

What if we all go vegan?

The impact on the Australian economy,
environment and land use of moving to a
vegan agricultural system

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A vegan agricultural system is?

- No animals used, including fish
- No animal products used, including manures
- Includes all of Australia and imports

Justification

- 1. Use of animals results in suffering
- 2. Consuming animal products is not necessary
- Animal agriculture is bad for environment
- Unfair distribution of food
- You know all this!

Areas of impact

- Land use
- Environment
- Economy, employment
- Health and society

Quantify!

Why research this?

- To answer some objections to veganism:
 - What will happen to the jobs?
 - Won't we all starve?
 - Our economy will collapse
 - What about people overseas?
 - What will happen to all the animals!
- To make our end goal more concrete
- Idea from BZE 10 year energy plan

Guidelines for recommendations

- Maintain levels of food nutrients for health
- Maintain living standards
- Protect environment for future generations
- Minimise economic and employment costs
- Shared responsibility of costs

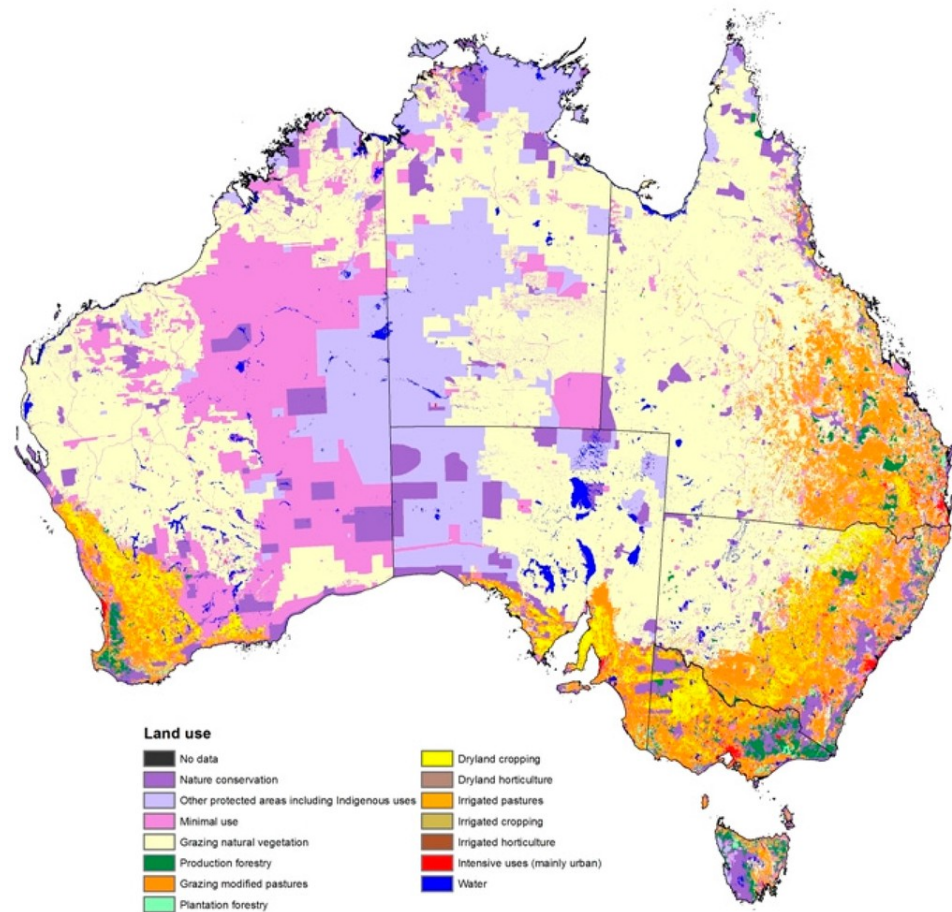
Areas of impact

- Land use 
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Land use

- Current animal agriculture land use
- Reusing this land without animals

Current land use



Current land use

- % used for animal farming?
- % used to grow plant food for humans?

