



## issues to address

- overconsumption = wastage & 'waistage'
- the ethics of using resources to produce so many
  - animal foods
  - modified foods
  - 'functional' foods

for overfed people while others starve

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## environmental issues

- greenhouse gases
- water issues (including irrigation)
- soil fertility
- fertiliser use
- reduced biodiversity
- high production of animal foods
- processing, packaging, storage, transport
- production of ethanol from food crops

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## greenhouse gases & food

- agriculture produces 16% of GHG
- 70% agricultural GHG from livestock
- methane particularly problematic
- feed improvements ⇒ slight ↓ in methane/cow

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## action - greenhouse gases

- avoid waste
- favour plant foods
- fewer animal foods & avoid lot-fed beef (40-80% of beef)
- choose minimally processed foods
- choose minimally packaged foods
- cut exports beef, lamb & dairy

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## water & food production

water is our most vital issue

- production of animal foods uses more water than required for most plant foods

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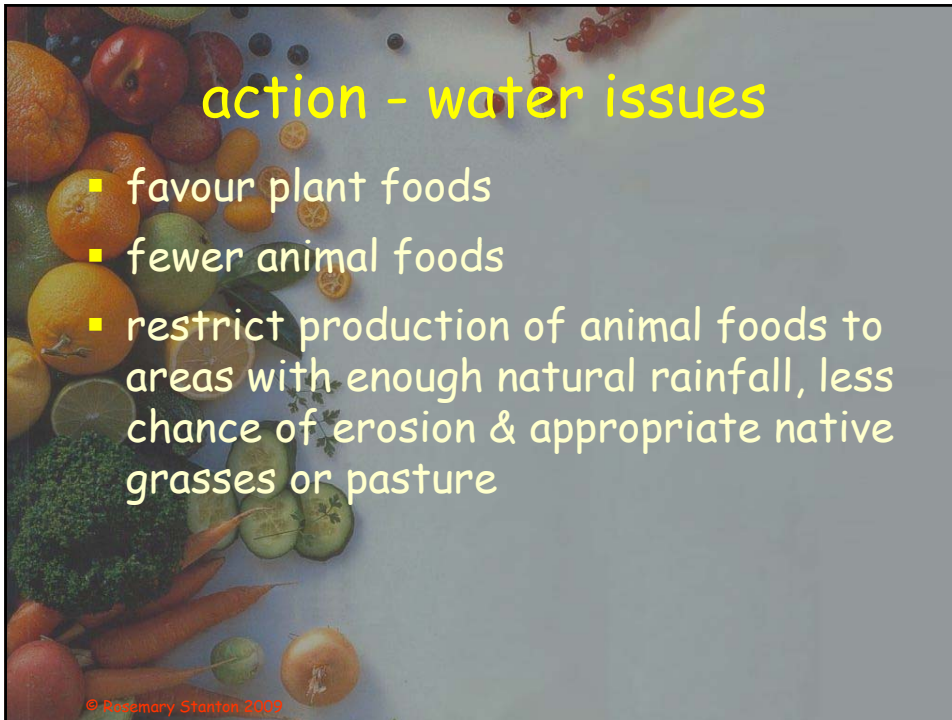


## litres of water for 1 kg food

potatoes	500
wheat	900
maize	1,400
rice	1,910
soy	2,000
chickens	3,500
beef, broad acre*	50,000
beef (lot-fed - USA)	100,000

Source: Pimmental D, Houser J, Preiss E. 1997 Bioscience 47: 97-106  
 Lenzen M, Dey C. The balancing act - CSIRO (2005) available at [www.cse.csiro.au/research/balancingact/](http://www.cse.csiro.au/research/balancingact/)

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## action - water issues

- favour plant foods
- fewer animal foods
- restrict production of animal foods to areas with enough natural rainfall, less chance of erosion & appropriate native grasses or pasture

