

Food, Glorious Food: Eating to Extinction

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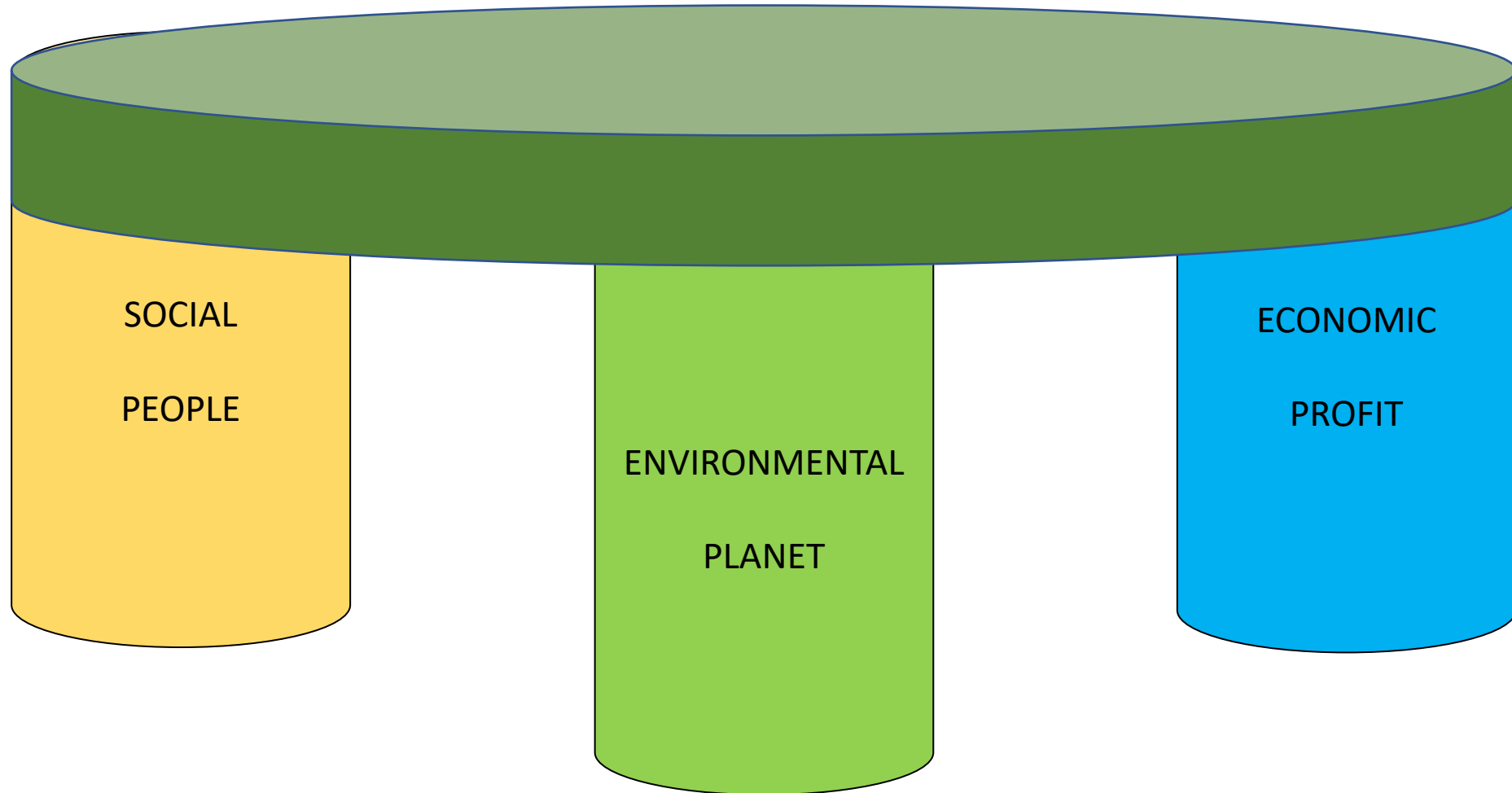
Introduction

- By 2030, 650m people will be obese (BMI>30) (FAO, 2019)
- 2 billion people are overweight (BMI 25-30) (FAO, 2019)
- 828 million people are affected by hunger (FAO, IFAD (International Fund for Agricultural Development), UNICEF, the World Food Programme (WFP) and the World Health Organization (WHO) et al, 2022)
- 2.3 billion are “moderately or severely food insecure” (FAO et al, 2022).

