

Global decline in world electricity demand – efficient smart cities need less energy.

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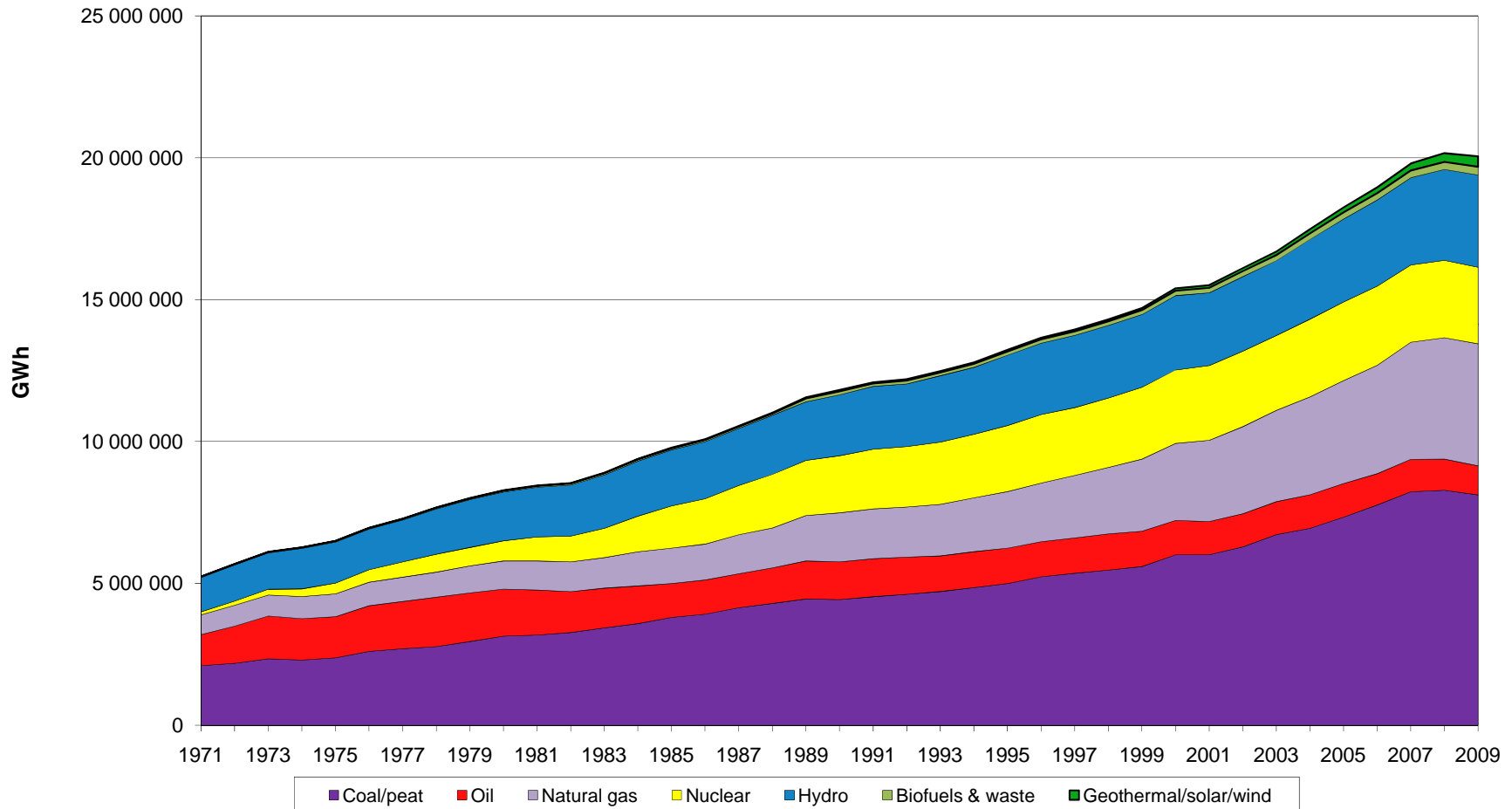
Global electricity ...

IEA Energy Statistics

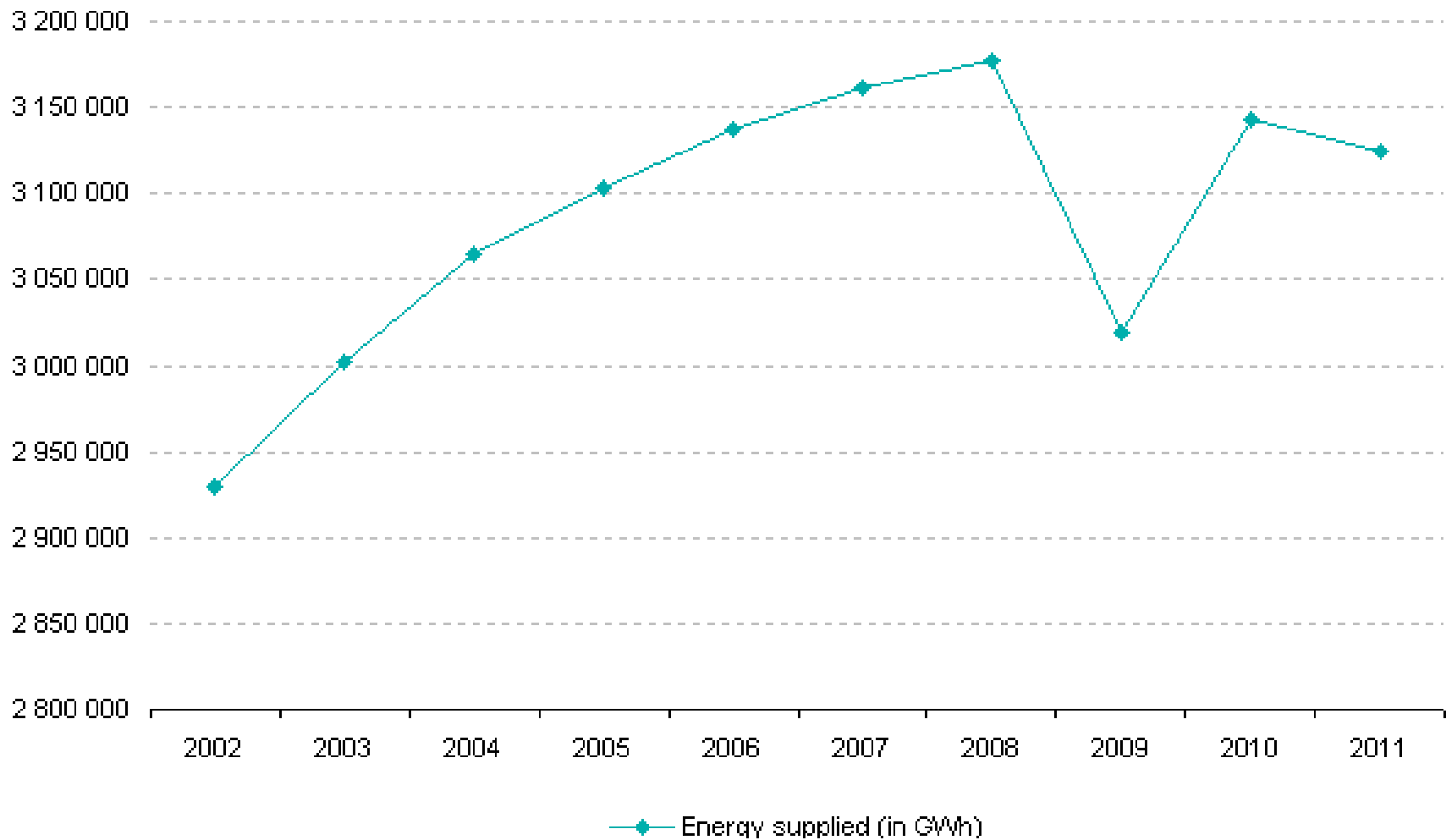
Statistics on the Web: <http://www.iea.org/stats/index.asp>