Current land use

- 56% used for animal farming

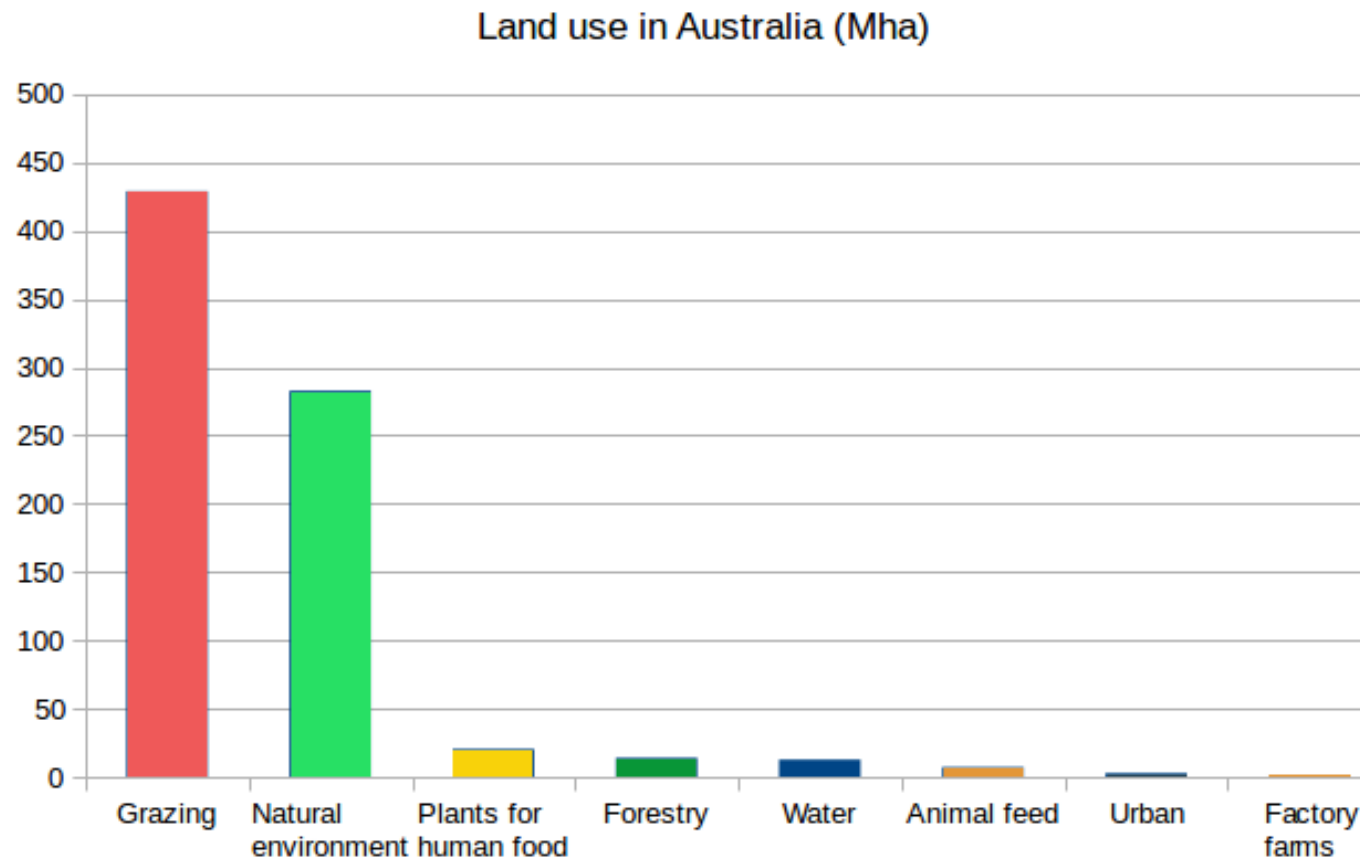
Current land use

- 56% used for animal farming
- 3.5% used to grow plant food for humans

Current land use

- 770 Mha Australia
- 429 Mha grazing for cows and sheep
- 4 Mha grains for feeding farmed animals
- 3 Mha fodder crops
- 20 Mha plant food for humans
 - Mha = million hectares