Introduction

- Those who have most, waste most
- US – 40% obese, 30-40% of all food is wasted (US FDA, 2023)
- UK – 26% obese, 38% overweight, 6.6mt food wasted, 75% is still edible (WRAP, 2023)
- FAO (2023) – 31% of food produced is wasted globally – 14% between field & market, 17% between market & consumer
- Implications for health, habitat, economy, mass migration

3 Pillars of Sustainability



Health & Social Sustainability

- Social sustainability is ill-defined – I will take the position closely aligned to environmental justice
- Link to MDG1, Target 1C (“Halve between 1990 and 2015 the proportion of people who suffer from hunger”)
- Not met (25% drop), but became part of SDG2 (Zero Hunger), SDG3 (Good Health and Wellbeing) and SDG12 (Responsible consumption and production)

Health & Social Sustainability

- SDG2, Target 2.1 End hunger & ensure food security for all by 2030
 - 2015 – 870m
 - 2019 – 700m
 - 2022 – 828m (COVID, Ukraine)
- SDG3, Target 3.4 Reduce premature mortality from non-communicable diseases by 1/3 by 2030
 - WHO (2022) – 2.8m die a year from being obese or overweight
 - “economic impact of overweight and obesity will reach \$4.32 trillion annually” by 2035 (World Obesity Forum)
- Western style diet of UPF linked to obesity, cancer, diabetes etc.

Health & Social Sustainability

- Cost of eating “healthy diet” is \$3.54 per day (World Bank)
- 3 billion cannot afford this
- Burundi (97.2%), Madagascar (97%), Azerbaijan, Iceland, Switzerland and UAE (0%)
- Anything which pushes up cost of food will have dramatic impact on poorer communities

Habitat, Biodiversity Loss and Environmental Sustainability

- Land Use is the key here
- Slash & burn was OK in palaeolithic times, but c1m km² of forest has been cleared for agriculture since 2000.
- Deforestation is followed by fertilisers, pesticides, higher water extraction
- UK is one of “most nature depleted countries” – lost 190,000km of hedgerow, increase in monoculture leads to most pesticides and herbicides, poorer quality soil

Habitat, Biodiversity Loss and Environmental Sustainability

- UK agricultural productivity increased >150% since 1970
- Number of breeding birds on farmland decreased by >50% (RSPB, 2019).
- House of Commons Environmental Audit Committee (2022) “only 14% of English rivers met good ecological status and no river met good chemical status” and agricultural pollution, in the form of run-off of pesticides, herbicides and fertiliser, was affecting 40 per cent of water bodies and was the most significant driver “preventing water bodies reaching good status”

Habitat, Biodiversity Loss and Environmental Sustainability

- Dalin et al (2017) – groundwater depletion significantly impacted by irrigation for farming.
- Link levels of groundwater depletion to specific regions and crops – UK is the ninth largest importers of groundwater depletion, primarily from Pakistan
- Mekkonen & Hoekstra (2016) illustrate impacts of groundwater depletion, such as the huge increase in pollution around the Aral Sea, which has reduced in size by 90 per cent, leading to increases in salinity and fish death.

Habitat, Biodiversity Loss and Environmental Sustainability

Greenhouse Gas Emissions (Kilogrammes of CO₂ equivalent), Land Use (m²) and Fresh Water Use (litres) per 1000 kilocalories for ten selected foodstuffs (Poore & Nemecek, 2018; Ritchie et al, 2022)

