Sustainability and Food Security

You can't have one without the other . .

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The way we produce and consume food has a large environmental impact

Overall environmental impact

61% of land

almost 80% of managed water

≈ 30% of greenhouse gas emissions

≈ 15-20% of total energy use

Household

The largest impact most people have on the environment is through their food

50% of water use

28% of greenhouse emissions

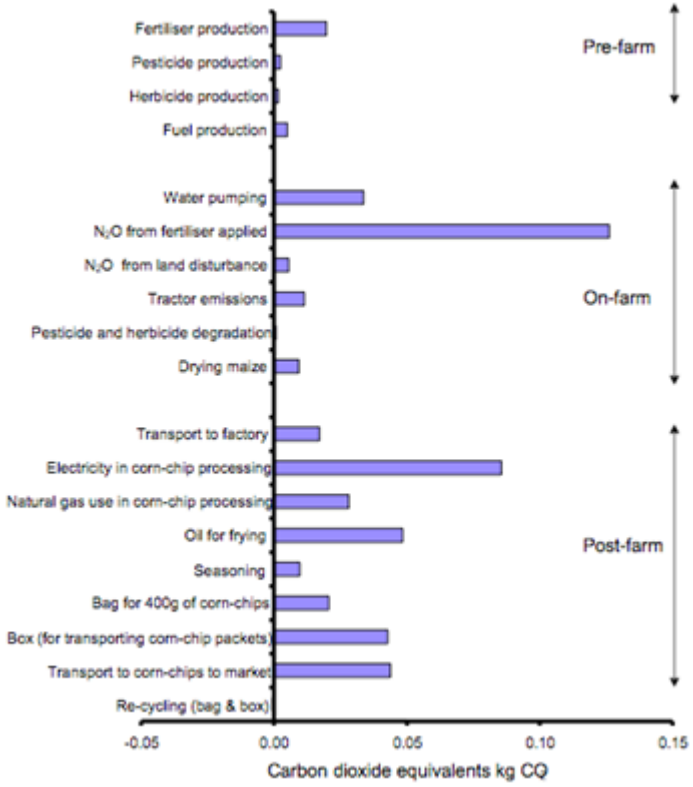
47% of waste to landfill

Internalised environmental costs will increase some food prices

The monetary value of beef would increase by a factor of 5-10, if the value of ecosystem goods in the production chain were fully accounted for (CSIRO 2005)

- Agricultural emissions are very significant
  accounting for soil carbon could help
- Some foods will be affected more than others
  "Retailers are warning the price of refrigerated food will rise under emissions trading" (AAP 2008)
- How will this affect access to food?

Greenhouse emissions from 400g packet of corn chips



Reducing environmental impacts of food will reduce exposure to rising prices

Sources: Agricultural Alliance on Climate Change 2006, Wood et al 2006, Guo & Gifford 2002, Grant & Beer 206, CSIRO 2005

Food prices will continue to be affected by resource constraints

Water

- Unable to increase supply to meet demand
- Competition for scarce supplies
- River systems dying

Land

- Losing peri-urban production
- 30% of the world's cropland already abandoned

Fish

- Overfishing - 76% of world's fisheries
- Aquaculture

Oil, biofuels and agricultural inputs

- Oil prices +500% between 2003 & 2008
- Increasing demand for biofuels
- Cost of key fertilizer products 'soaring'

THE LAND

The stakes get higher as food, fuel and fertiliser costs soar

MATT CAWOOD
23/05/2008 1:43:00 PM

Urea prices soaring towards $1000 a tonne

BY BETH JOHNSTON
11/06/2008 3:16:00 PM

A+ A-

UREA prices are rapidly approaching $1000 a tonne as global demand, combined with a 135pc export tariff from China, takes its toll on Australian suppliers.

Sources: Cornish 2007, Wahlquist 2007, Budge 2007, Wood et al 2005, VCMC 2007, BBC 2008, Colebatch 2008, Farm Weekly 2007

Ecosystem thresholds and diminishing access to genetic resources could affect food supplies

- Agriculture has been a major driver of native biodiversity loss

44% plants

Victorian native species extinct, threatened or vulnerable

30% vertebrates

- Declining genetic diversity of crop and livestock varieties

12 plant species provide 75% of our food, 4 of these provide over 50%

- Opportunities for biodiversity to increase productivity and resilience

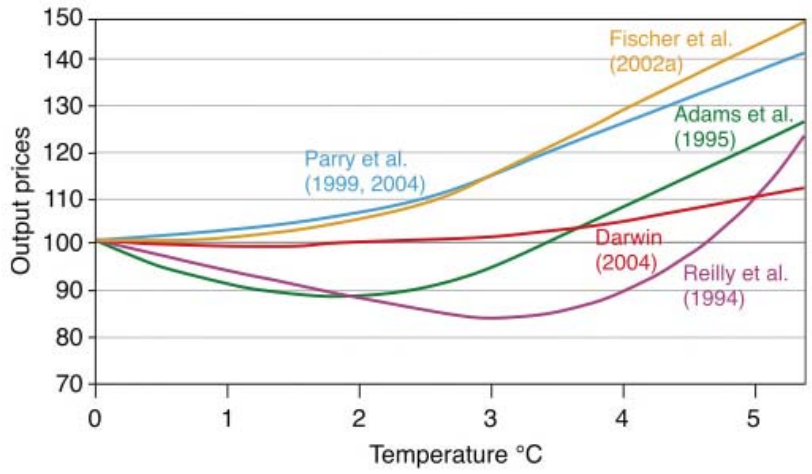
There are more organisms in a gram of soil than there are human beings on Earth

Sources: VCMC 2007, UN FAO 2007, Cribb 2008

and then there's climate change . .

- Localised advantages and disadvantages, but worldwide and local declines in productivity expected

Cereal crops vs global mean temperature change



Changing rainfall and local conditions

Production declines due to drought and poor weather between 2004 and 2006 (wheat and coarse grains)

- US - 16 and 12 per cent;
- Australia - 52 and 33 per cent;
- EU - 14 and 16 per cent.

Unpredictable events are inevitable
- we will need to deal with uncertainty and constant change

Sources: IPCC 2007, RIRDC 2008

What can we do?

People should eat less high-calorie foods, especially foods high in saturated or trans fats and sugar, be physically active, prefer unsaturated fat and use less salt; enjoy fruits, vegetables and legumes; and select foods of plant and marine origin. This consumption pattern is not only healthier but more favourable to the environment and sustainable development.

- Adapting diets can have both health and sustainability benefits
- Urgently need to reduce reliance on non-renewable inputs and oil
- Build the resilience of the system - diverse types and sources of food, choice of outlets, ability to deal with shocks and reorganise in response
- Encourage innovation - many different solutions from many different people

Sources: WHO/FAO 2003