

A Renewable Energy Seminar



The Reality of a Renewable Future for our Region: Possible, Plausible or Inevitable?

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Metropole Hotel Palmer St Townsville

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**The Climate
Reality Project™**

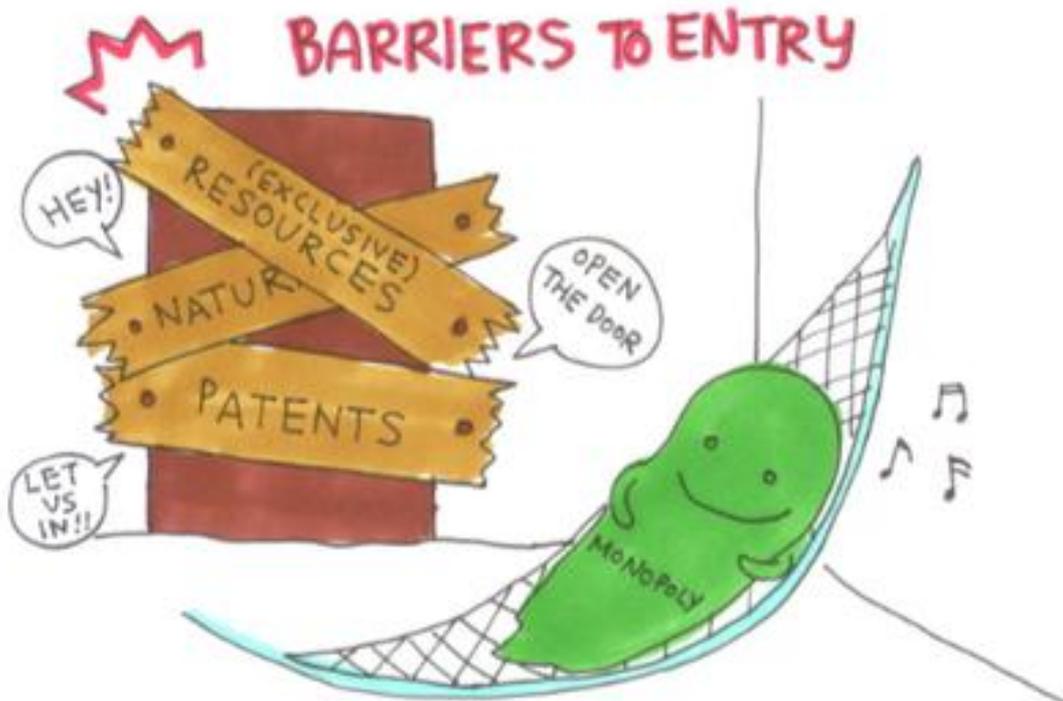
AUSTRALIA

“90% of the regions energy from renewables by 2040”

Possible?

Plausible?

