
Appendix A - Sustainable Food Issues.

1) Environmental Impacts of Food

The environmental impacts of food are significant but are often somewhat hidden in terms of standard environmental impact reporting methodologies. To date sustainable food issues have not been prominent in environmental awareness and education although this is now changing.

Reports indicate that approximately 37% of Victorian's ecological footprint is due to food production and consumption and on a life cycle basis around 20-30% of environmental impacts of private consumption can be attributed to food. Estimates indicate 50% of an Australian urban household's water use has been estimated to be through their food; 28% of greenhouse emissions and up to 47% of municipal waste to landfill is organic (food and green waste)¹.

1.1 Greenhouse Gases and Climate Change Impacts

Greenhouse emissions are created from the use of fossil fuels in the production and processing of food (directly and via products such as fertilizers); production of methane a very potent greenhouse gas from the grazing of sheep and cattle; and transportation of food (the distance food travels is referred to as food miles). In 2005 ~17% of Australia's emissions come directly from agriculture and ~13% of Victoria's emissions. This is higher (and estimated to be at least 23%) when the whole food system eg processing and transport is taken into account. A 2009 World Watch Institute report which took into consideration emissions produced by land clearing for livestock and feed crop farming, the lost carbon storage from cleared forest and the reduced soil carbon capacity indicates that the actual emissions level attributable to animal agriculture globally is 51% of emissions from human activity.

The largest contributor to greenhouse gas emissions from the agriculture sector is methane from livestock (enteric fermentation). Plant based food has the lowest greenhouse impact per kilo <1kg/kg food product compared with domestic beef, cheese and tropical fruit at >8kg/kg product. The relative greenhouse intensities of major food groups are shown in Figure 1 below. Beef also has the highest water footprint and vegetables and fruits the lowest.

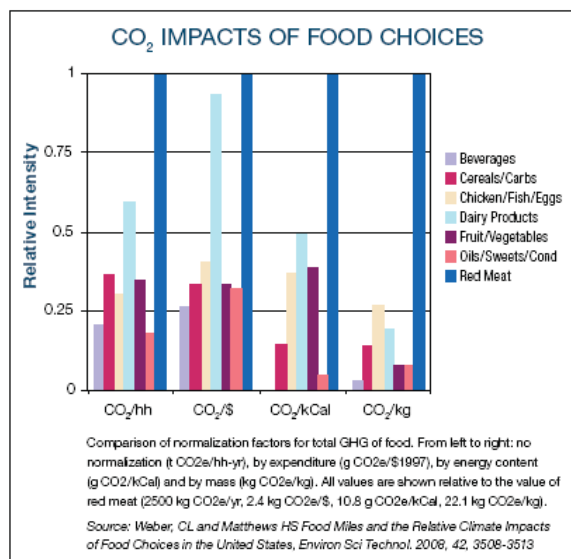


Fig. 1 Relative greenhouse intensities of major food groups.

1.2 Water

¹ From a number of reports cited in Victorian Eco Innovation Lab (VEIL), 2008 *Sustainable and Secure Food Systems for Victoria*

As indicated above 50% of an Australian urban household's water use is through their food consumption, compared to 11% directly in showers, gardening and cleaning. Australia uses 30% of its water to grow food for domestic consumption. Water is becoming scarcer in Australia and irrigation practices continue to deplete environmental flows and threaten river systems including the Murray Darling basin, a key food growing region.

Water is also becoming scarcer globally. By 2025 water scarcity may inflict an annual loss of 350 million tonnes of food globally (which is equivalent to today's global rice harvest). And by 2050, seven billion out of nine billion people may face chronic water shortages².

1.3 Land and Soil Degradation

Common impacts on soil loss and soil quality include soil erosion, salinity and acidification via unsustainable farming practices. There are also emerging issues around structural decline e.g. compaction; contamination of soil (from chemical fertilizers and pesticides); and loss of biological life in soils (VEIL). Further, current agricultural practices lead to carbon loss from soils. Improved farming practices may return the soils to being a carbon sink. Biochar a form of charcoal formed by chemical decomposition of biomass is attracting interest in its capacity to store carbon in the ground, improve water quality, increase soil fertility and raise agricultural productivity. Biochar projects are currently small scale however.