Current land use



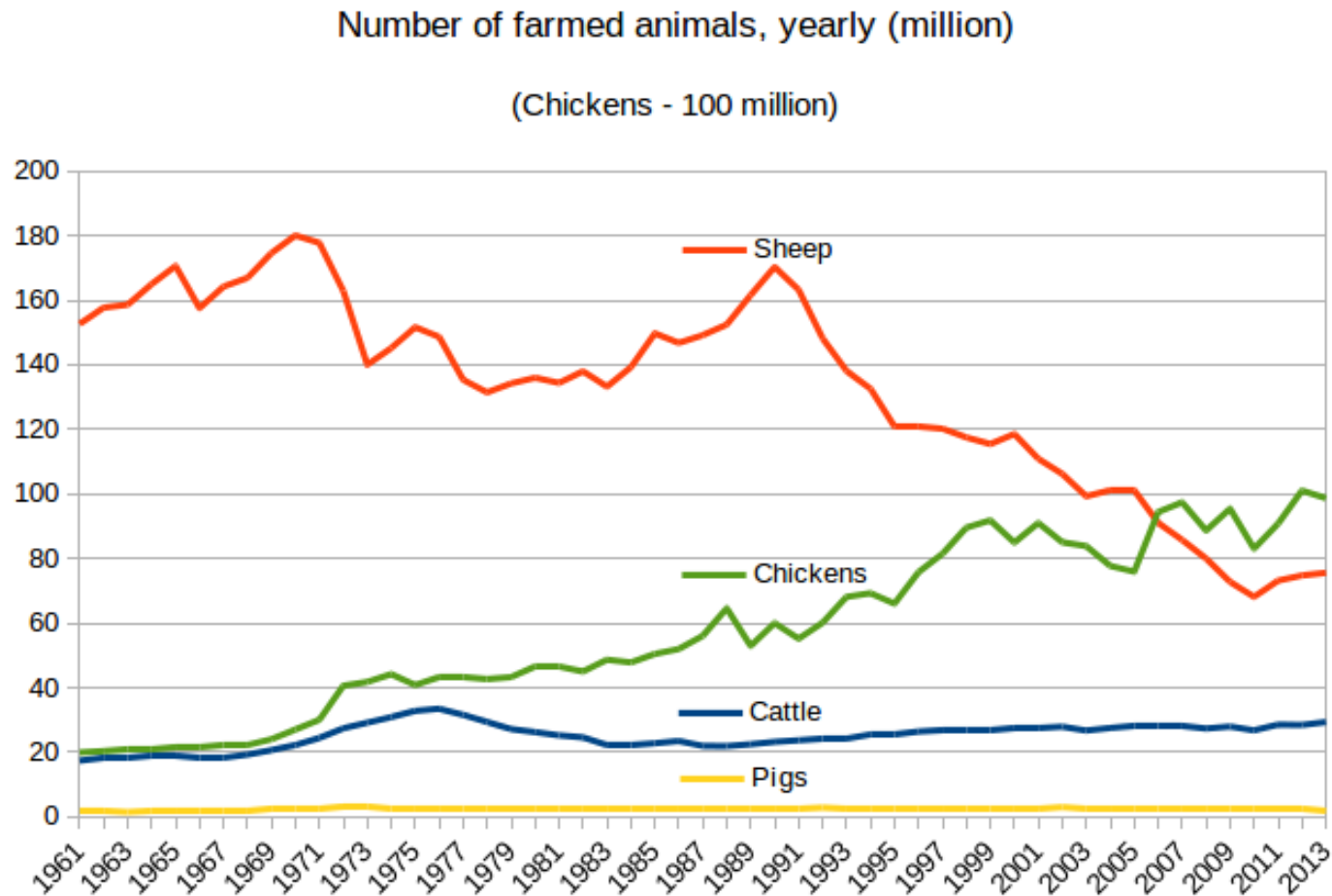
Growing feed for farmed animals

- Fodder and grains for animals use 7 Mha land
- Twice as much grain as humans in Australia
- 9 million tonnes == 1 kg per person per day
- 30% of cattle are 'finished' in feedlots
- 90% of food for chickens and pigs are grains
- Much of this grain is suitable for humans

Past changes in land use

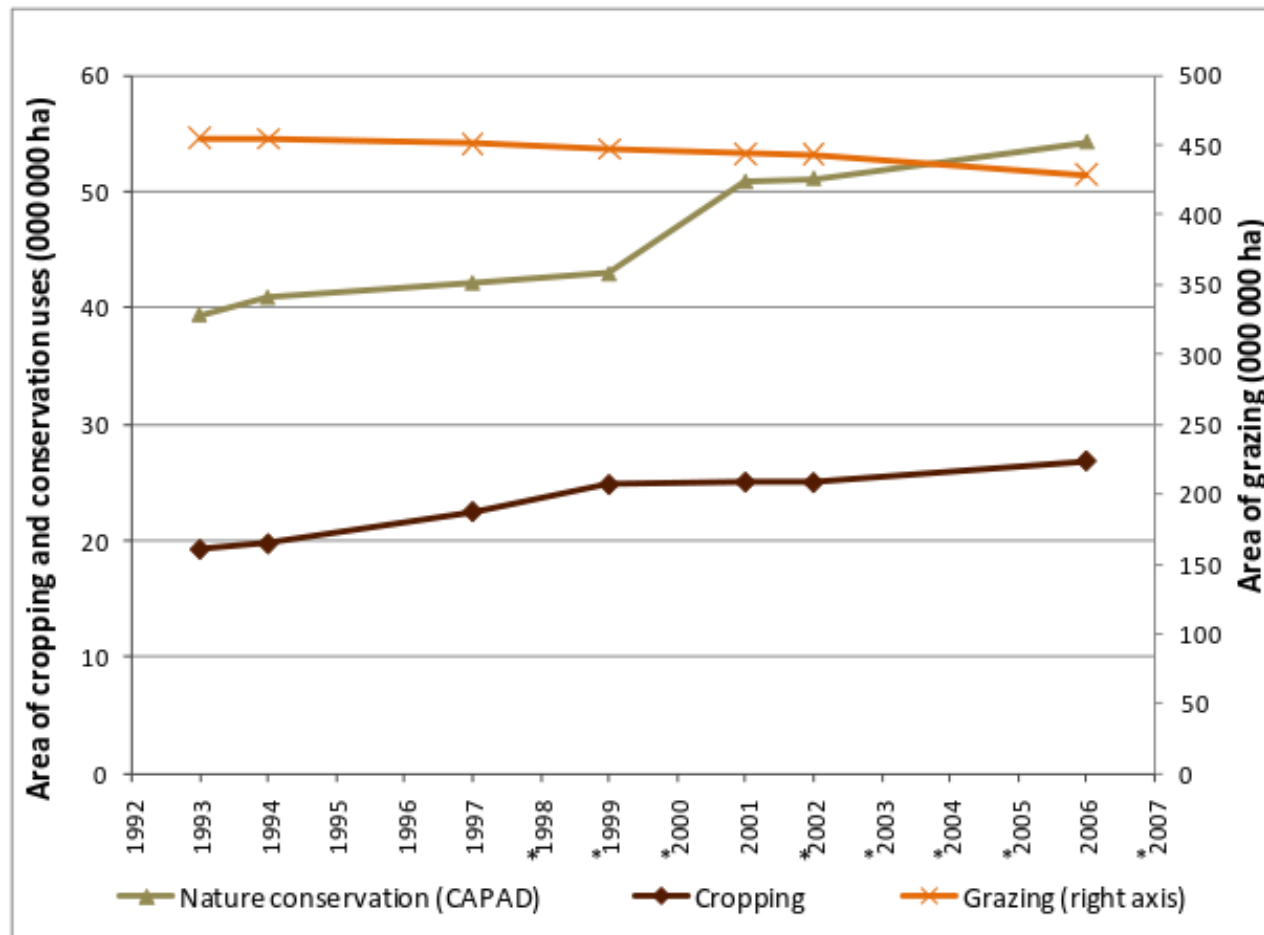
- History of farming is adapting to change
- Farmers are capable of moving to animal-free
- Examples:
 - Sheep numbers now half of 1960s
 - Canola expanded rapidly from 1992 to 2005
 - Overall move from grazing to cropping, wheat, sugar