Electricity generation by fuel

World

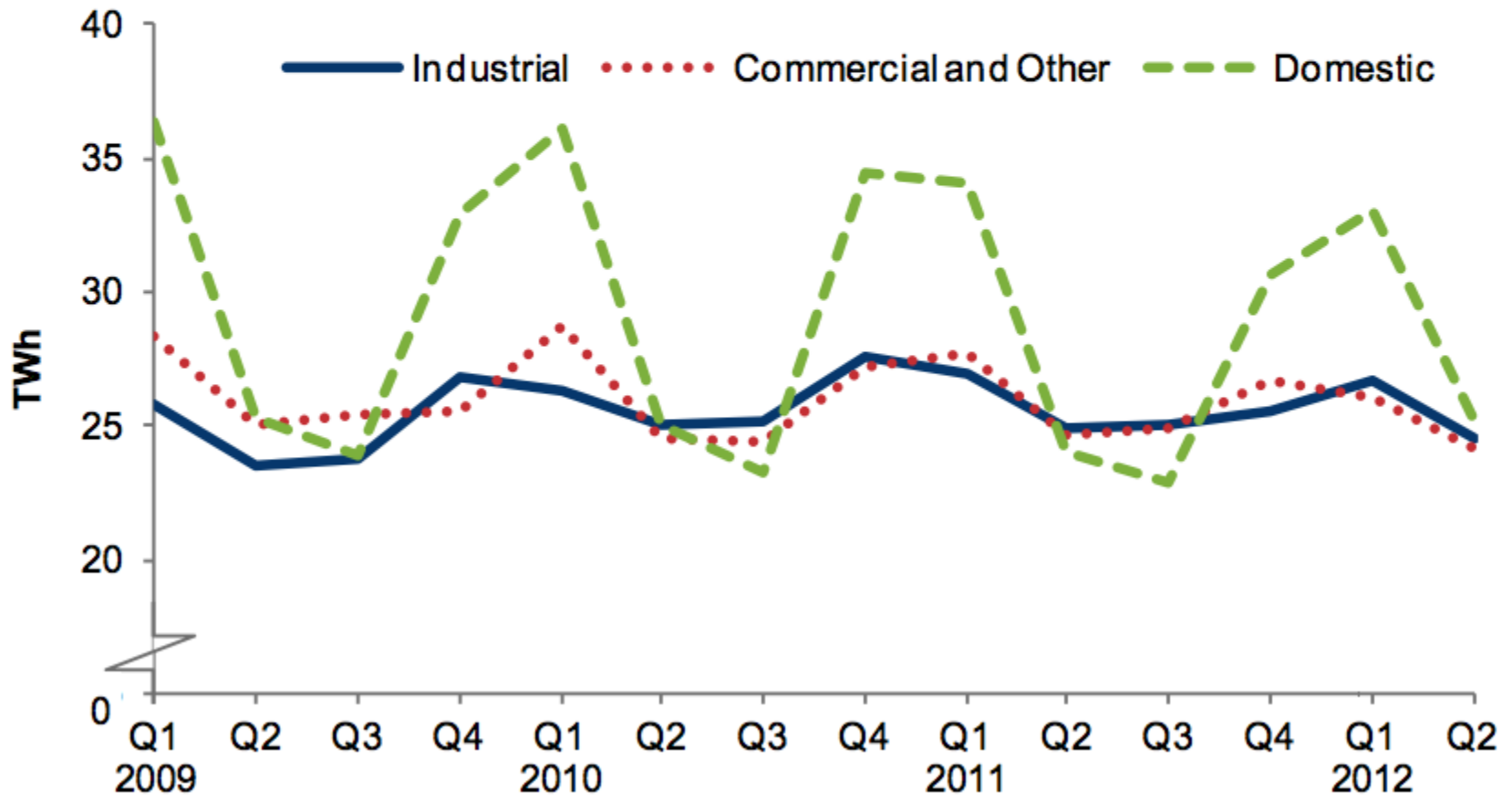


Global electricity growth - Europe



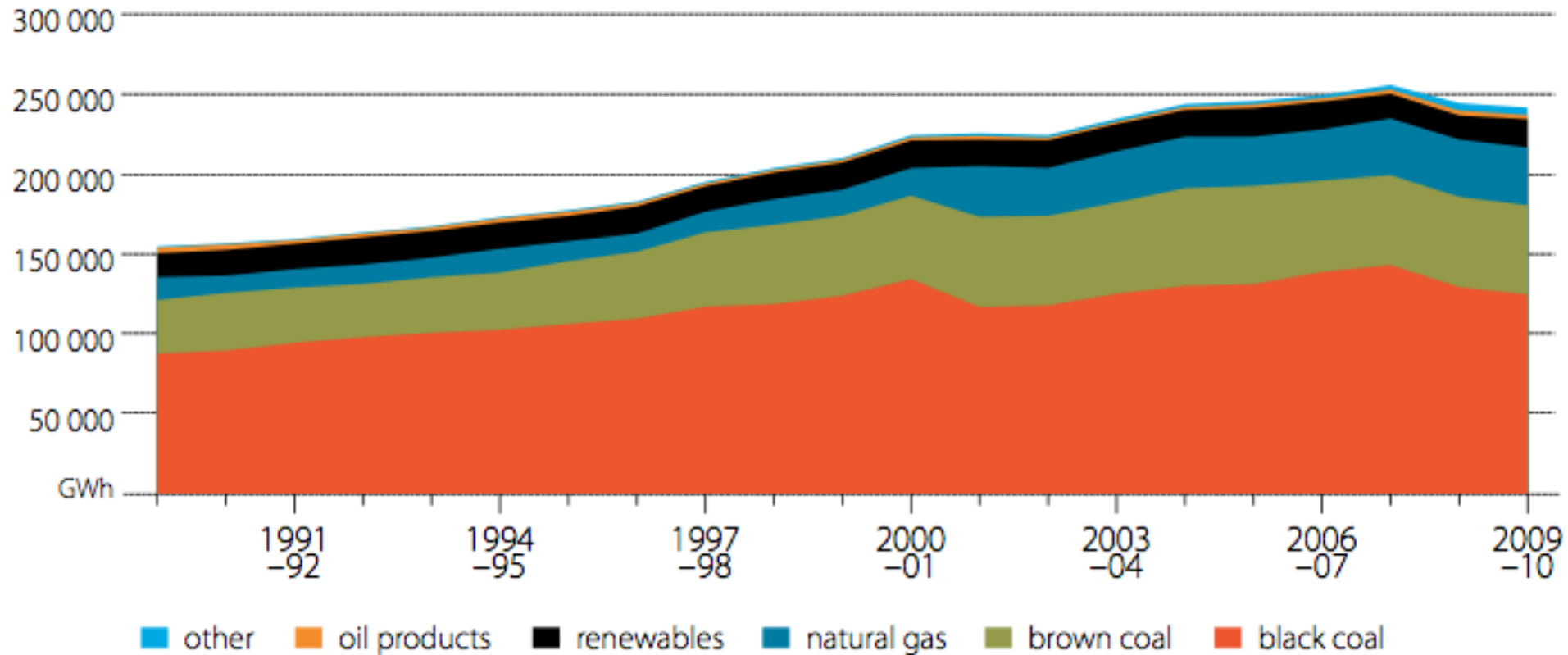