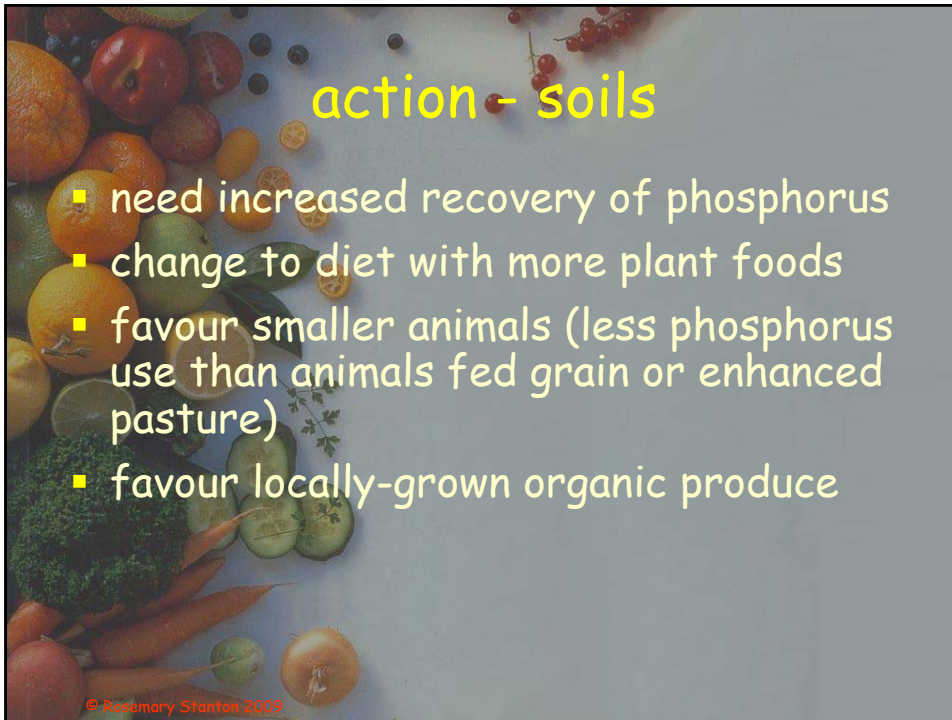
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## soils & food production

- Australian soils very low in phosphorus
- over-reliance on chemical fertilisers
- little research on organic production

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## action - soils

- need increased recovery of phosphorus
- change to diet with more plant foods
- favour smaller animals (less phosphorus use than animals fed grain or enhanced pasture)
- favour locally-grown organic produce

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## modern food production

emphasises

- animal foods
- processed foods
- packaged foods
- foods for export
- imports

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## animal production

- 40% of world grain fed to animals
- 20-50 kg of feed produces 1 kg meat
- issues include
  - land clearing
  - farm inputs & transport
  - waste (450kg steer → 29kg wet waste/day)

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## animal production - action

### government action

- reduce animal numbers & lot feeding
- reduce meat exports
- reclaim phosphorus from animal manure

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animal production - action

personal action

- reduce consumption of meat
- favour chicken, pigs, meat from animals that graze & kangaroo
- keep chooks at home (if appropriate)

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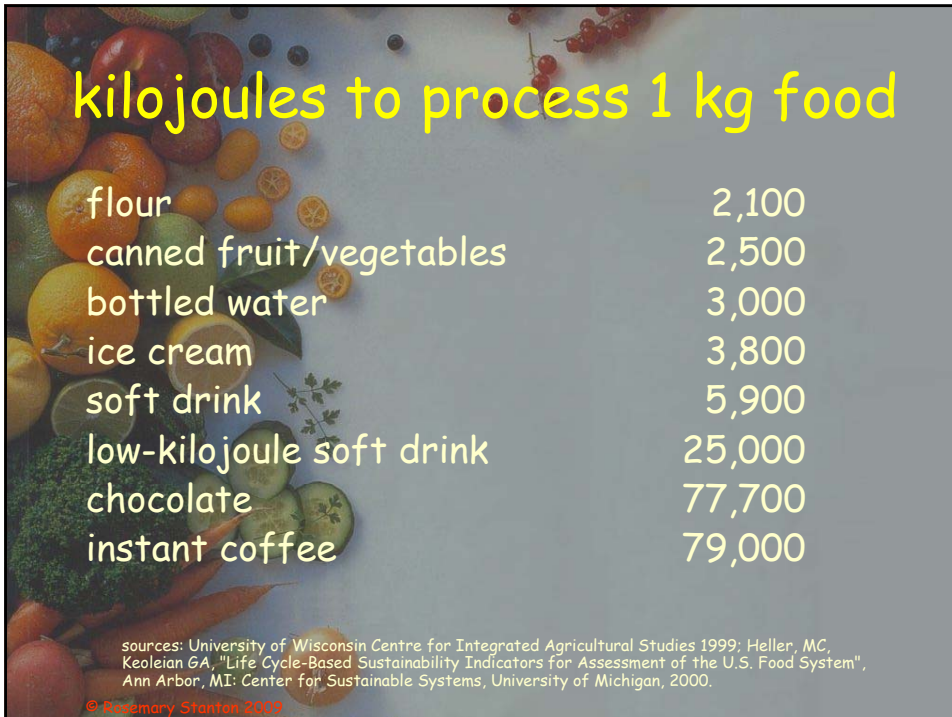
## processed foods