Past changes in land use

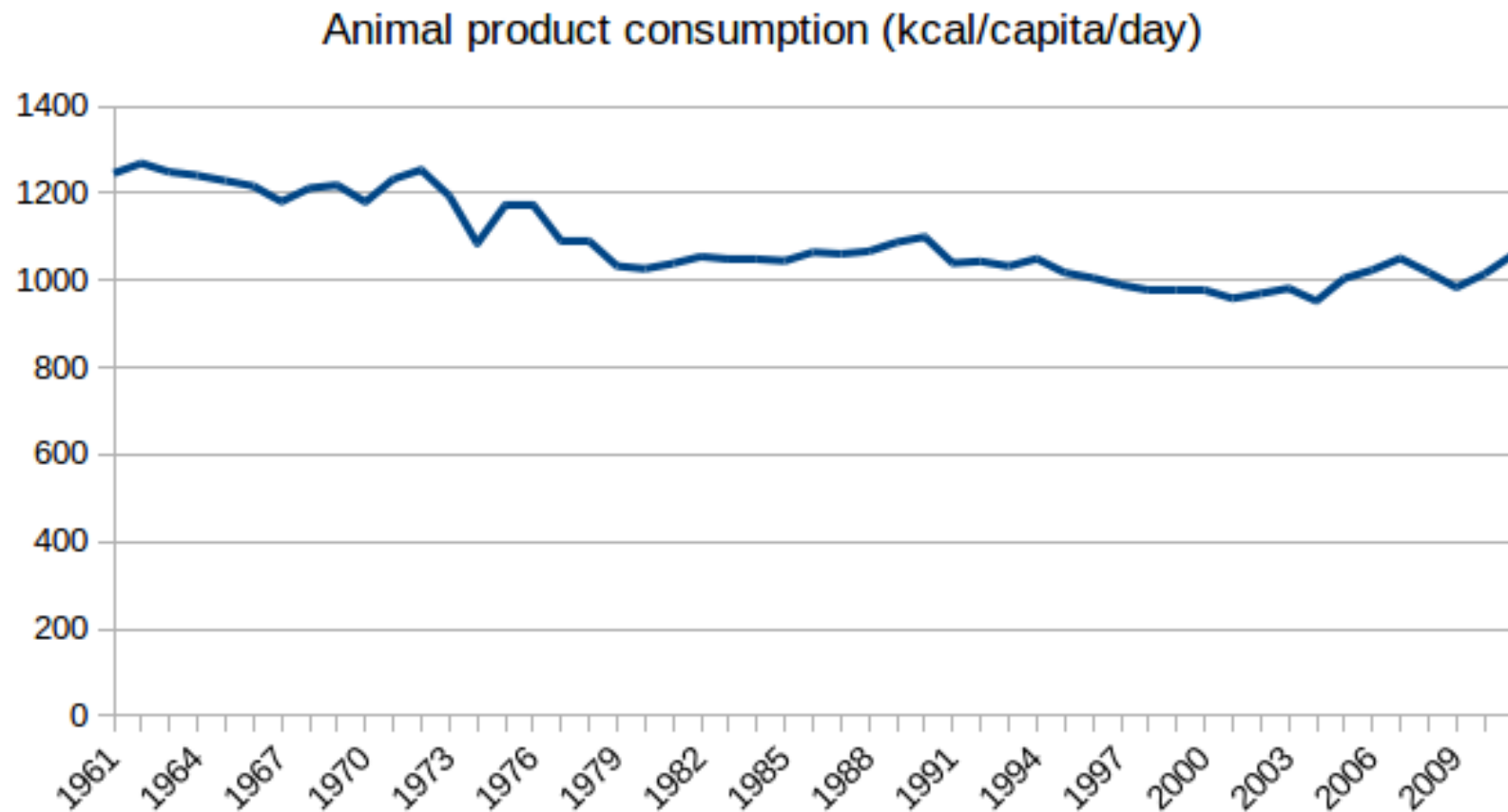


Past changes in land use

Change in area of selected land uses between 1992-93 and 2005-06 based on ABARES national scale land use map



Reduction in consumption



Where will we get our protein!?

- No animals, so need to replace with plants
- Estimate land that could be used
- Estimate land that is needed to replace animal protein

Land available to grow plants



Land available to grow plants

- 3 Mha fodder
- 4 Mha grain feed
- 4 Mha dairying
- 1 Mha irrigated pastures
- 7 Mha grazing land in Victoria and Tasmania
- part of about 60 Mha grazing on improved pastures in intensive zone

Land available to grow plants

- Land currently used for animal agriculture that is suitable for growing plants for human food
- Difficult to estimate, but at least 20 Mha

How much extra plant food needed?

- Animal protein consumption is about 70g/day
- So, 613,000 tonnes/year for all Australians
- Protein content of beans, chickpeas, etc, ~22%
- So need extra 2.8 million tonnes of plants