Foodstuff	Emissions (Kg CO ₂ eq.)	Land Use (m ²)	Water Use (litres)
Beef (Beef Herd)	36.44	119.49	532
Prawns (Farmed)	26.09	2.88	3,413
Beef (Dairy Herd)	12.20	15.84	994
Fish (Farmed)	7.61	4.70	2,062
Pig Meat	5.15	7.26	751
Brassicas (e.g. broccoli, cabbage, kale)	3.00	3.24	702
Onions & Leeks	1,35	1.05	39
Root Vegetables	1.16	0.89	77
Rice	1.21	0.76	610
Wheat & Rye	0.59	1.44	242

UK food market and Economic Sustainability

- van Niekerk (2020) economic sustainability “refers to practices that sustain long-term economic growth without adversely impacting environmental, social and cultural aspects of community”
- Jackson (2009), “the truth is that there is as yet no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of nine billion people”

UK food market and Economic Sustainability

- FAO estimate that food production will need to increase by 70 per cent to feed the projected 9bn people living on Earth in 2050 (FAO, 2009)
- 70% of these people (6.3bn) will be living in urban areas, as compared to 49% (3.3bn) when the report was written (FAO, 2009)
- Urban areas will need to expand – at the same time as cities like Kolkata may become uninhabitable due to sea level rise

UK food market and Economic Sustainability

- Government Office for Science (2011) “The Future of Food and Farming” talks of “sustainable food production” throughout, but only define “sustainable production” as:
 - “A method of production using processes and systems that are non-polluting, conserve non-renewable energy and natural resources, are economically efficient, are safe for workers, communities and consumers, and do not compromise the needs of future generations” (GO-Science, 2011, p204)
- The Report concludes that:
 - “very difficult decisions lie ahead and it will require bold actions by politicians, business leaders, researchers and other key decision-makers, as well as engagement and support by individual citizens everywhere, to achieve the sustainable and fair food system the world so desperately needs”

UK food market and Economic Sustainability

Size of the UK food market (Source: Statista, 2023)

Type of Food	Size of UK Market (2022 unless stated)
Dairy Products	£22,100,000,000
Vegetables and grains	£20,900,000,000
Meat (Cow / Sheep / Pig / Chicken)	£14,300,000,000 (2021)
Fruit and nuts	£13,700,000,000
Fish and seafood (farmed plus wild caught)	£4,100,000,000
Total	£75,100,000,000

UK food market and Economic Sustainability

- Most is imported. Beverages (Scotch) is the only category UK is a net exporter.
 - ASDA: Apples from “Belgium, Chile, Argentina, Austria, UK, Italy, France, Germany, Netherlands, New Zealand, South Africa, Spain, Portugal, USA, Poland, Brazil”
 - Tesco: Blueberries from “United Kingdom, Mexico, Romania, Zimbabwe, Serbia, Turkey, Zambia, Croatia, Egypt”
 - Waitrose: Cherries from “Canada, United Kingdom, United States, Spain, Argentina, Australia, South Africa, France, Greece, Chile”

Ethics and environmental injustice

- One of the largest, and enduring food-related ethical debates centres around the rights and wrongs of eating non-human animals, and products derived from them.
 - Some are committed to eat many different types of meat
 - Some to “eat less red meat”
 - Some are forbidden by their faith from eating certain types of meat
 - Some are pescatarians, demi-veg, vegetarians, vegans, and all stages in between.

Ethics and environmental injustice

- The Jātakamāla (a 4th Century BCE Buddhist poem) makes it clear that if a person finds something unpleasant, they should not do it to an animal (Dhammika, 2015).
- The Bible, by contrast, says that humans have “dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth” (Genesis 1-26).

Ethics and environmental injustice

Animal	Is it OK to eat?
Cow	
Horse	
Venison	
Reindeer	
Chicken	
Budgerigar	
Lamb	
Kitten	

Ethics and environmental injustice

- Benefits and costs are not borne equally.
- 9bn people will be living on a planet with less space to grow food, so pressure on wildernesses will increase.

Solutions?

- Looks easy.
- Eat less (or no) meat, eat more grains and veg. Job done.
- “Solution-induced problems” – by doing this, what will happen:
 - To meat farmers / processors?
 - To food cost?
 - To the import/export market?
- Thaler & Sunstein 2017 – “nudge” theory
- Need something more substantial – “shove” not “nudge” – laws banning foodstuffs?