Global electricity growth - UK

Chart 5.4 Electricity Final Consumption



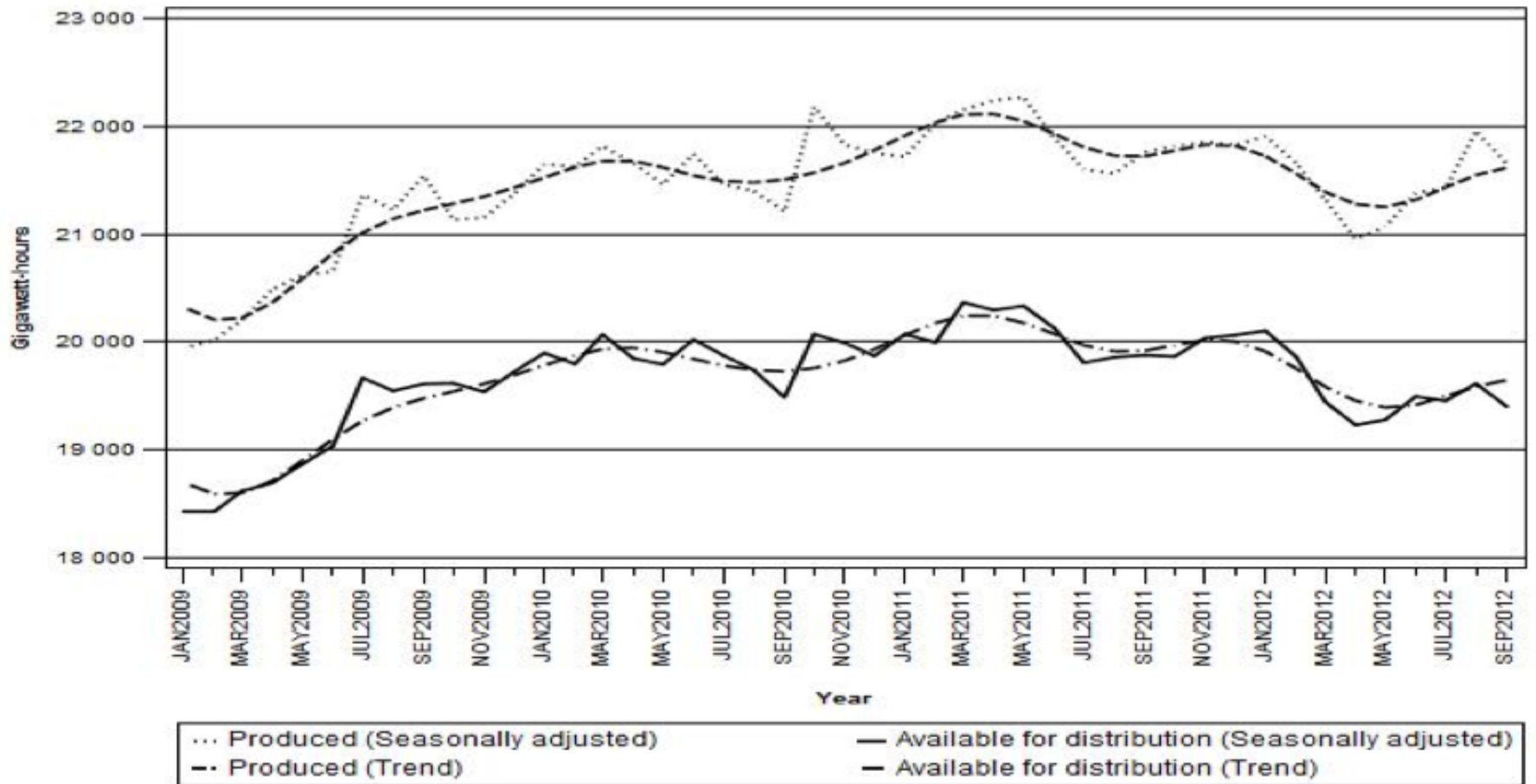
Australian electricity ...