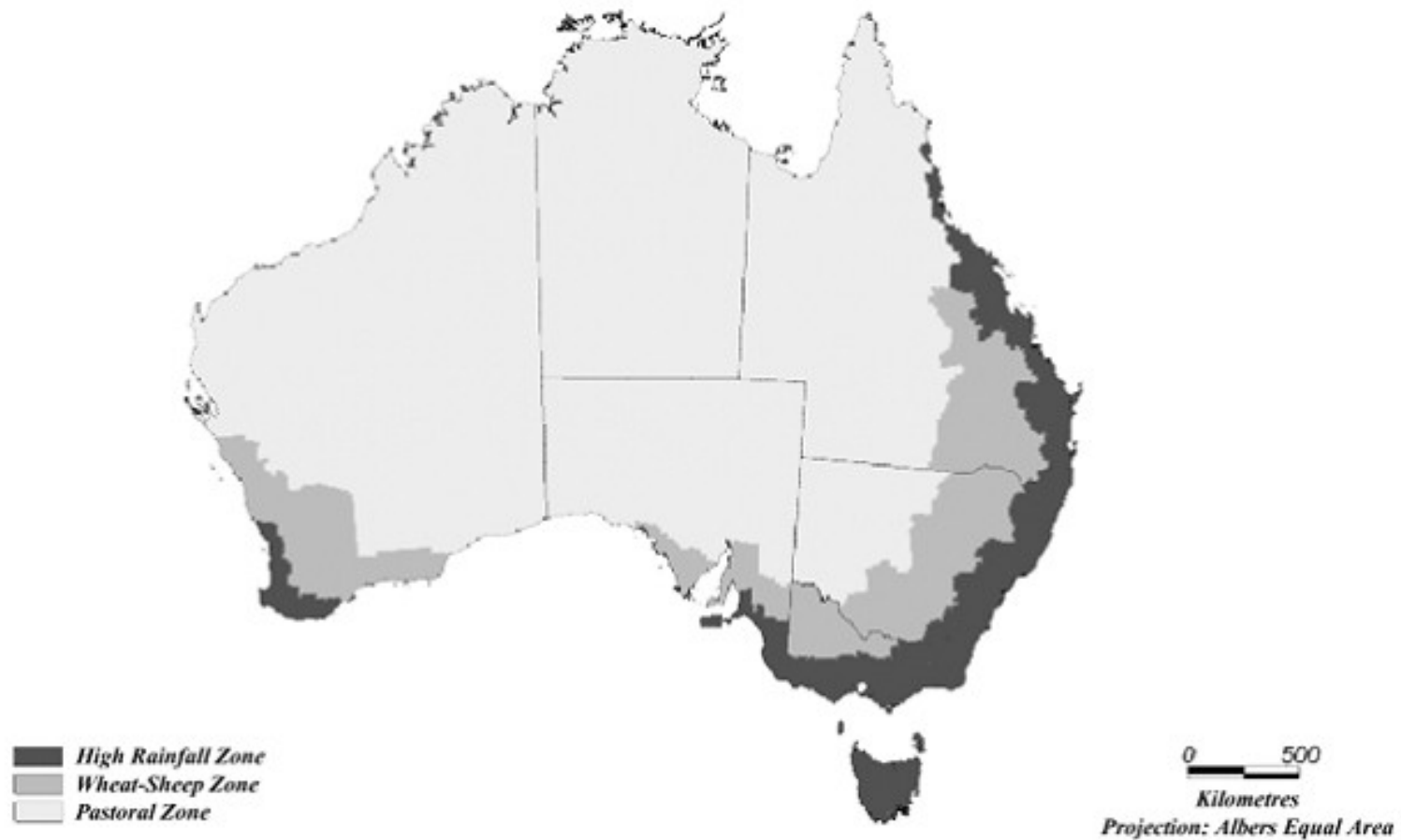
How much land needed to grow it?

- Need extra 2.8 million tonnes of plants
- Average yield of 1.4 tonnes per hectare
- Need extra 2 Mha land converted to grow crops for domestic human consumption
- Plus another 1 Mha to cover exported protein
- Compare to ~20 Mha that could be used
- By removing animals from agriculture we could actually produce more food for more people!

Reusing land without animals

- 430 Mha currently used for animal farming
- 3 Mha for extra crops for humans
- 35 Mha multi-use "wheat/sheep" land
- 1-5 Mha extra forestry (now 13 Mha)
- 100 Mha carbon farming
- 1-5 Mha biochar from tree crops
- 200 Mha restoration of rangelands
 - All very approximate!

Wheat belt



Mallee eucalypt carbon farming



Restoration of rangelands

- Sequestering carbon in soil and vegetation
- Providing native habitat for endangered species
- Increasing biodiversity
- Reducing erosion and soil loss
- Reducing salinisation
- Improve water quality

Restoration of rangelands



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Land use case study

- Wooleen Station in Western Australia
- Land has been grazed for over 100 years
- Most land in poor condition
- Some so badly eroded, not expected to recover
- Four year trial of de-stocking
- Grasses planted, natural systems restored
- "Nature is bouncing back!"

Regeneration case study

Monitoring Photo - Wooleen Lake Bed



Before 2004



After 2009

Case study: La Trobe Sanctuary



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Environment

Impact of vegan agricultural system on environment

- Reduce/reverse greenhouse gas emissions
- Increase biodiversity and reduce species extinctions
- Reduce water use, allow river systems to recover
- Reduce erosion and soil loss
- Reduce pollution from intensive feeding operations
- Reduce pressure on native forests
- Save the marine environment, Great Barrier Reef!

Global warming now

- Australia's climate is changing ***now!***
- Almost 1 degree C warmer since 1910
- Hotter weather, more extreme heat
- Fewer cold extremes
- Caused by greenhouse gases
- Animal agriculture is major source of GHGs

Global warming now

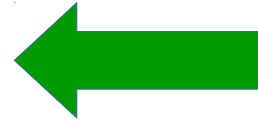
- Animal agriculture emits 50% GHGs
- Both Australia and worldwide
- Why don't people know about this?
- Because of two UN reporting *conventions*:
 - 100 year time scale
 - Ignore short lived gases
- Watch Cowspiracy movie (on Netflix)!

