing dietary emissions.
Hyland et al. (2017)	Habitual diet based on Irish national nutrition survey	There was no significant difference in the total emissions of the highest red meat consumers and the lowest red meat consumers
Masset et al. (2014)	Habitual diet based on French national nutrition survey	The main factors that were identified to have a more sustainable diet which were lower in GHGE: reduced energy intake and reduced energy density
Wilson et al. (2013)	Modelling study based on diets which meet New Zealand nutrient recommendations	Vegan diets resulted in slightly higher emissions than other 'low emitting diets'. There was a trade-off between increased daily food cost and consuming food associated with lower emissions
Hendrie et al. (2016)	Australian Health Survey data on food consumption integrated with an input-output model	The most effective strategy to reduce emissions is to focus on diet quantity, in terms of eating to one's energy needs, and diet quality, by consuming adequate core foods and less discretionary foods.
Macdiarmid et al. (2012)	Diets modelled to meet UK dietary recommendations	A sustainable diet that meets dietary requirements for health with lower emissions can be achieved without eliminating meat or dairy products.

Is a diet free of animal protein more sustainable?

A sustainable diet that meets dietary requirements for health with lower emissions can be achieved without eliminating meat or dairy products

...need for a more holistic approach to reducing dietary emissions rather than focusing solely on lowering meat consumption...

Achieving health & sustainability (Horgan et al, 2016)

- Reducing the GHGE via food production methods may not be sufficient
 - Diets will also have to change
- Challenges in achieving dietary change
 - Changing behaviour is often undesirable
 - Challenging in the current food environment
 - Fails to take account of the multifaceted nature of eating from social aspects, habits, preferences, cultural and social norms
- Are there minimum food and dietary changes individuals can make to achieve both sustainability and health????

Achieving health & sustainability

How much change required in the UK diet

(Horgan et al, 2016)

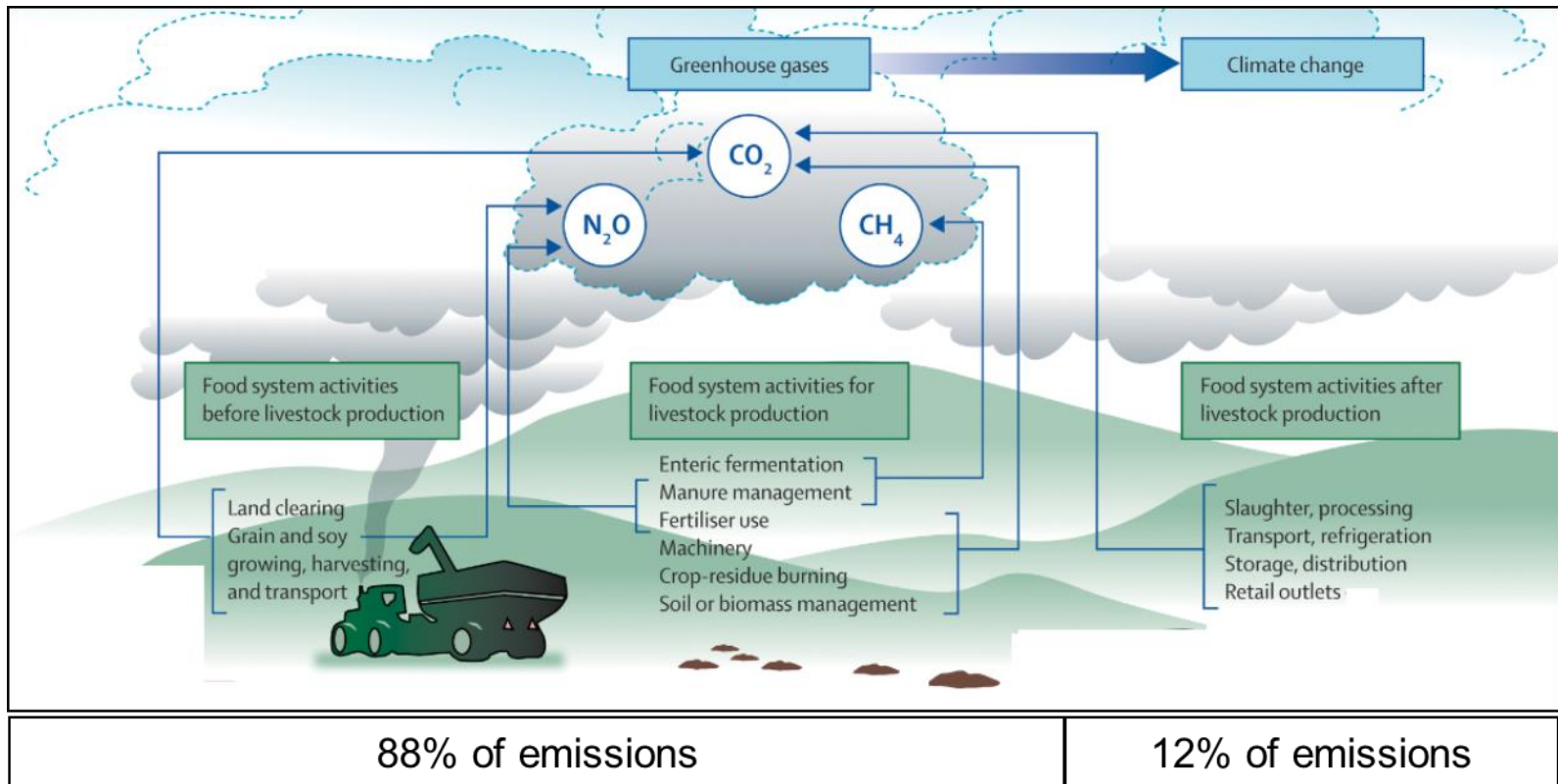
- UK – NDNS – 4 day food diary
 - Modelled individual diets until health, sustainability or both achieved by
 - Modifying the amount of food currently consumed
 - Add new foods to existing diet
 - Add new foods and change existing consumption
 - Removal of foods from the diet