4 Australian electricity production, by fuel



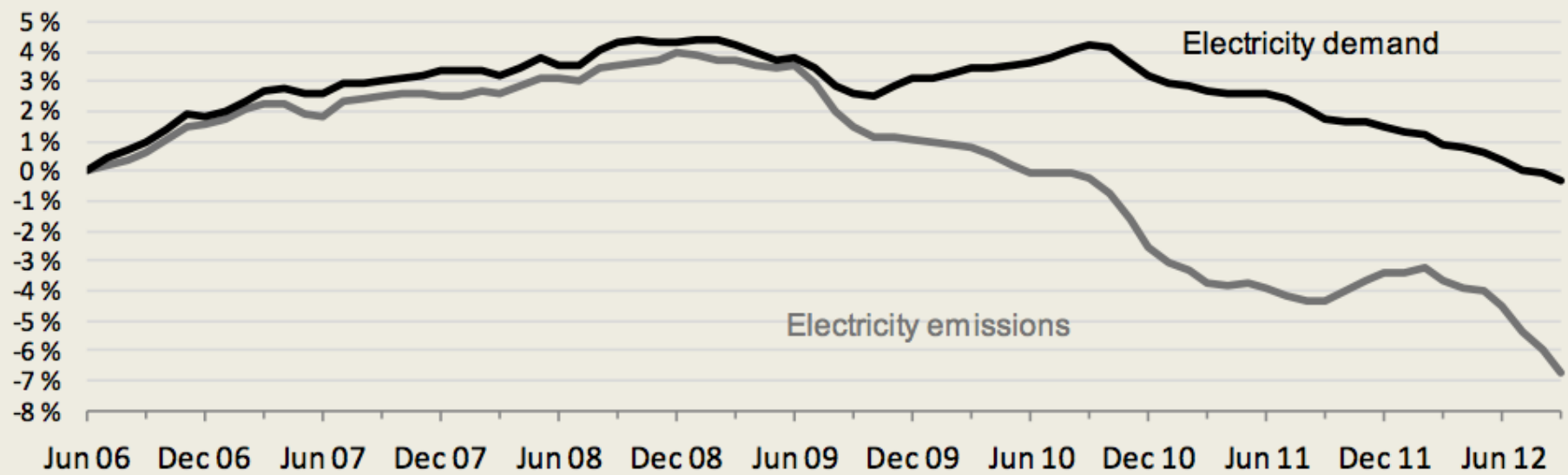
South Africa electricity 2012...

Figure 1 – Electricity produced and available for distribution in South Africa, seasonally adjusted and trend

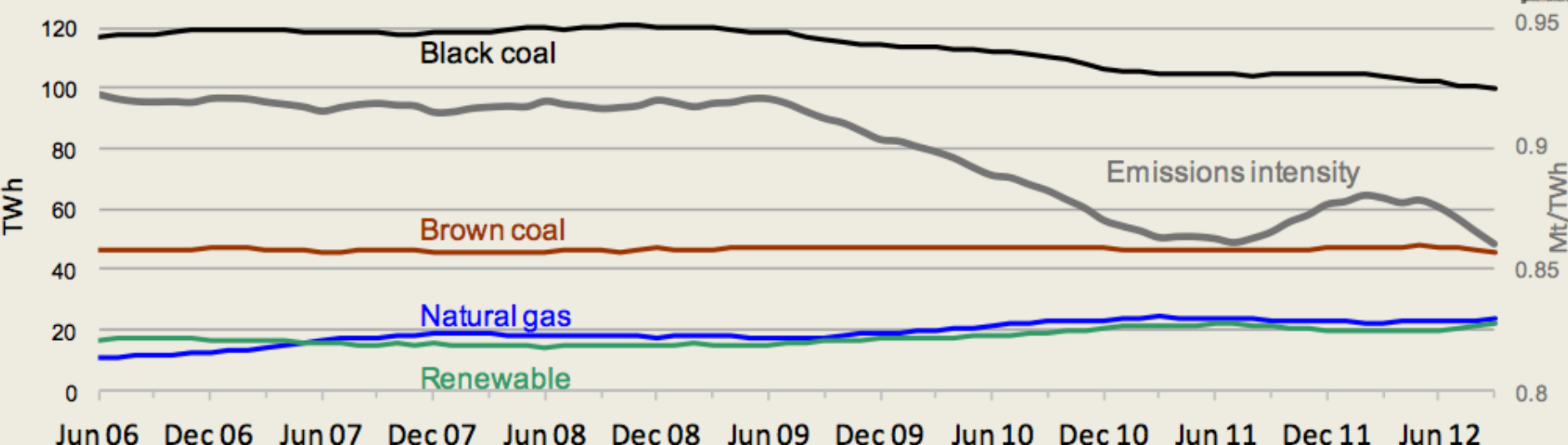


Australian electricity consumption 2012...

Changes in electricity generation and emissions

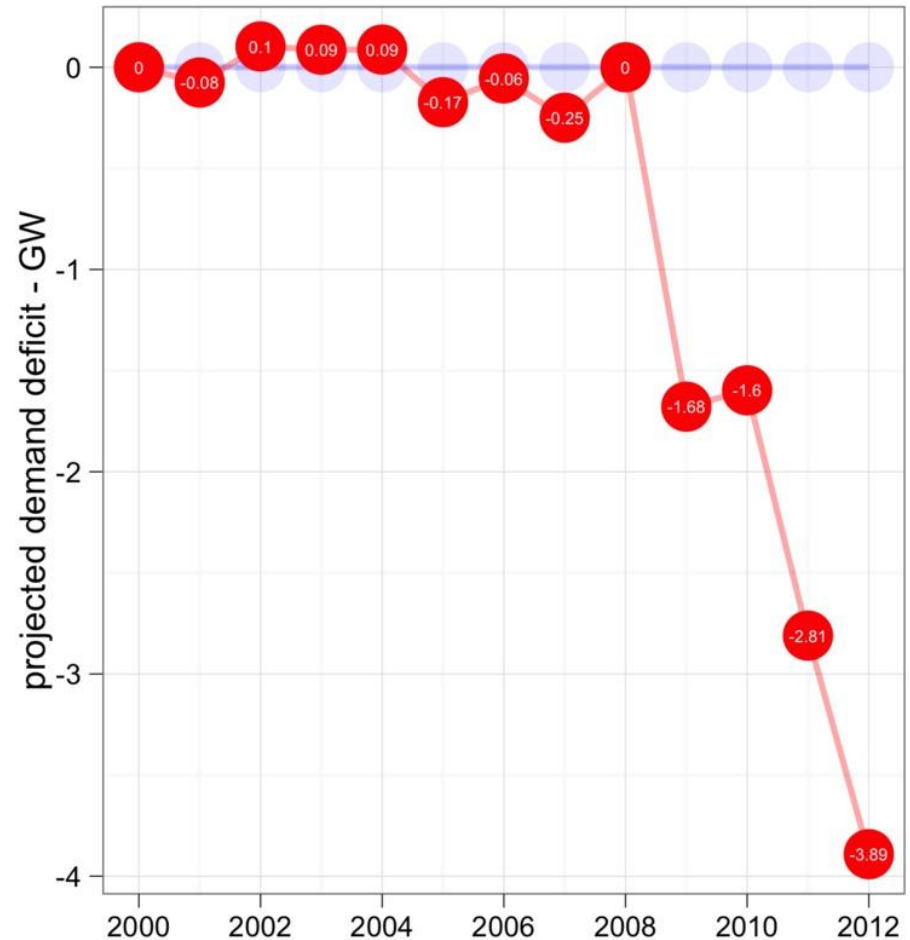
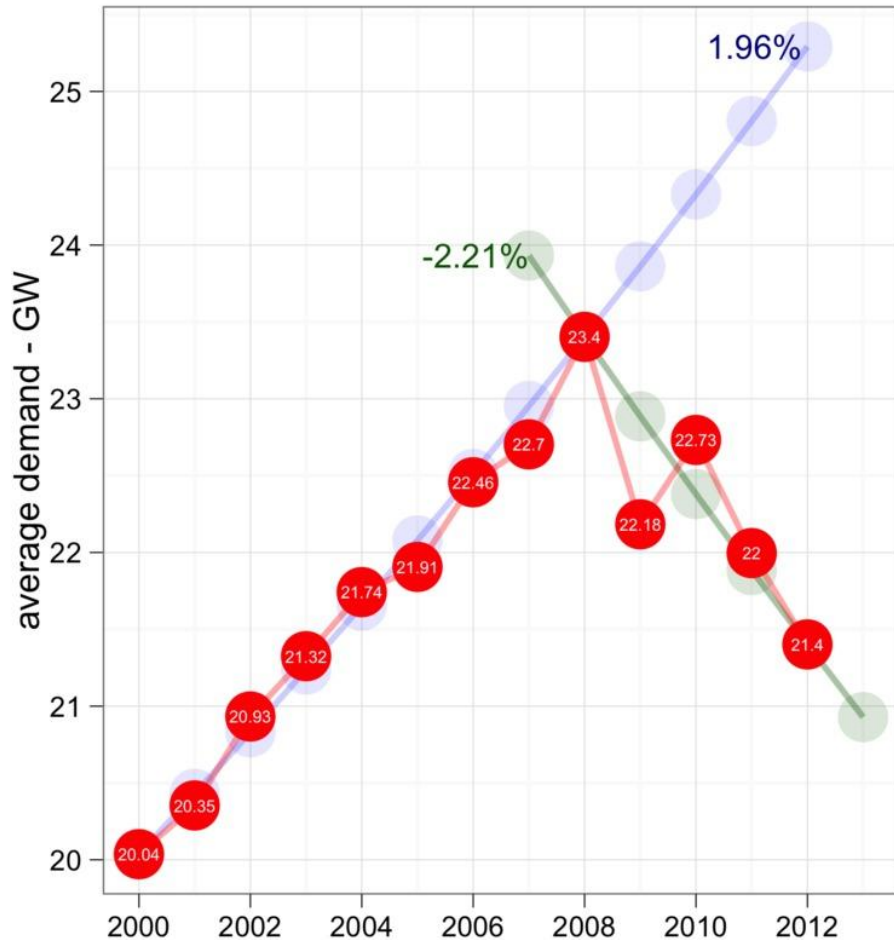