Impact of vegan agricultural system

- Less methane production (enteric fermentation)
- Reduce/reverse land clearing for grazing
- Reduce savanna burning
- 50% reduction in GHG emissions (or more!)
- Effects seen in 12 years (methane removed)
- Less intense floods, droughts, bushfires, cyclones
- Reduce risk of future catastrophe

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Economy

- The animal agriculture industry now
 - Size of industry
 - Exports
 - Employment
- Impacts of going animal-free

Size of animal agriculture industry

- % of Gross Domestic Product (GDP)?
- 1-2% ?
- 5-10% ?
- 20-30% ?



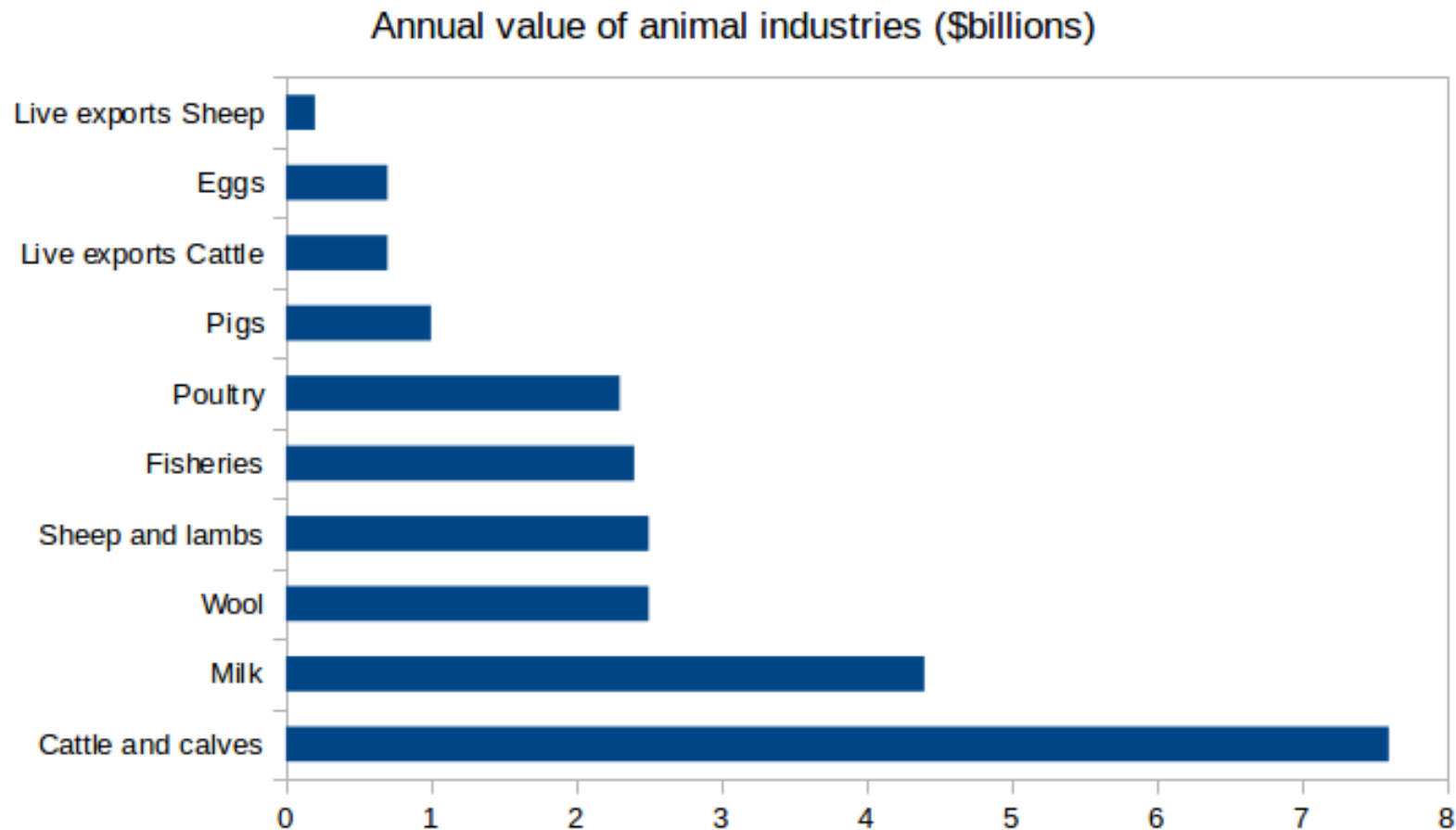
Size of animal agriculture industry

- All agriculture: \$50 billion
- Plant agriculture: 55%
- Animal agriculture: 45%
- Australian economy: \$1.5 trillion
- Animal agriculture: about 1.2% GDP

