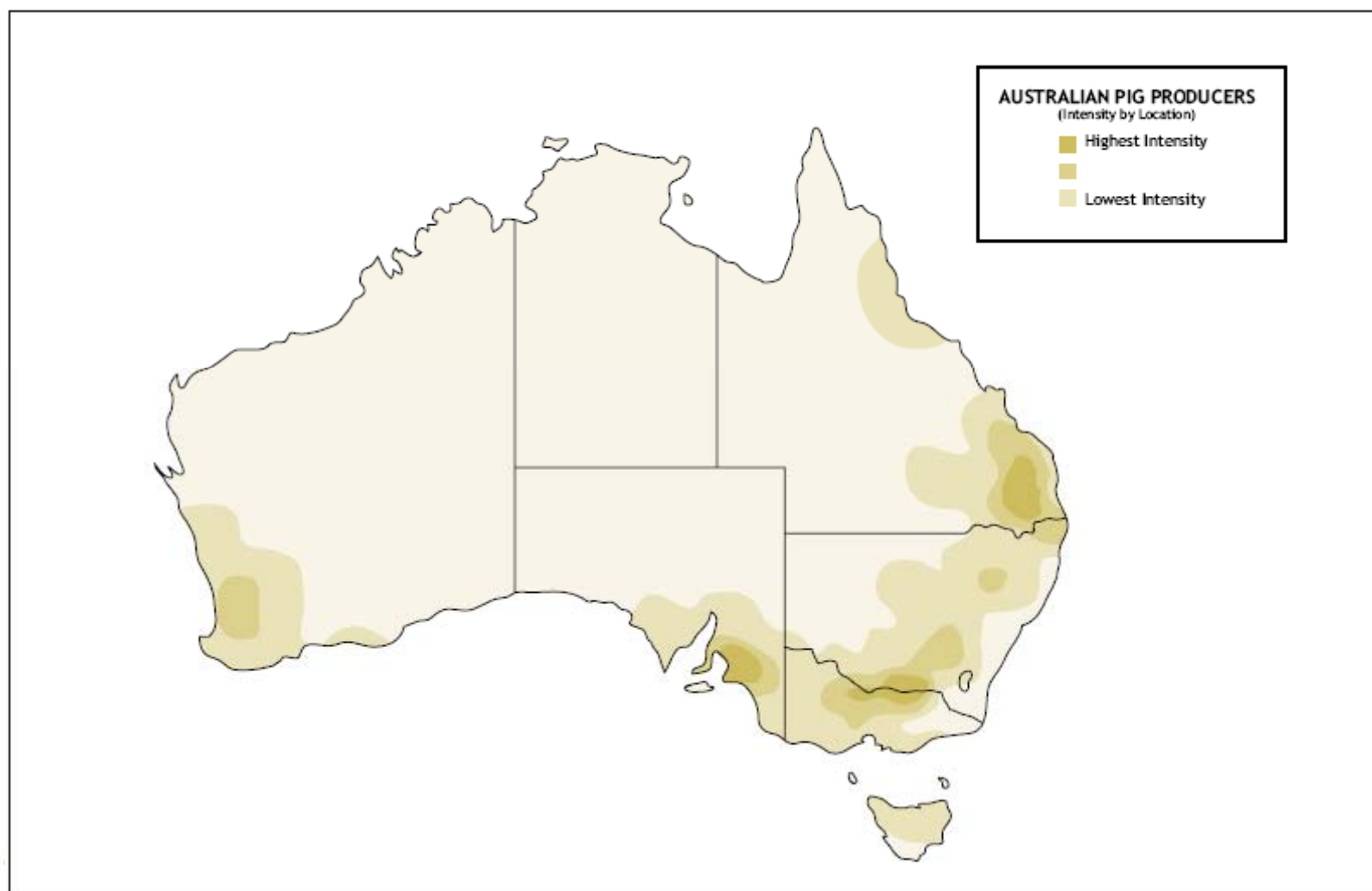




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Australian Methane to Markets in Agriculture





Australian Update

Research News

4 desk top studies

- Review of R&D in Australia
- Assessment of most appropriate technologies and models
- Regulations and costs of flares
- Economic viability of methane capture systems in Australian intensive agriculture
- Data collection from 2 existing sites