Eastern states electricity generation and emissions intensity

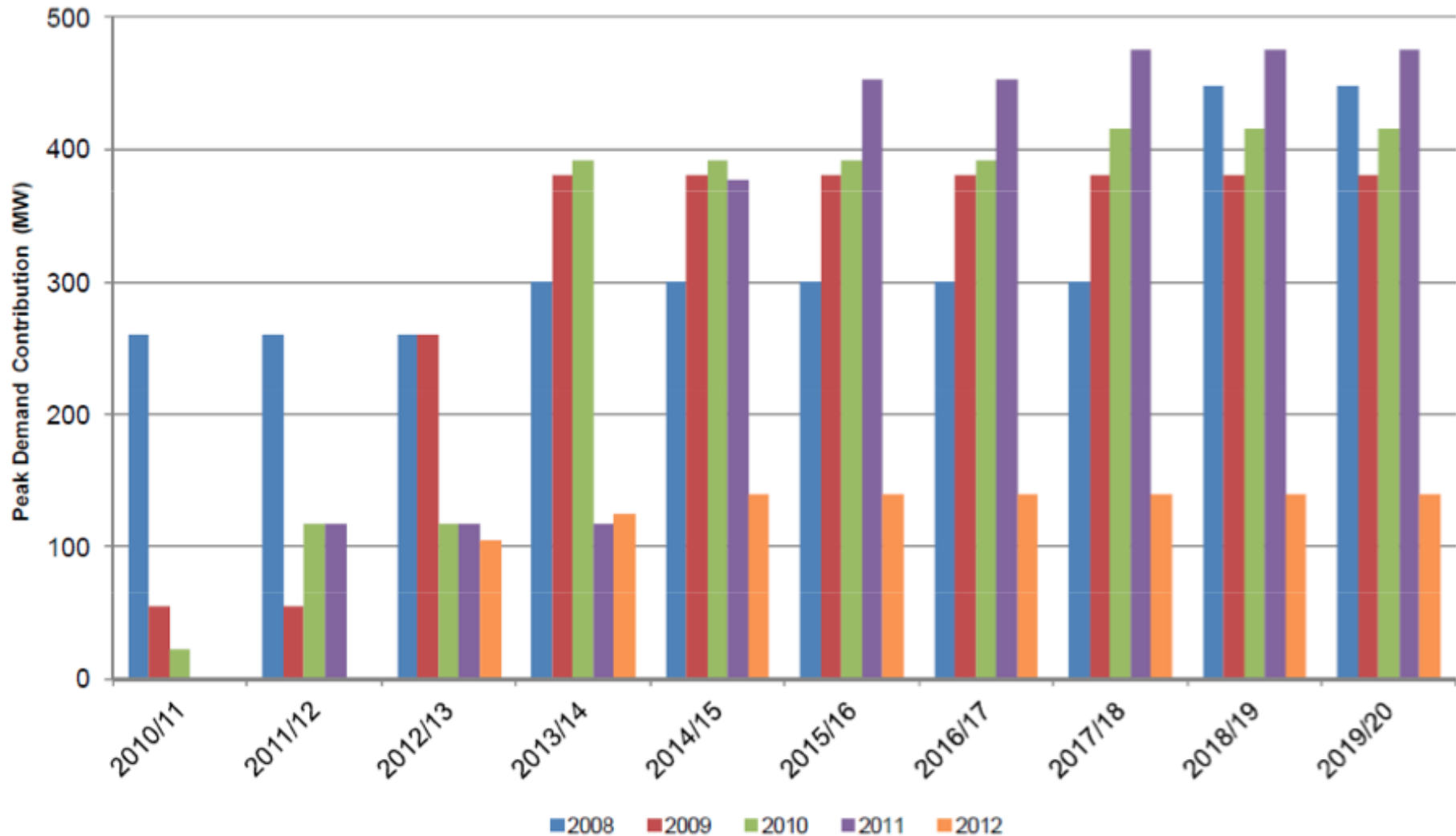


Australian electricity demand 2012...