consider

the energy inputs

- production
- processing
- packaging (& disposal)
- distribution

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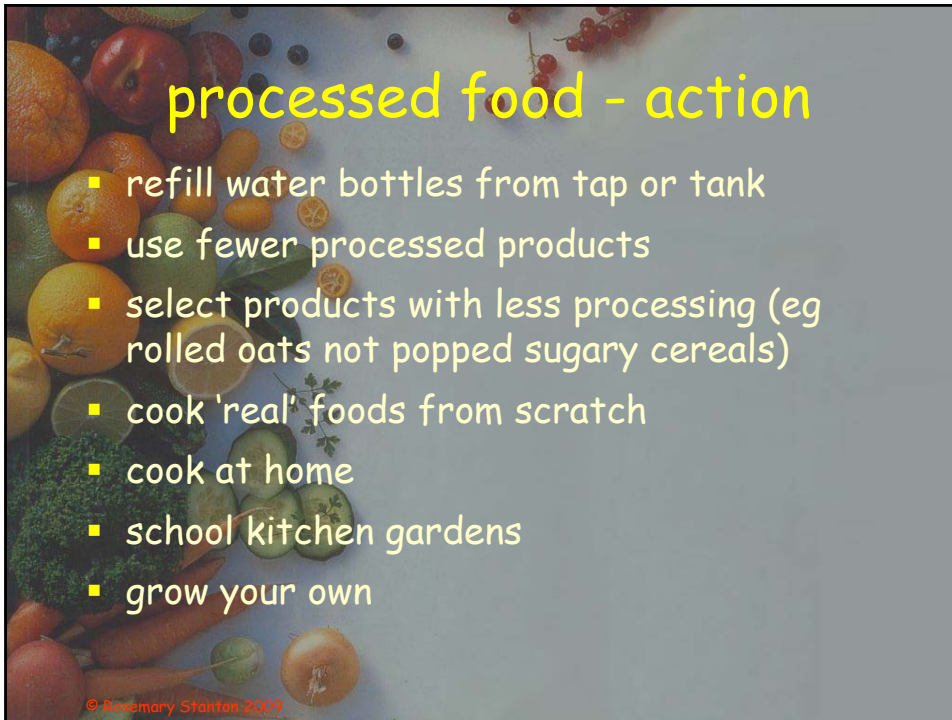


## kilojoules to process 1 kg food

flour	2,100
canned fruit/vegetables	2,500
bottled water	3,000
ice cream	3,800
soft drink	5,900
low-kilojoule soft drink	25,000
chocolate	77,700
instant coffee	79,000

sources: University of Wisconsin Centre for Integrated Agricultural Studies 1999; Heller, MC, Keoleian GA, "Life Cycle-Based Sustainability Indicators for Assessment of the U.S. Food System", Ann Arbor, MI: Center for Sustainable Systems, University of Michigan, 2000.

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## processed food - action

- refill water bottles from tap or tank
- use fewer processed products
- select products with less processing (eg rolled oats not popped sugary cereals)
- cook 'real' foods from scratch
- cook at home
- school kitchen gardens
- grow your own

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## modern food production

emphasises

- animal foods
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- imports

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## packaging - action

- choose foods with less/no packaging
- recycle at home
- lobby local gov't on recycling
- lobby state gov't to set mandatory rules for container deposits
- lobby federal gov't for mandatory recycling costs in product price

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## modern food production

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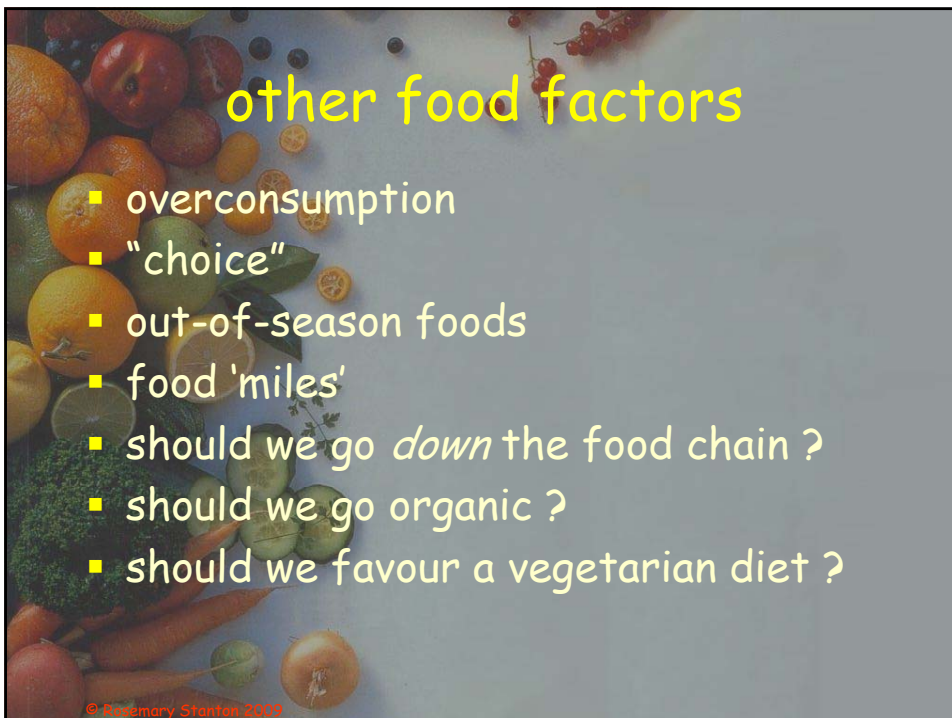
## food exports