Two New Digesters

- Floating cover retrofits to a piggery and dairy

New Government

- New Laws Pending

- 60% reduction in GHG emissions by 2050
- Emission Trading by 2010
- 20% mandatory renewable energy targets
- Policy commitments on low emission technology, renewable energy and climate change in agriculture



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Green Energy from Brownfields

Commercialising Least Cost Technologies for Methane Capture in
Intensive Agriculture in Australia

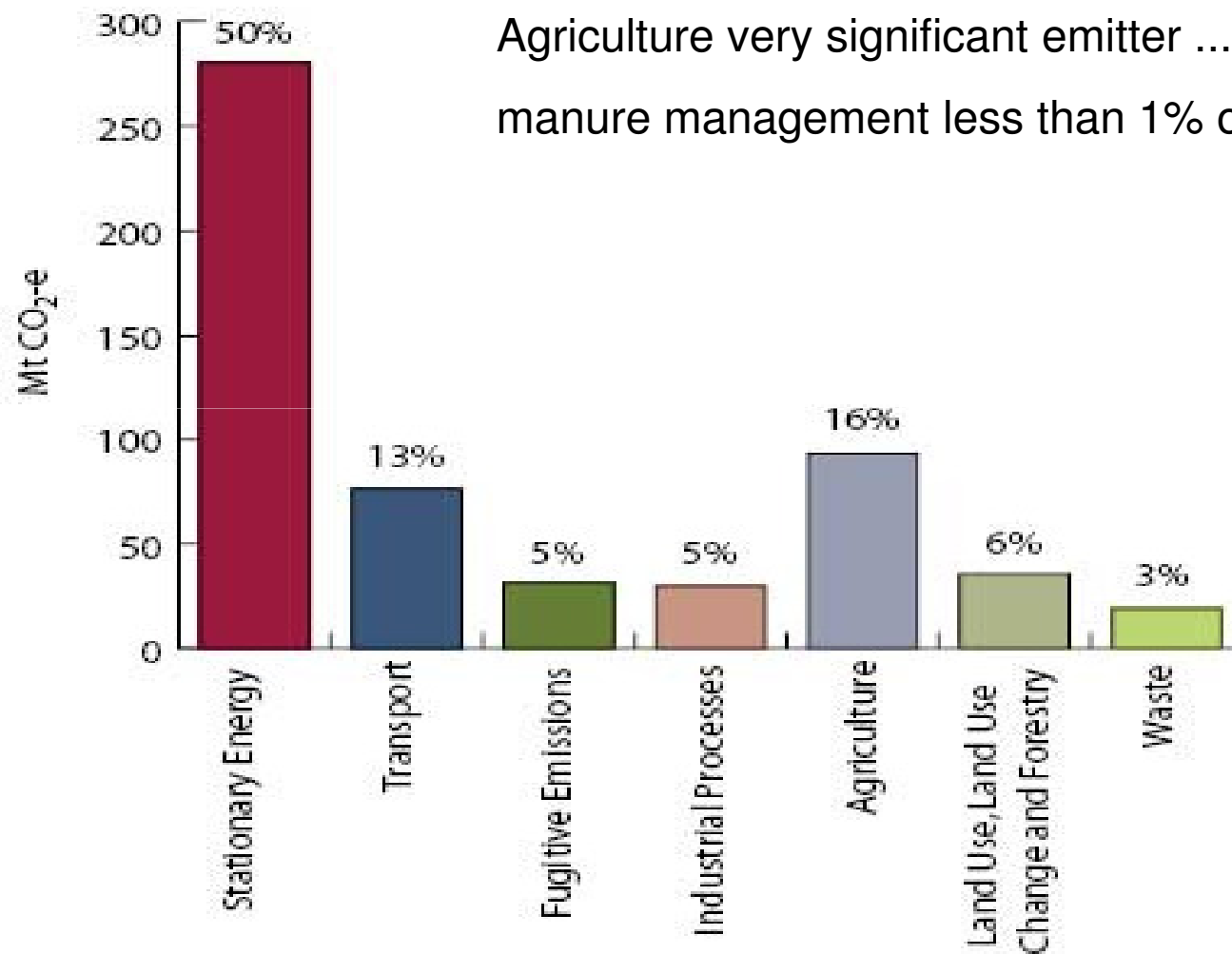


RIRDC Shaping the future



Why do we care?