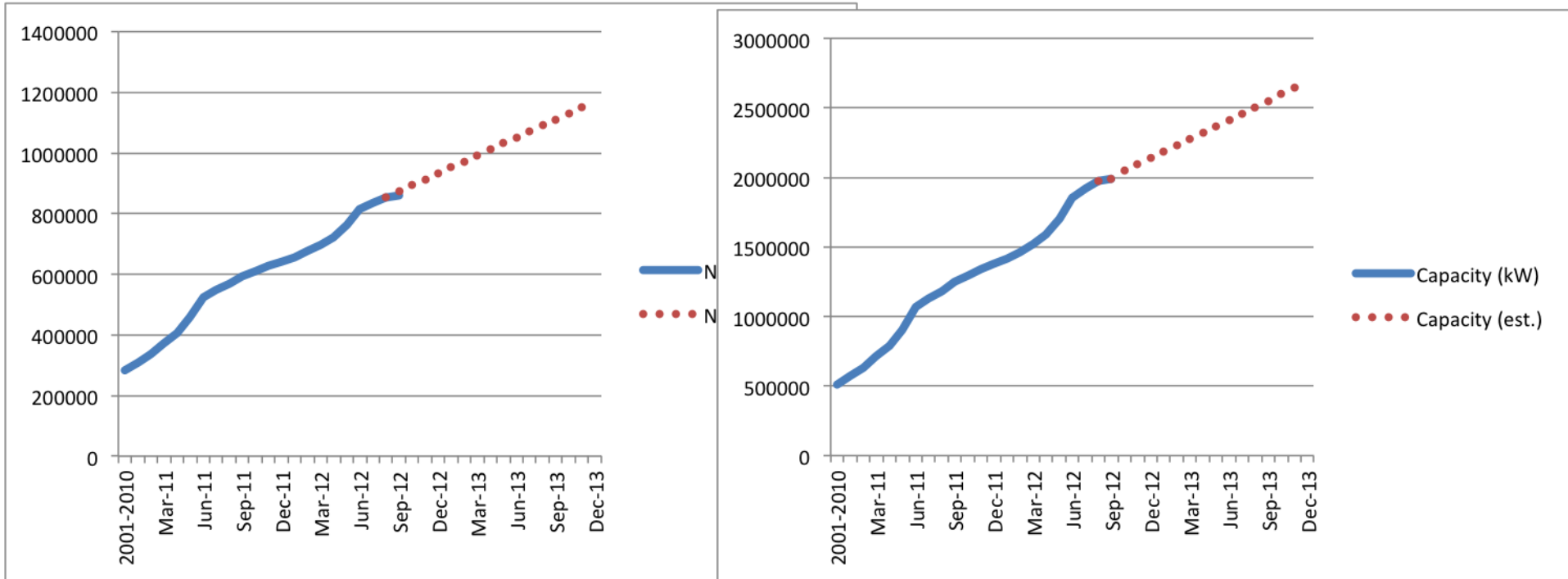
NEM : 1-July to 30-September



Electricity market projections – WA

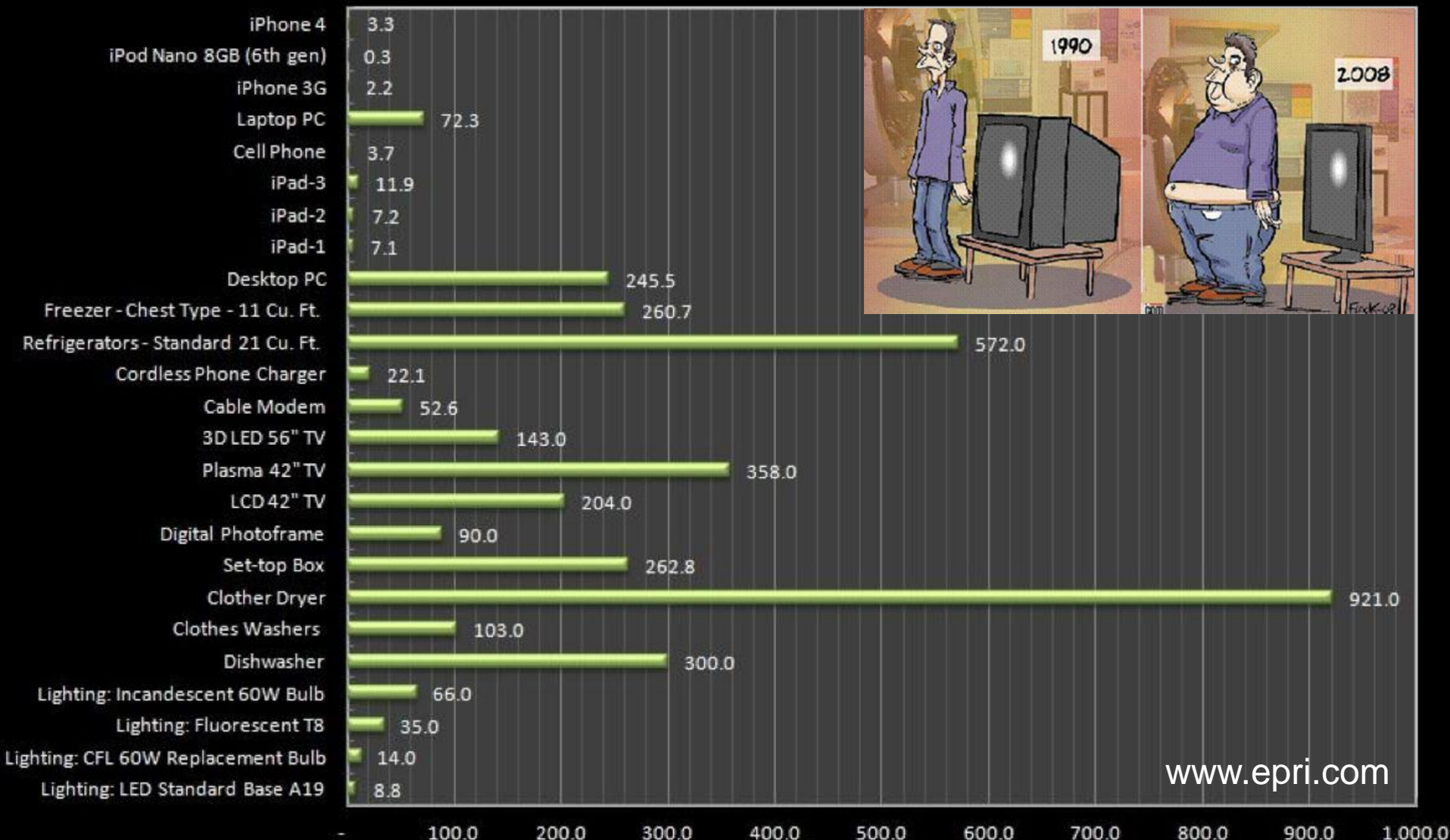


Solar on Australian homes

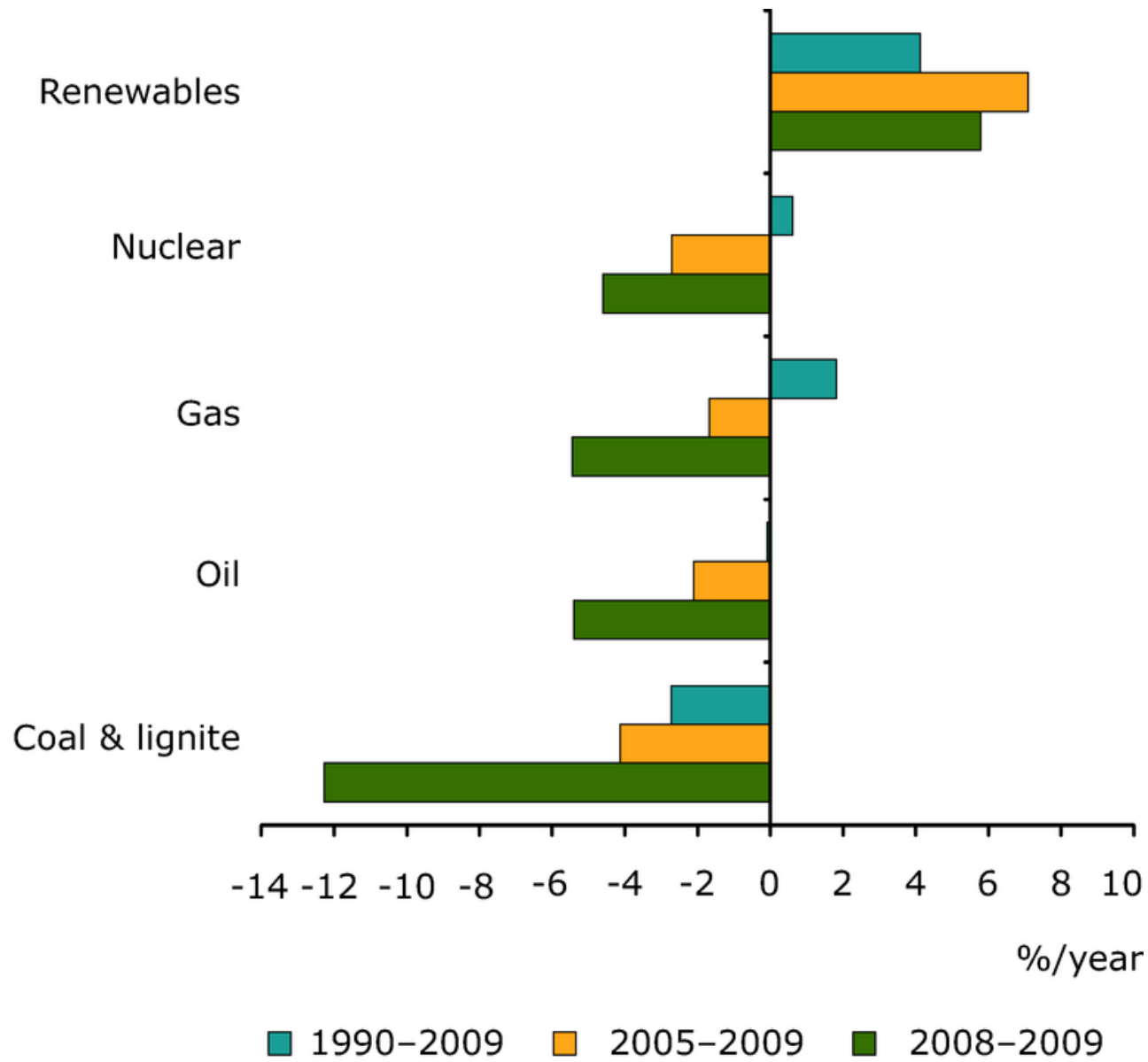


Technology energy use

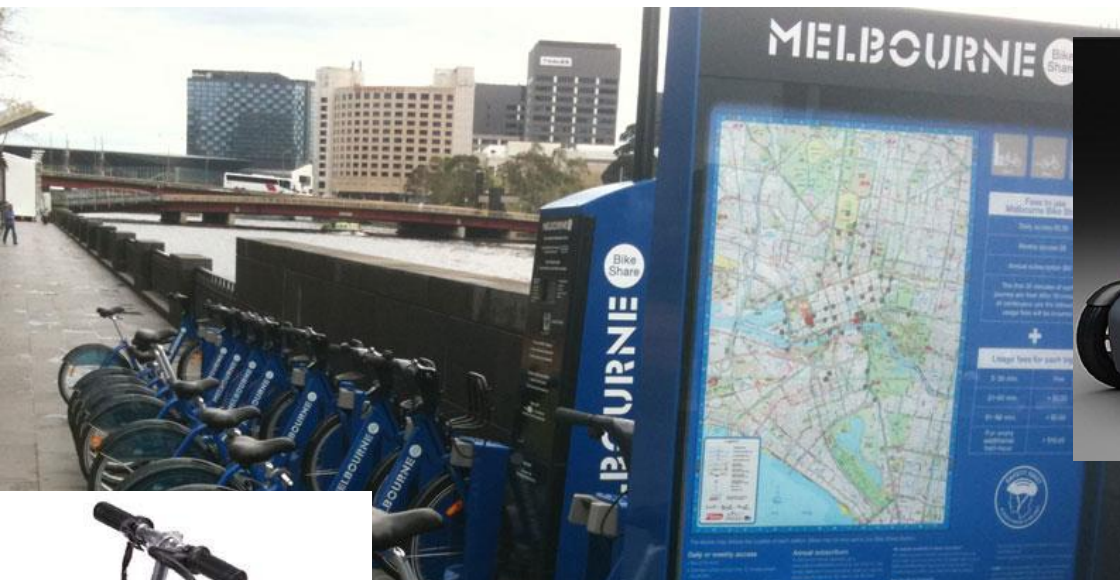
Annual Electricity Energy Consumption (in kWh)



Global electricity growth

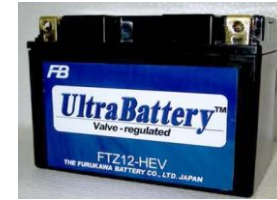


Rapid change - Personal mobility



Private transport

- Fuel efficiency, other energy sources
- Transport
- Energy storage key
- New technologies may be disruptive