Australian GDP by industry



Size of animal agriculture industry

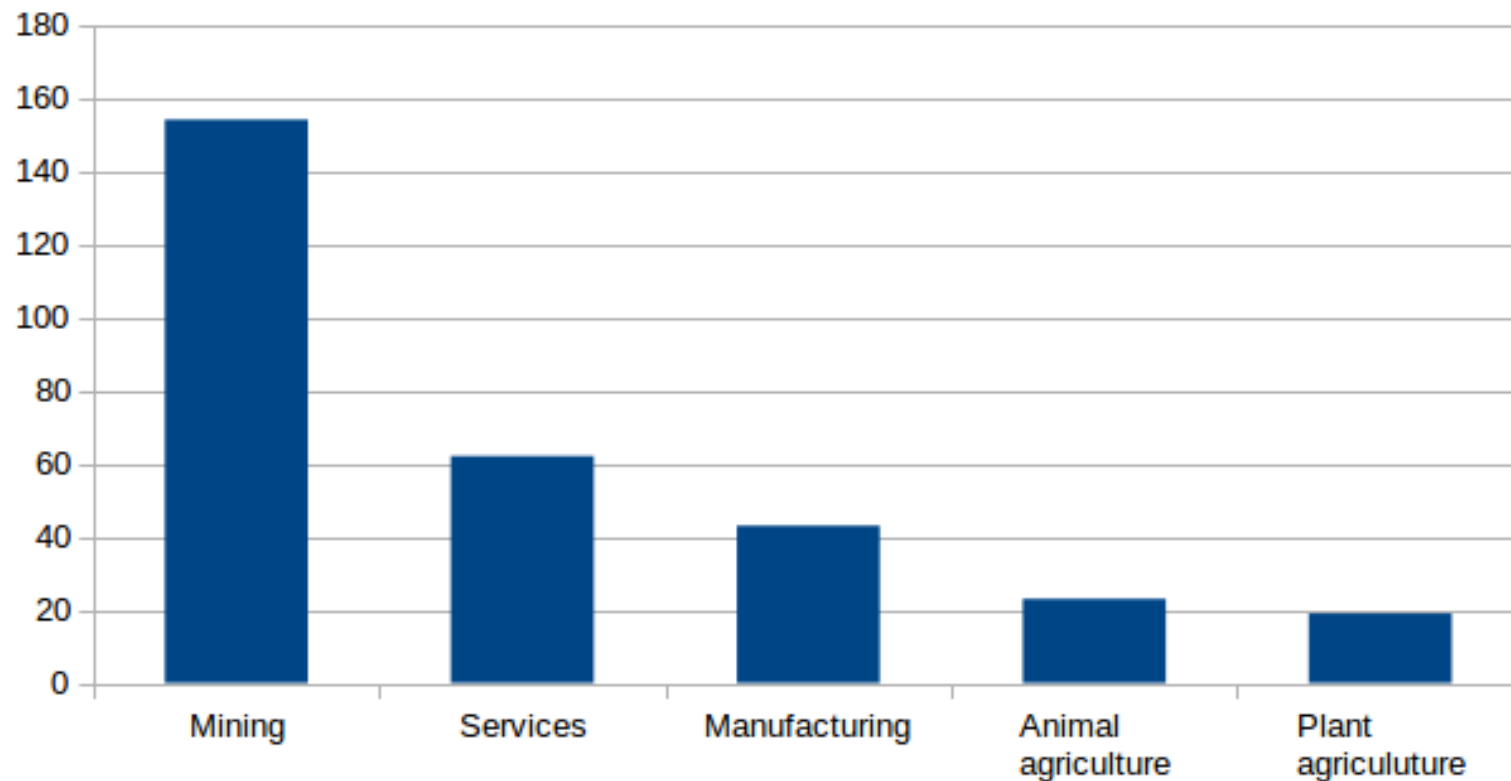


Animal product exports

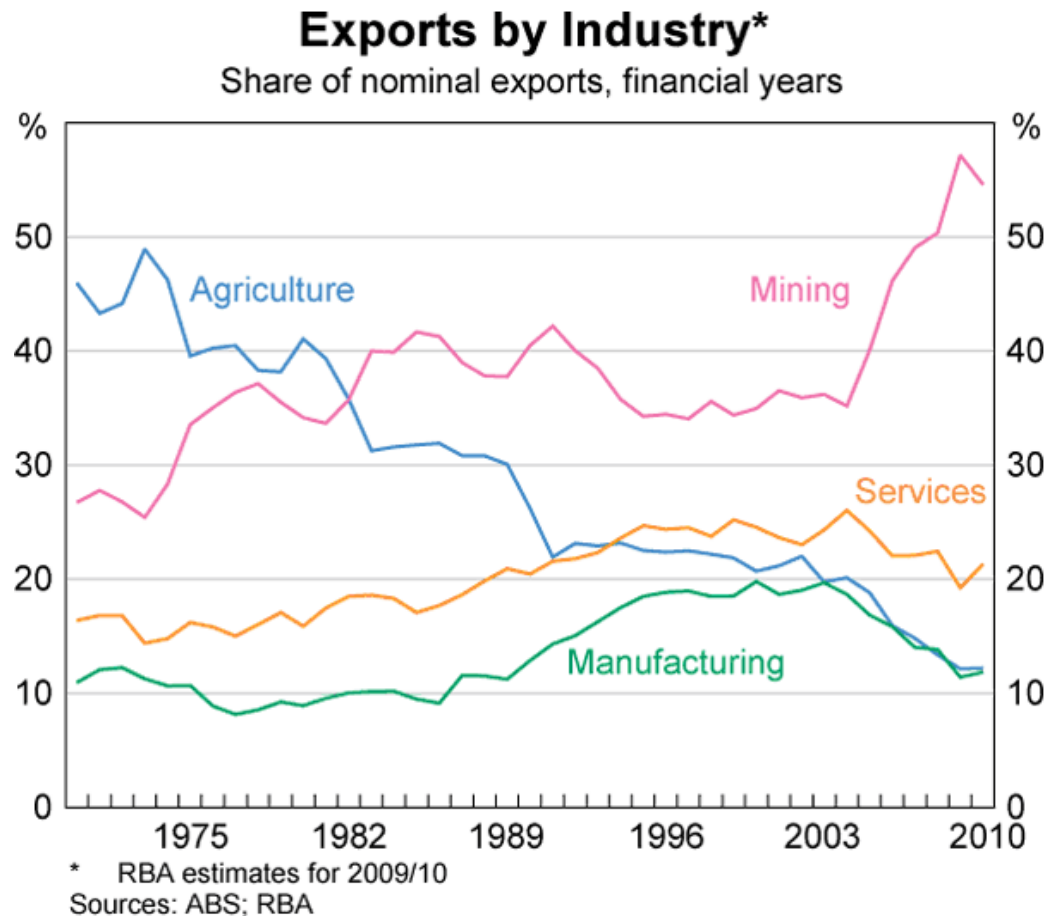
- Total Australian exports: \$319 billion
- Agricultural exports: \$42.5 billion
- Animal products: \$22 billion (7% of all exports)
- Compare: education-related travel: \$18 billion