Agriculture very significant emitter ... However,
manure management less than 1% of total emissions





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Australian Methane to Markets in Agriculture Program

*Partnership between
industry and government*

RIRDC Shaping the future



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Partners

- Australian Lot Feeders Association
- Australian Pork Ltd
- Dairy Australia
- Department of Agriculture Forestry & Fisheries
- Meat & Livestock Australia
- Rural Research & Development Corporation





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Bioenergy potential

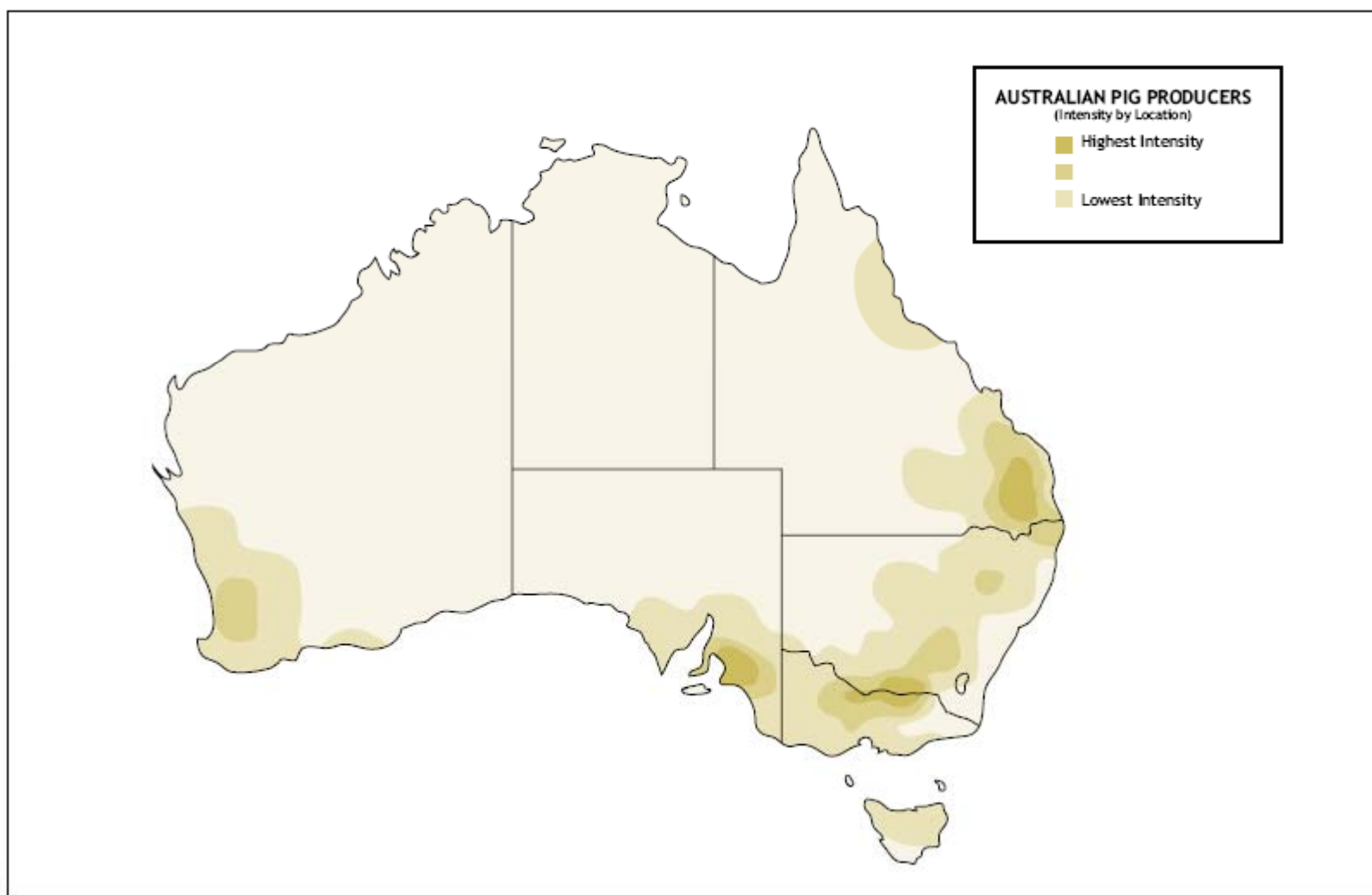
30 feedlots with 10,000+ head

55 piggeries with 10,000+ pigs

300 dairies with over 400 head



Locations





Bioenergy potential

30 feedlots with 10,000+ head

- Steam flaking provides easy power route
- Need to commercialise solid state fermentation to make these sites work

55 piggeries with 10,000+ pigs

- Paybacks of 4-12 years

300 dairies with over 400 head

- Uncertain yields with variable mix of pasture supplementary feeding



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Show me the money!