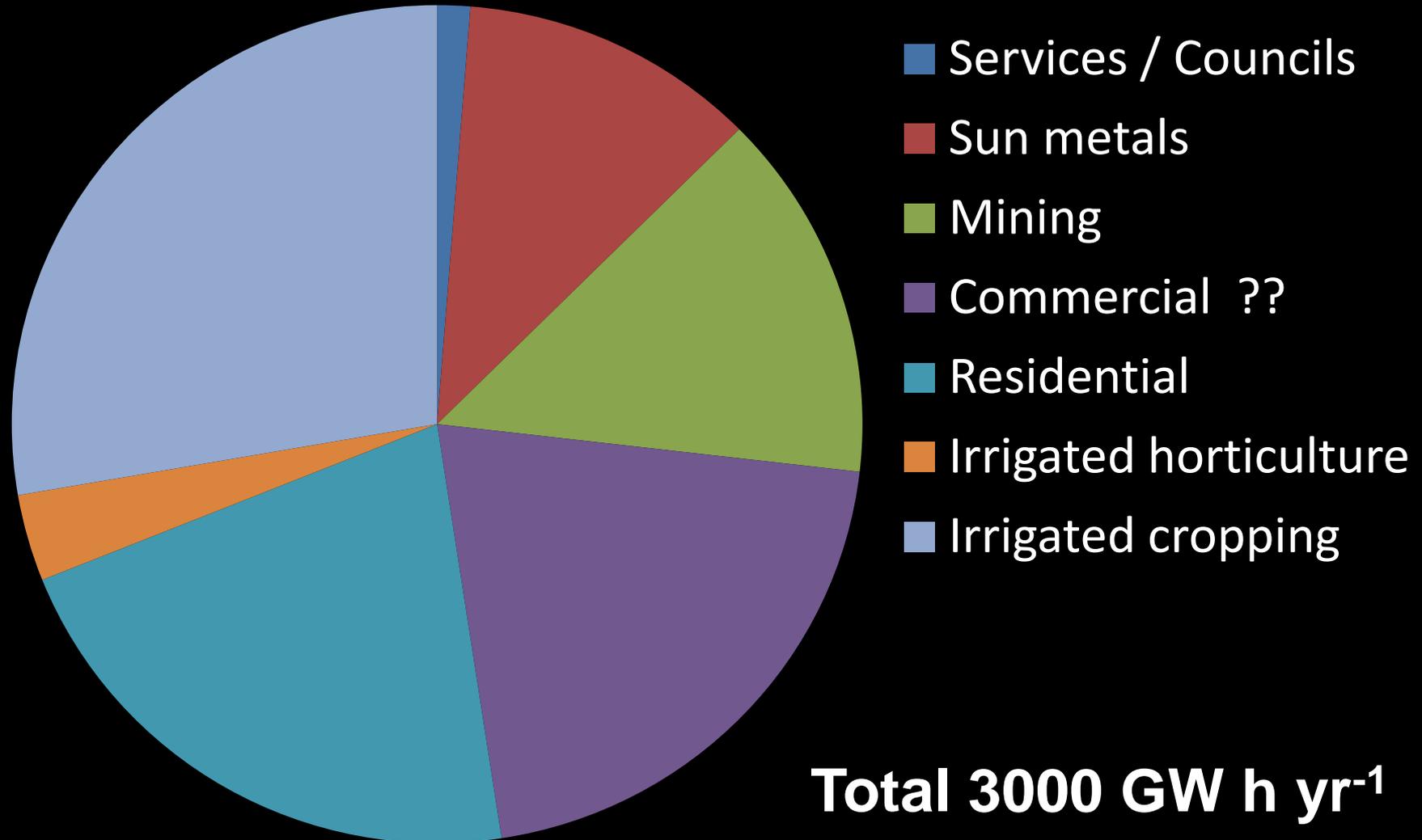
Inevitable?





- Coal Coral Cane Cows
- Import & Export Energy
- Militarily Strategic
- Urban, Irrigation, Sparse
- Remote (Wireless)
- Good Road, Rail, Ports

Regional Electricity Use Profile



FRV Royalla Canberra

20MW installed estimated 37 GWh y⁻¹



= 1.2% of regional demand

Photo – The Guardian 2015

Bulli Creek Proposal Toowoomba

2GW-10 years- \$1B-5000ha



= >100% demand

Photo – The Guardian 2015

Regional Electricity Renewables : Plausible ?

Source	*Installed / + Scoped GWh/yr-1	% age of demand
Domestic Solar	*14 (Solar City 17000 homes)	0.5
Sugar mills	*Bagasse (1/2 of 500 off grid Qld)	4
Ingham Bio-energy	+700 ?	23
Solar Farm Ayr	+280	9.3
Burdekin Hydro	+150	5
Wind	+Bowen & Hughenden	??
Collinsville	+ Solar thermal for coal mine	No
Marine	?	0
Algae	?	0
Total	134 - 1200	4.5 - 40

Regional Liquid Fuel Supply: Possible?

Petrol (ML)	Diesel (ML)	LPG/CNG/dual fuel (ML)	Total fuel (ML)
200	141	7	347
Ethanol	Biodiesel	Methane	Total
2-3%	41%	0%	44%
26%	41%	7%	89%



Sugar



Livestock



Sorghum



Processing

Biofuels Production (ML/y⁻¹) : Plausible ?

Fuel (Facilities)	Aust. Capacity	Region Capacity	Max Regional Demand
Ethanol (3)	440	60+3.6	10-160
Bio-diesel (11)	217	0	141
Bio-methane (0)	0	0	7
Total	657	60	308

Source: Biofuels Association of Australia 2012 & Aus Dept. Industry & Science

Is Climate Change Enough of a Global Storm?