Achieving health & sustainability

How much change required in the UK diet

(Horgan et al, 2016)

- **Modifying the amount of food currently consumed**
 - 7.5% achieving healthy diet
 - 4.6 achieved a sustainable diet
- **Add new foods to existing diet**
 - 59% achieve a healthy diet
 - 53% achieved a sustainable diet
 - (approx 5 new foods – oily fish most common)
- **Add new foods and change existing consumption**
 - 50% increase in 7-10 new foods and/or 75% reduction resulted in >95% achievement in both diets
- **Removal of foods from the diet**
 - 50% change in current consumption and up to 24 food items removed = 100% achievement for both health and sustainability

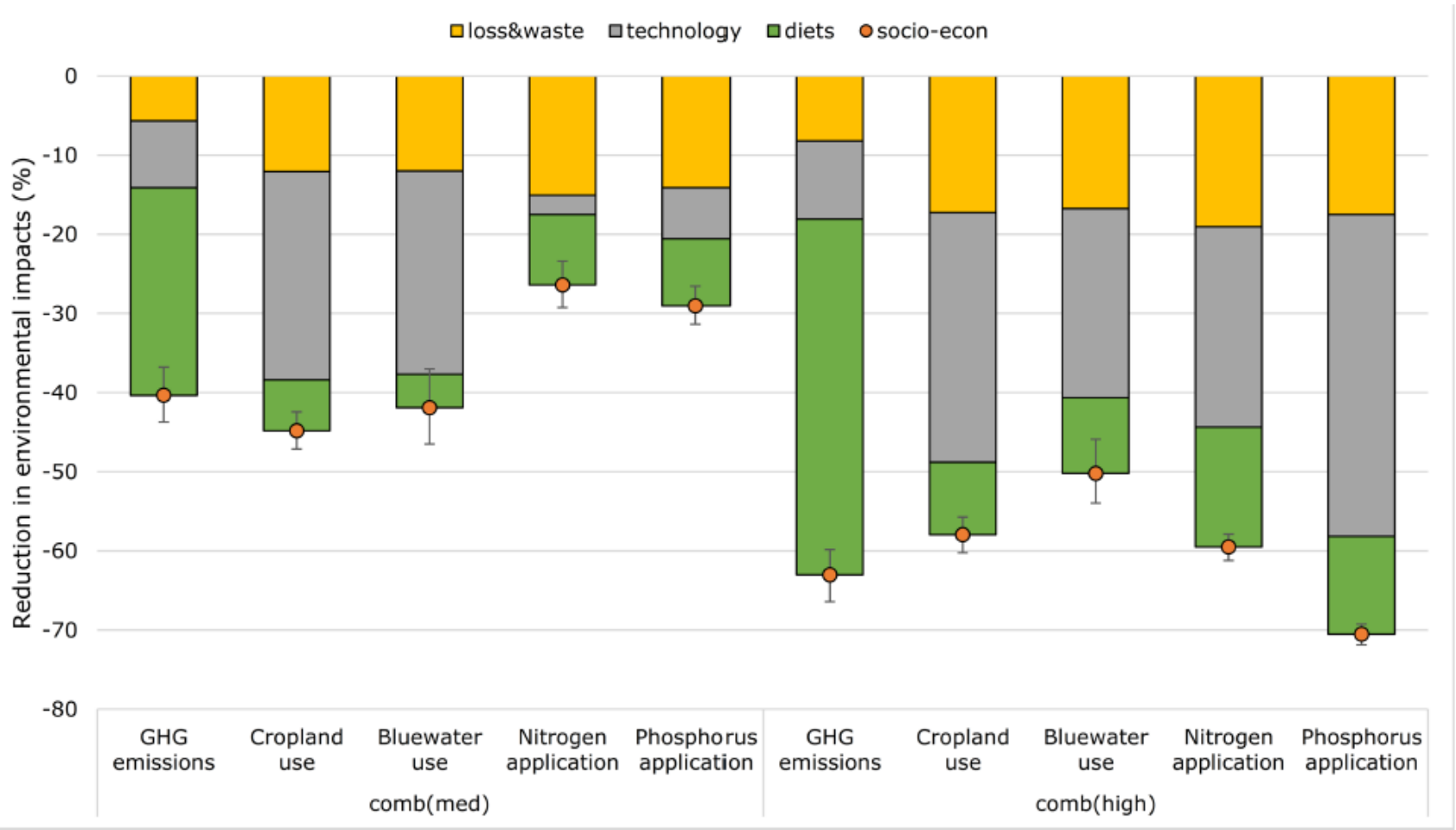


KEEPING THE FOOD SYSTEM WITHIN ENVIRONMENTAL LIMITS