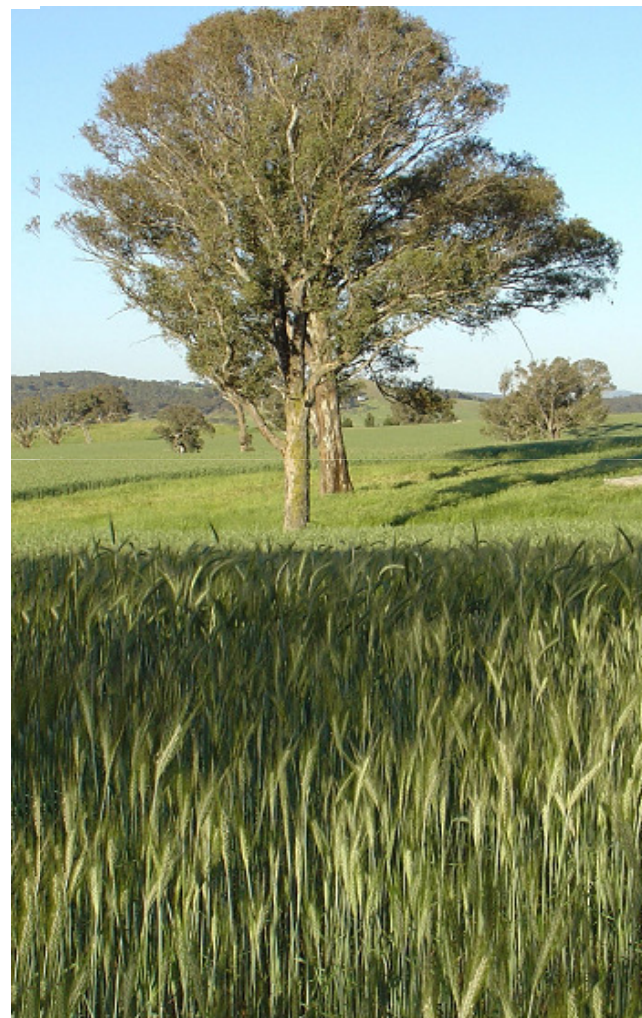


- Propane substitution
- On-site electricity
- Tipping fees
- Sale to grid
- RECs (MRET)
- Carbon Credits
- Direct incentives
- Regulatory good will
- Odour



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Nutrient Exporter



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Sludge Handling



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Demonstration Sites

Existing

- Berry Bank Piggery Vic, 20,000 pigs birth to bacon
- Bears Lagoon, Vic, 27,000 grower-finisher piggery
- Mindarra 2, Piggery WA, 15,000-50,000 pig grower finisher piggery

Proposed

- Leslie's dairy, Vic 600 cows (modify existing lagoon)
- Granthams piggery, Qld 700 sows breeder only (fix floating cover to existing lagoon – piglet heating)
- Uni of Qld, pilot scale leach bed digester



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Berrybank

Italian design

- Grit removal
- DAF with chemical dosing
- Heated CSTR
- Secondary digester for sludge recycling





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Bears Lagoon



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Dairies

Irrigated pasture or pad feeding

– grain vs water vs milk price

Model VS load under different scenarios



Demo site

*Absorption
chillers*





Feedlots



Commercialise leach bed digesters





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Deep-litter piggeries dry fermentation or plug flow digesters



RIRDC Shaping





Strategy

Demonstrate key technologies

- Sludge management under covers
- Use of biogas for heating
- Leachbed digesters
- Absorption chillers

Collect data: yields, prices, suppliers, ROI

Present to govt opportunities

- CO₂eq mitigated/\$ govt spending

Role out 10-100 sites over 2-5 years