1.4 Biodiversity Impacts

Biodiversity impacts include fishing or hunting beyond the carrying capacity of the natural system, direct consumption of endangered species, land clearing to graze animals and/or grow crops often in monoculture situations and risks associated with genetically modified organisms. 76% of the world's fisheries are now fully or over exploited and it remains common practice in Australia to consume common species of fish that are now at risk eg shark (flake), tuna, dory and scallops. Some sea cage aquaculture practices also have negative environmental impacts on marine systems including pollution and overfishing to resource the farmed species.

1.5 Resource Impacts

Modern agriculture relies heavily on fertilisers particularly the macro nutrients nitrogen, phosphorus and potassium which are also becoming scarce. Producing meat and dairy products is much more resource intensive than growing fruit, vegetable and grains in terms of water, energy, fertiliser and land use.

1.6 Waste

As much as half of all food grown is lost or wasted either before or after it reaches the consumer. Organic waste (food waste and green waste) is around half of the waste sent to landfill in Victoria.

2) Food Security

Food Security has been described as 'the state in which all persons obtain nutritionally adequate, culturally acceptable, safe foods regularly through local non-emergency sources'³.

Food security requires consideration of both food supply and access. Access issues are generally related to low income and other indicators of disadvantage including mobility and availability of

² Julian Cribb and Associates cited in Victorian Eco Innovation Lab 2008 *Sustainable and Secure Food Systems for Victoria*

³ Community Food Security Coalition 1995 - cited in VicHealth 2005 *Health Eating - Food Security : Investment Plan 2005*.

nutritious food options locally. The 2007 Darebin household survey found that the rate of food insecurity amongst Darebin adults was 9.5%.

Food supply is threatened globally through environmental impacts including land degradation, climate change impacts including water shortages and crop damage etc.

Our current forms of food production are heavily dependent on oil use and petroleum products for synthetic fertilizers and pesticides, production and harvesting, temperature controlled storage, transport and processing. It is estimated that around ten units of oil energy is used to produce every one unit of food energy in the United States. With peak oil (when global oil supplies peak and then start to decline) petrol prices will rise significantly and this will impact significantly on the cost of food. At least some food products will become scarce with a possibility of widespread scarcity. Already the impacts of peak oil are impacting the world's poor as increasing demand for biofuels (eg ethanol, biodiesel) results in replacement of food crops with fuel crops.

Currently 800 million people are chronically undernourished because they do not have access to adequate food and population increase and demographic change is estimated to increase food demand by 50% by 2030.⁴

Due to the pressures on the food system not only are the vulnerable groups increasing but all people are potentially in danger of food insecurity.

People living in poverty and vulnerable groups will continue to be the hardest hit by food supply issues and scarcity.

3) Ethical Issues

There are also a range of ethical issues around common practices of food production including:

- global inequity and increasing costs of basic staple foods for the world's poor. Driven by scarcity and demand in rich nations for particular commercial crops eg biofuels and resource intensive food products e.g. beef and dairy.
- unfair labour conditions including child labour and very low pay
- animal welfare concerns around farming conditions e.g. small enclosures for chickens and animals, use of antibiotics and hormones etc
- impacts on biodiversity (as per above) e.g. land clearing to grow palm oil is placing increasing pressure on the orang utan in Malaysia and Indonesia.
- corporate behaviour or companies who produce many common supermarket products
- localised food security issues.

4) Economic Value of Food System

In Victoria the food industry is worth 20% of the state's gross product and 36% of exports. As farming becomes more marginal due to water shortages, higher value export crops, including meat and dairy and diversification into biofuels is common. The current economic system tends to drive less sustainable farming practices.

⁴ Chatham House 2008 cited in City of Banyule and City of Darebin, *The Role of Local Government in Food Security: A Literature Review*, 2009.