Can the food system be kept within environmental limits?

- Reducing environmental effects of food system requires a range of combined measures. No single measure alone is enough
- Requires synergistic combination of dietary changes, reduction in food waste, technological changes (Sprinmann et al 2018)

Can the food system be kept within environmental limits?



Can the food system be kept within environmental limits?

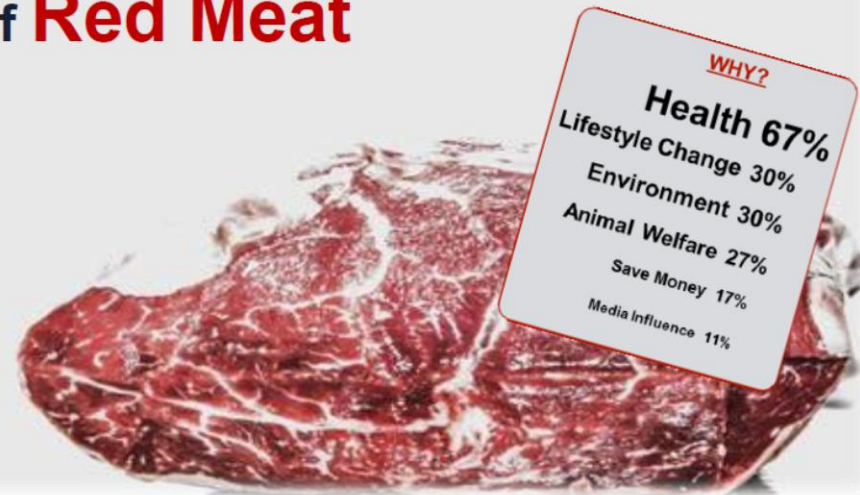
- Great than 50% reduction in ruminant meat consumption required alongside technological advances in productivity and mitigation measures.
- Food waste reduction will have little impact (Bryngelsson et al, 2016)
- Will consumers change?

Is there an appetite for dietary change?