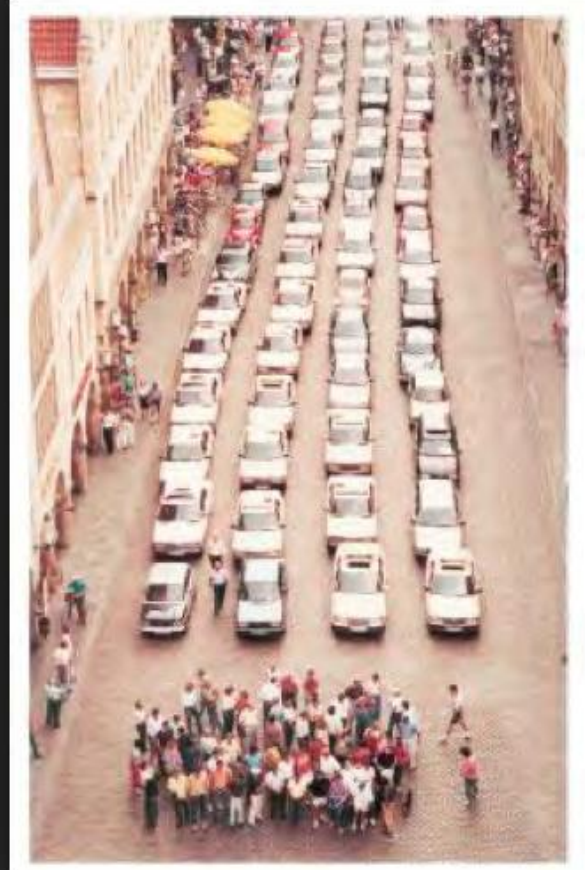


City of Münster, Planning Department

Comparison of amount of space required to transport 72 people



72 bicycles = 90sqm
Based on 1 person per bike



60 cars = 1000sqm
Based on 1.2 people per car



1 bus = 30sqm
Based on 72 people per bus

Commercial vehicles

Smith Newton electric truck

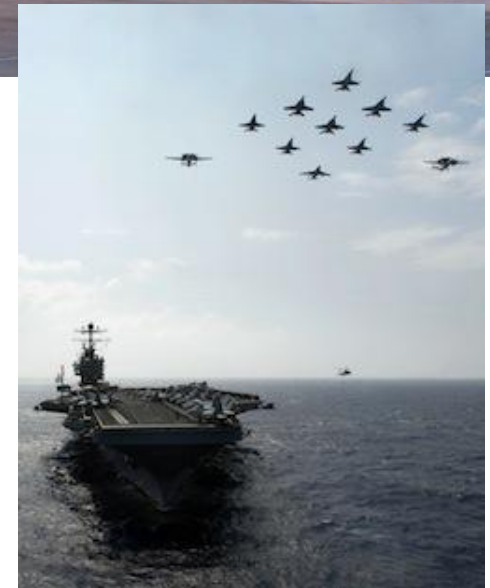
Mega electric diesel hybrids

- London Bus
- Haul Pak + Earthmover
- Mitsubishi Fuso
- Honda prime mover
- Oshkosh Military Vehicle



Flying and floating fuels

- February 25, 2008 – Virgin Atlantic Stages the First Biofuel Flight
- October 30, 2007 - U.S.A.F. Tests New Synthetic Fuel on Plane
- February 14, 2011 – Qantas follows US Military to algae biofuels
- September 13, 2011 – US Navy announces by 2016 Green Strike Group, powered by renewable diesel-electric engines, nuclear power and aviation biofuels, is able to operate independent of fossil fuel supply line threat or disruption



Smart grids, smart houses (and farms)

- Integrated energy planning
- Smart grids to coordinate the actions of devices such as loads & generators



Green cities

■ Global

- Tianjin Eco-City China
- Ulsan Ecocity Korea
- Masdar City UAE

■ Australia

- City of Sydney – 70% CO2 reduction by 2030
- City of Melbourne
- Stirling City Centre, Perth
- City of Cockburn
- City of Fremantle
- Yanchep – 2 x 100 000

■ Local government critical



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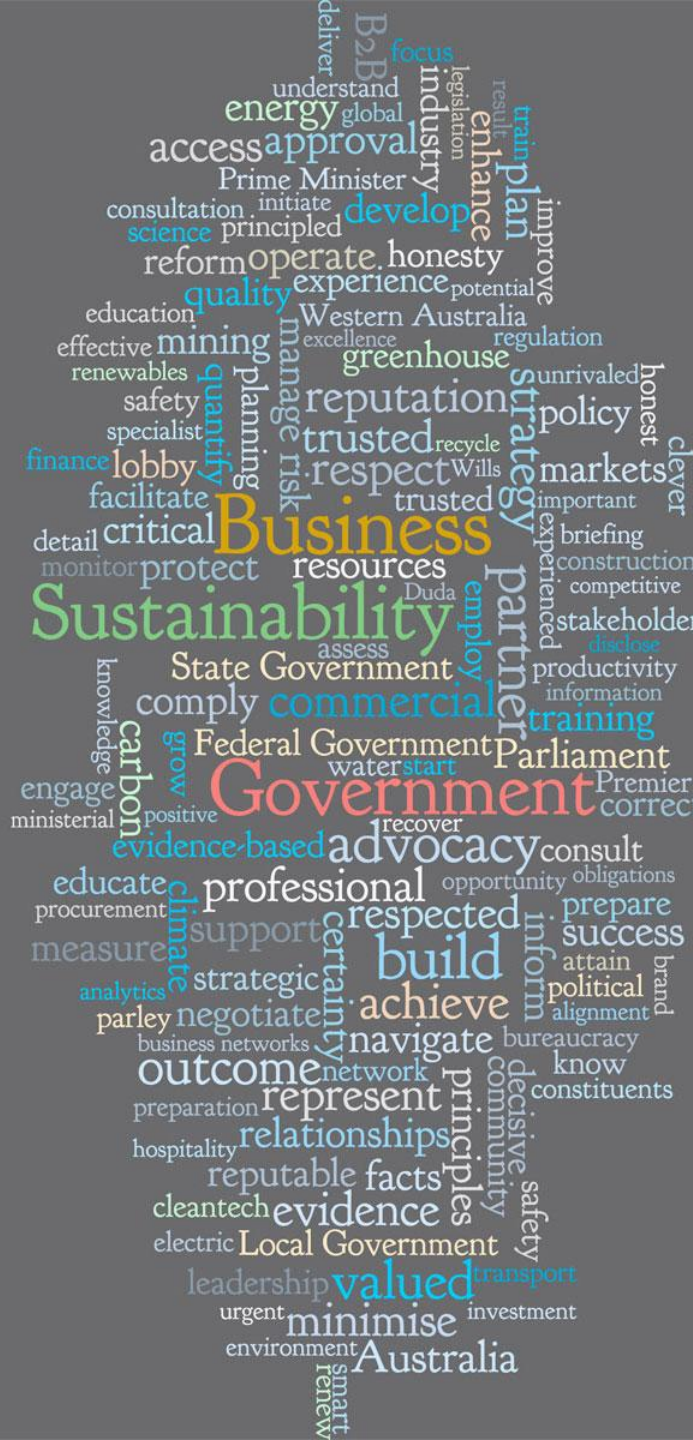
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