### Australia exports

- 72% of grains/oilseeds
- 22% of seafood (imports also high)
- 60% of meat (66% beef)
- 70% of dairy production
- > 80% of some processed foods

source: [dfat.gov.au](http://dfat.gov.au)

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## other food factors

- overconsumption
- "choice"
- out-of-season foods
- food 'miles'
- should we go *down* the food chain ?
- should we go organic ?
- should we favour a vegetarian diet ?

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**go down the food chain?**

the more affluent societies become,  
the more animal & processed foods  
and the fewer plant foods  
they consume

**the more they increase obesity,  
diabetes,  
cardiovascular disease and  
cancers (especially bowel, breast)**

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**go organic ?**

**benefits**

- raises environmental consciousness
- decreases pesticides, artificial fertilisers
- decreases energy use & greenhouse gases
- possible nutritional advantages

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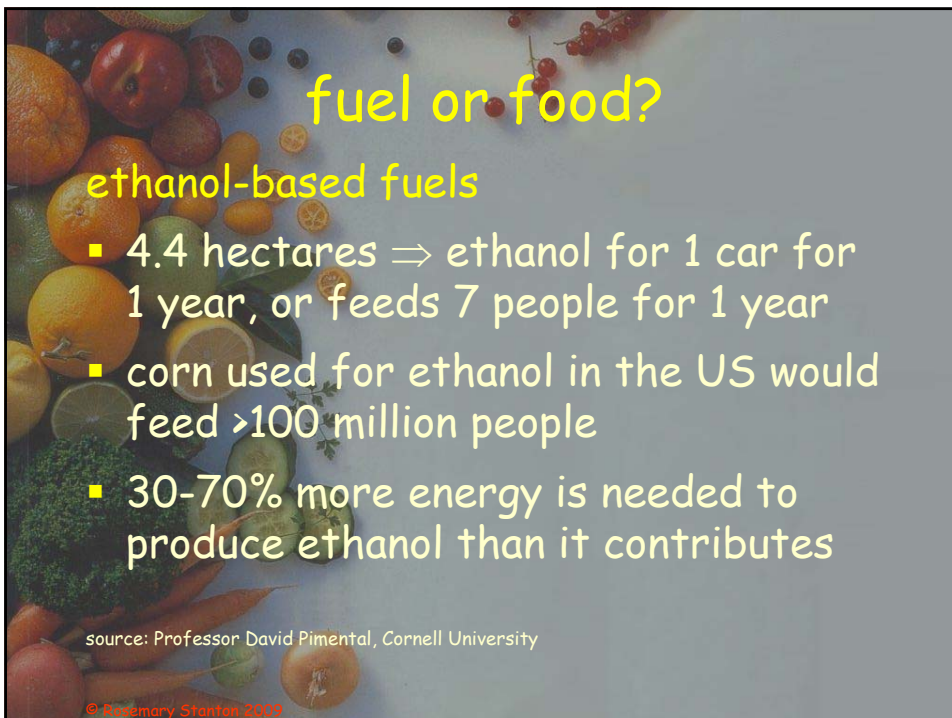
should we go vego?

plant-based diet scores best for

- energy use ✓
- greenhouse gas production ✓
- use of land ✓
- water use ✓

and is therefore more sustainable

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fuel or food?

ethanol-based fuels

- 4.4 hectares  $\Rightarrow$  ethanol for 1 car for 1 year, or feeds 7 people for 1 year
- corn used for ethanol in the US would feed >100 million people
- 30-70% more energy is needed to produce ethanol than it contributes

source: Professor David Pimental, Cornell University

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