Economics

“Governments representing almost half of the world's population and 52 percent of global GDP have thrown their weight behind a price on carbon.”

Dr Jim Yong Kim
President of the World Bank

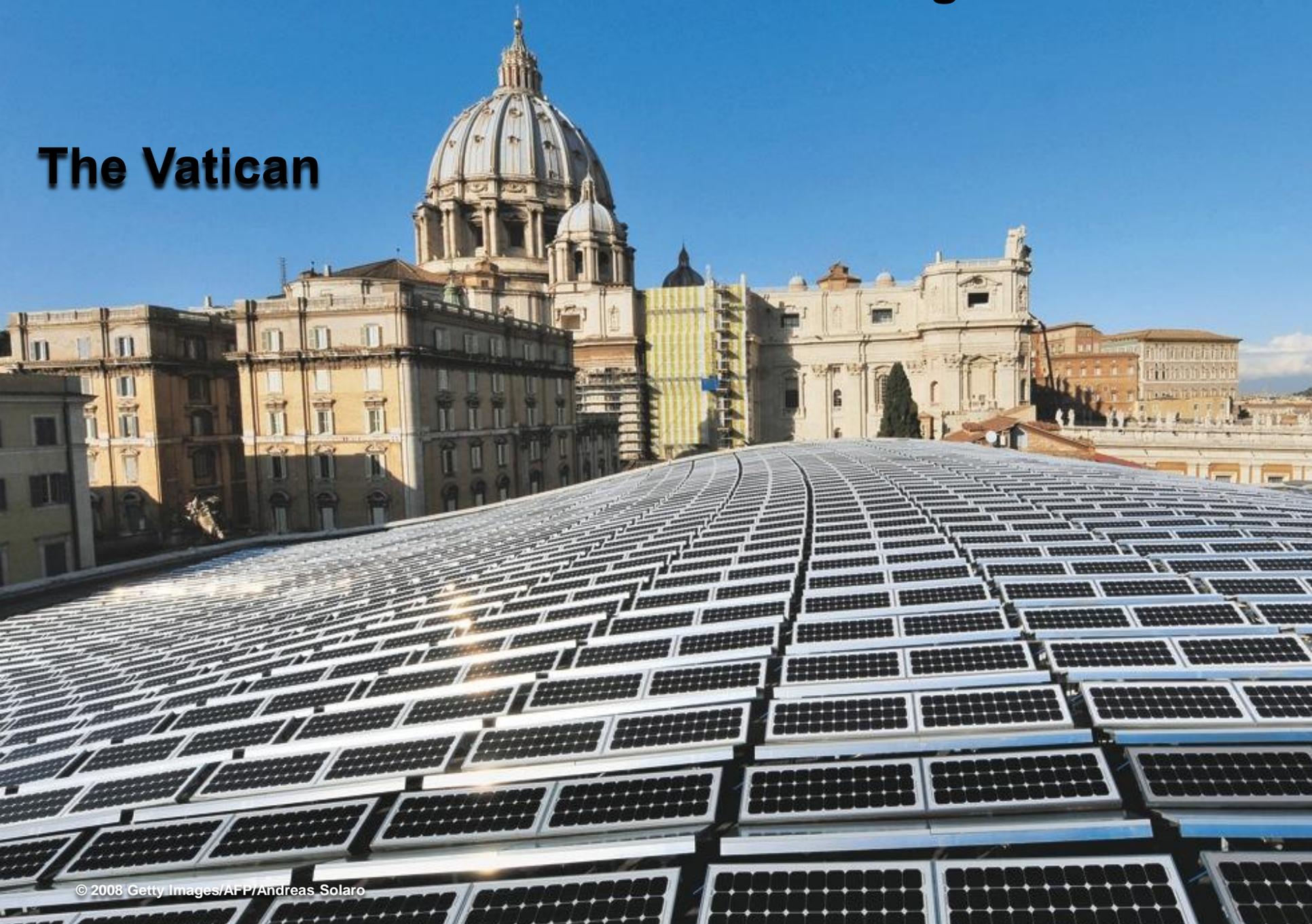
Image: Flickr CC Julian Robinson

Fossil Fuel Impacts

**Australian coal costs \$8.3 billion/year
in medical expenses**

1. Climate
2. Environment
3. Health
4. Jobs
5. Culture
6. Ethics & equity
7. Economics

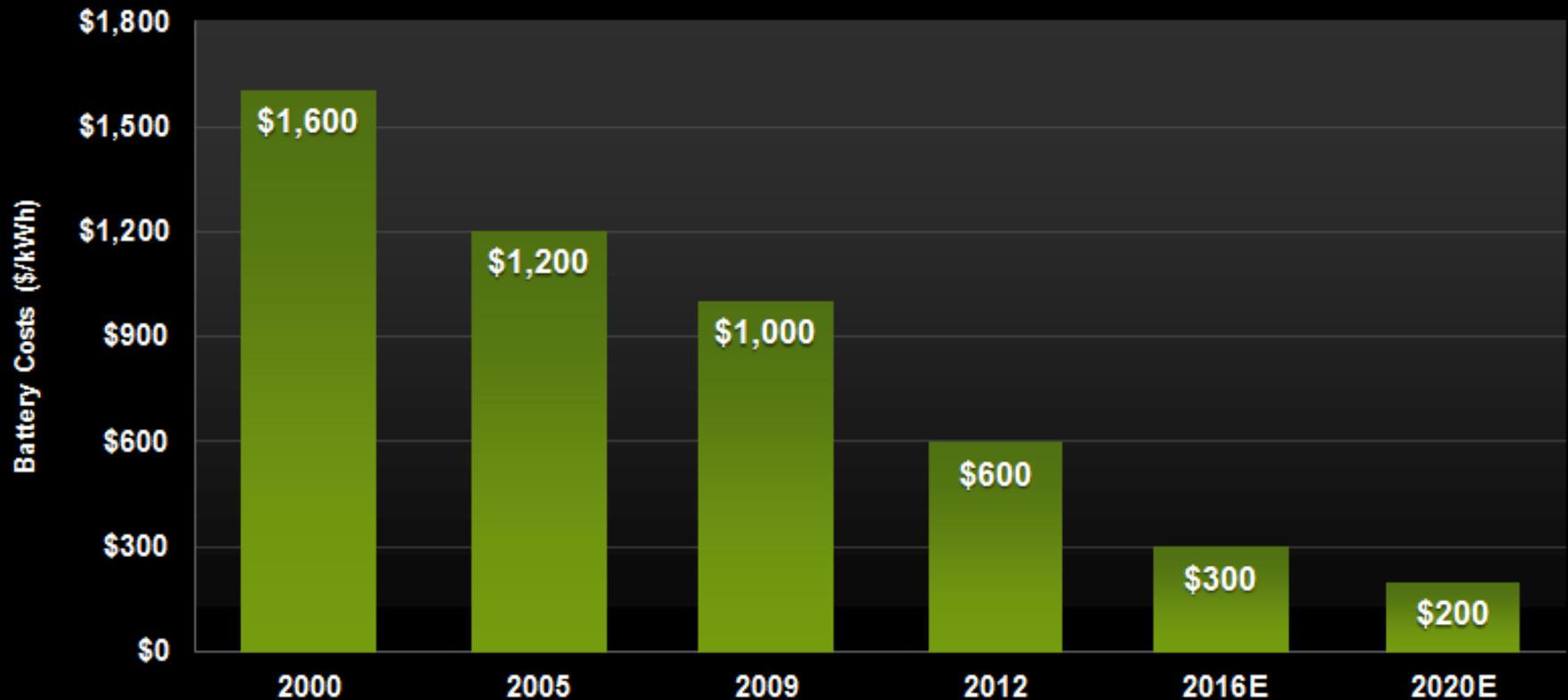
The Vatican



Renewables are Getting Cheaper and Easier