Exports by sector

Exports by sector 2104-15 (\$billions)



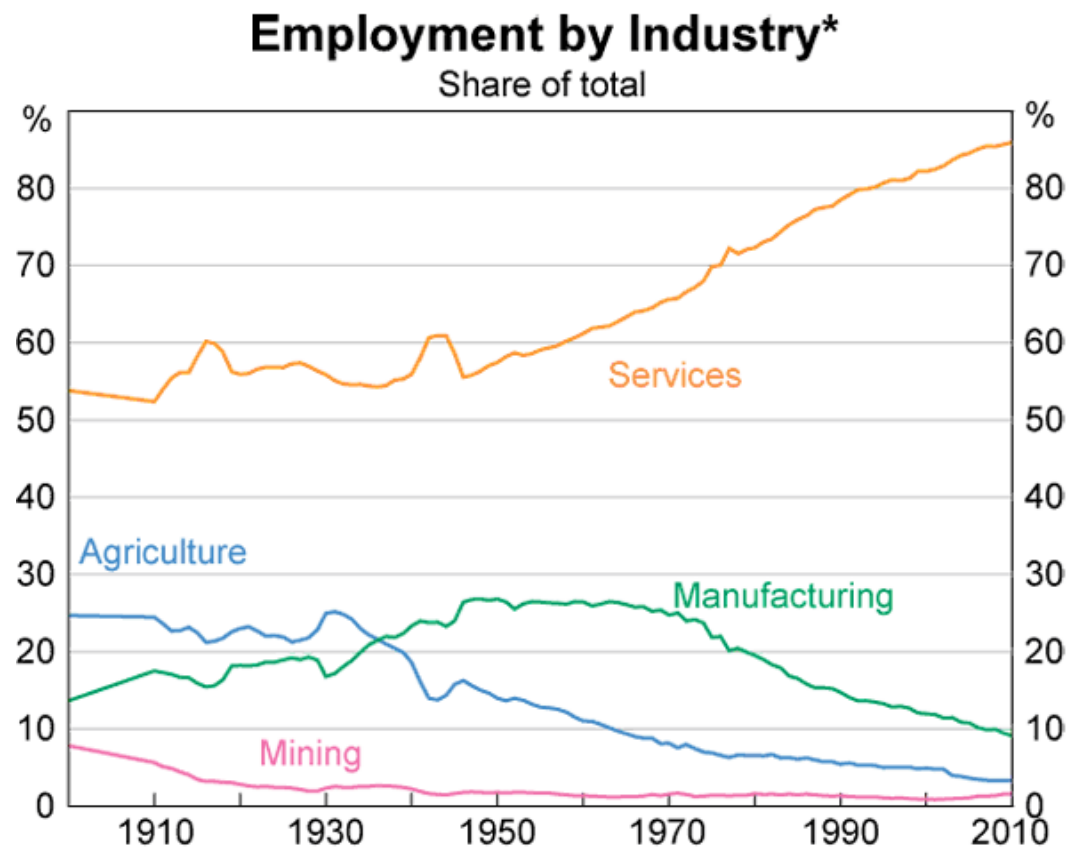
History of exports



Employment in animal industries

- Total employment: 11,482,000
- Animal agriculture: 142,000 (1.2% of total)
- Compare:
 - Construction 9.3%
 - Health care 8.9%
 - Manufacturing 7.7%
 - Education and training 3.3%
- Food processing: 240,000 (meat: 80,000)
- Distribution, retail: over 1 million

History of employment



* Data are interpolated between 1900 and 1910
Sources: ABS; RBA; Withers, Endres and Perry (1985)

Summary of economy

How big is the animal agriculture industry?

- Production value: 1.2% of GDP
- Exports: 7% of total exports
- Employment: 1-2% of the Australian workforce

ie: relatively small part of the modern Australian economy

Economic costs of animal free

- Changes in national income
- Changes in jobs distribution
- Changes in investment worth
- Shared responsibility of costs
 - Government help

How to handle costs?

- Transfer some jobs to equivalent vegan job
- Eg: production of smallgoods, cheese, milks, etc
- Carbon farming – society pays for env. services
- Assist farmers in changing land use
- Employment in revegetation and forestry
- Retraining for new careers

! need to quantify !

Geographical distribution

- Jobs will move from country to city
- Population will move
- Regional towns will be impacted

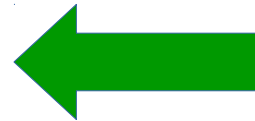
New industries!



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Health and society

- To be done!
- Health benefits
- Cost savings due to health benefits
- Benefits to society of less violence to animals
- Food security



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Planning the transition

- Time scale: 10 years
 - Enough time for economic adjustments
 - In time to avoid bad climate change

Summary: a vegan Australia is possible

Where to now?

- Research unfinished
- Need economists, agriculture experts, statisticians, health experts
- Make detailed roadmap for change over 10 years

More: veganaustralia.org.au/research