22% claim to have reduced their intake of Dairy



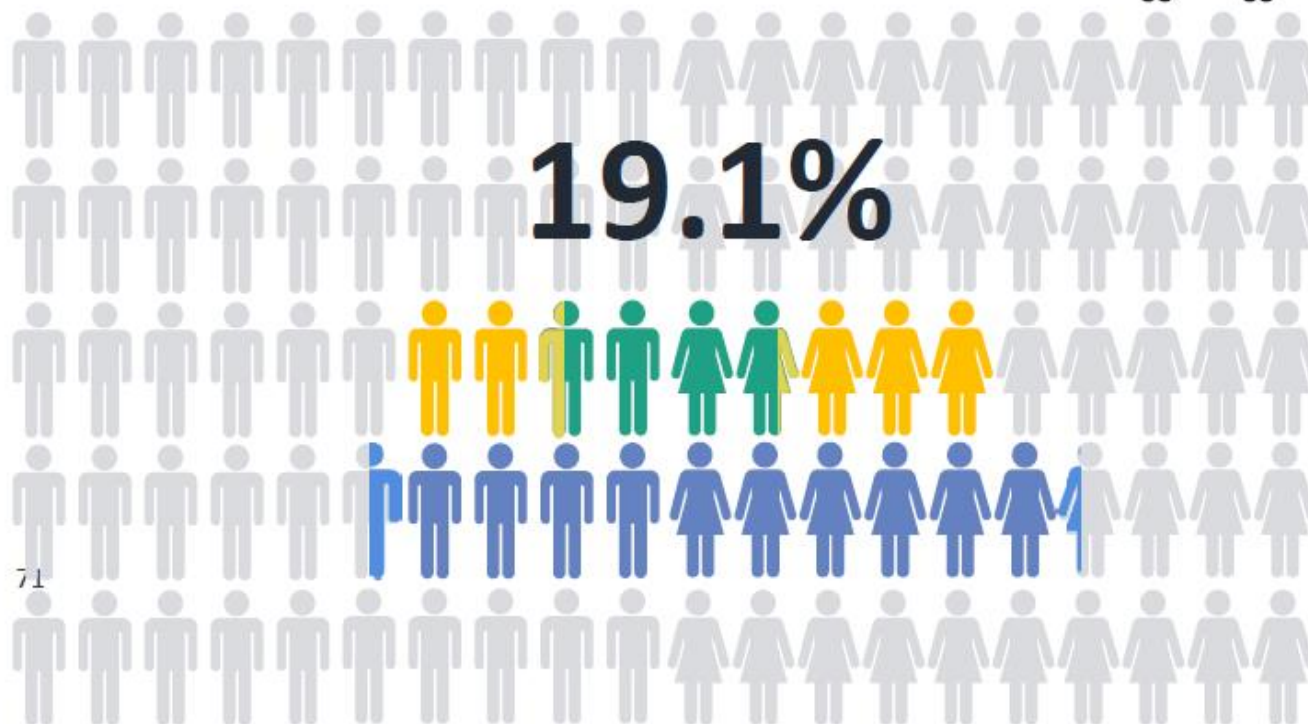
1 in 3 claim to have reduced their intake of Red Meat



Is there an appetite for dietary change?