Battery Costs

Electric and Hybrid Vehicle Batteries



Source: Generation Investment Management

The \$22 Trillion Carbon Bubble

Burned 1850 – 2010

1821 Gt CO₂

Remaining Proven
Fossil Fuel Reserves

2230 Gt CO₂

Burnable*

Unburnable

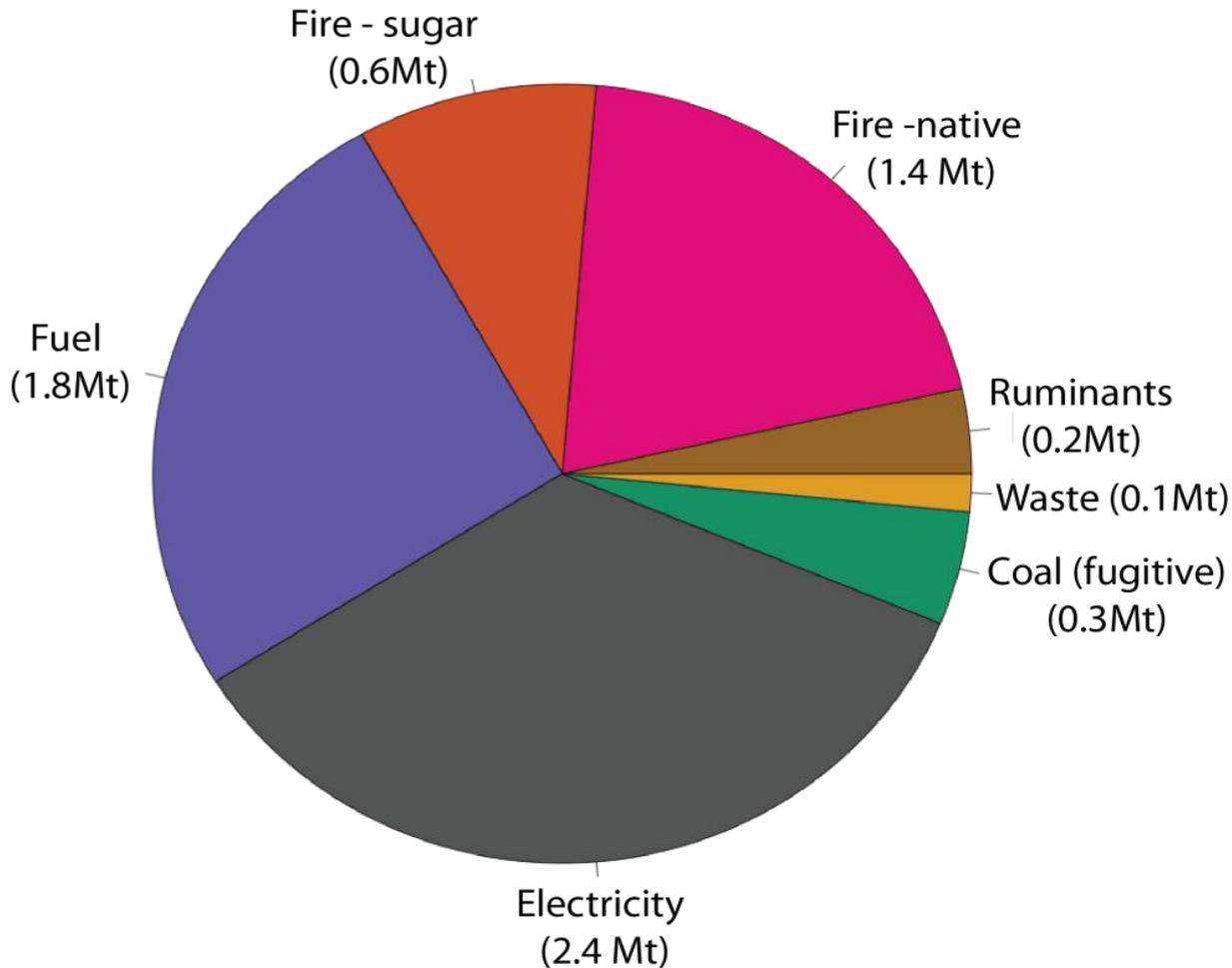
Burned
since 2000

* If we are to have a good chance of limiting warming to 2° C

Annual Regional Emissions

(Mega tons CO₂-e yr⁻¹)

Total Region (6.8Mt)



**Burning Exported
Coal (38Mt)**

**Burning Exported
Carmichael Coal
(120-180Mt)**

Summary

“90% of the regions energy from renewables by 2040”

Question	Answer	Rationale
Possible	Yes – Electric cars	Technology
Plausible	Yes – Net Exporter	Design - Business Interest & Scoping
Inevitable	No – But hope with leadership	Politics and Markets

What Might We Do?



- Recognise sources & users' diversity
- Broaden desirability criteria
- Rethink the grid – (Bowen, Burdekin, Grazing)
- Target 100% Net (Ethanol)
- Market to Governments on global economics
- Speak up together - As environmental practitioners