Veganism / Vegetarism / Re-balancers



The 5 principles of Sustainable Food and Agriculture

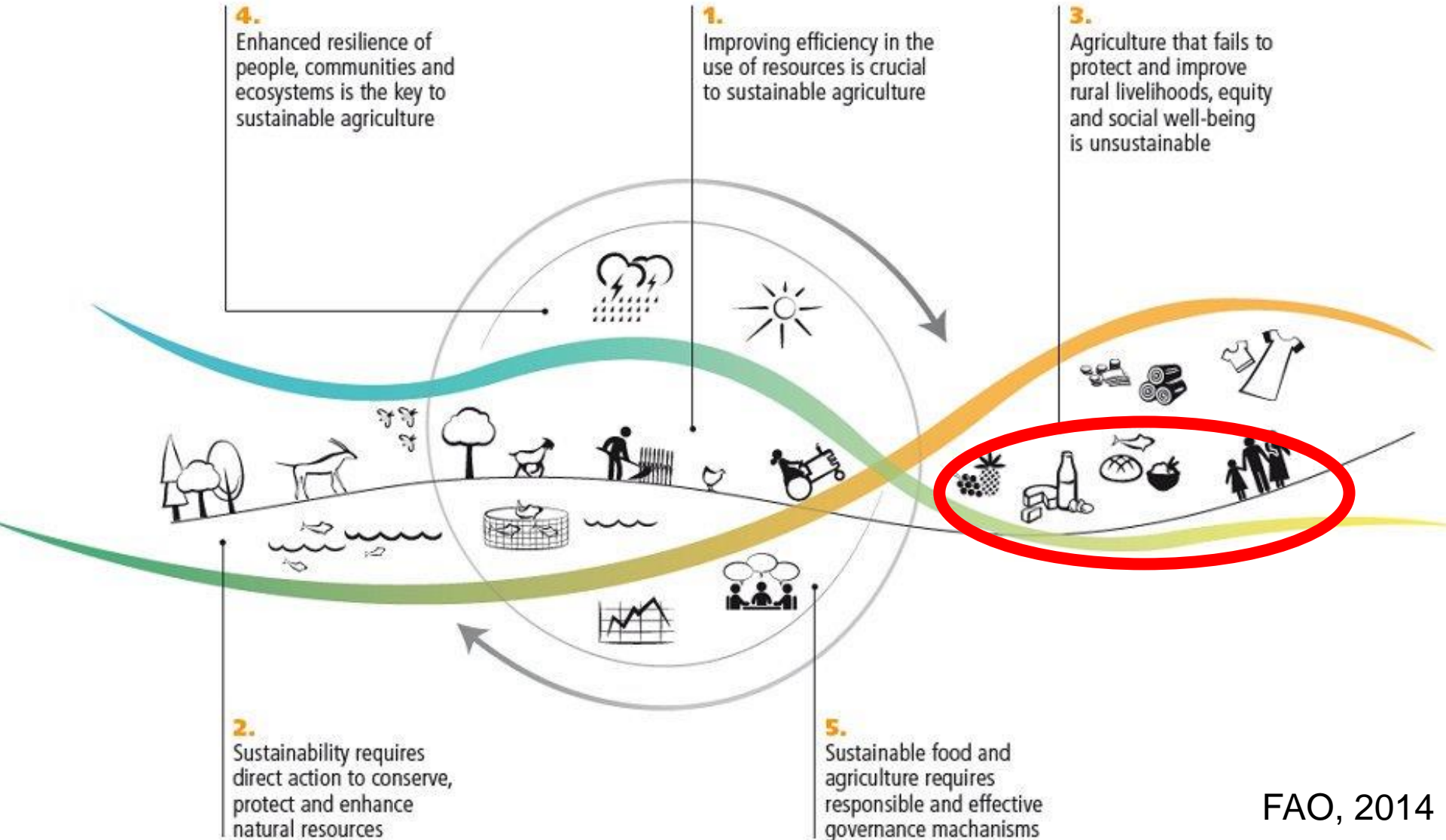
4. Enhanced resilience of people, communities and ecosystems is the key to sustainable agriculture

1. Improving efficiency in the use of resources is crucial to sustainable agriculture

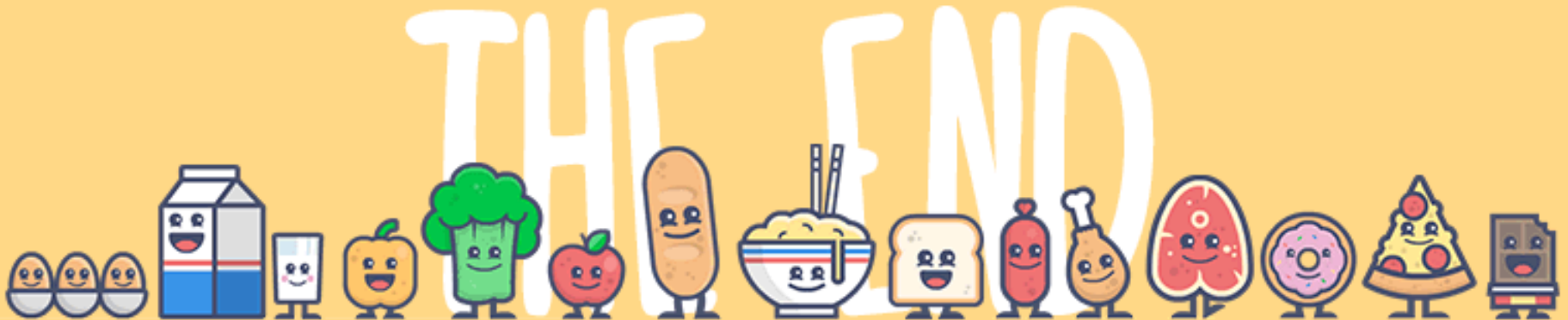
3. Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable

2. Sustainability requires direct action to conserve, protect and enhance natural resources

5. Sustainable food and agriculture requires responsible and effective governance mechanisms



Thank you for listening



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References and Acknowledgements

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