GRATTAN Institute

Renewable energy and innovation: a particular policy challenge

Sustainable Engineering Society

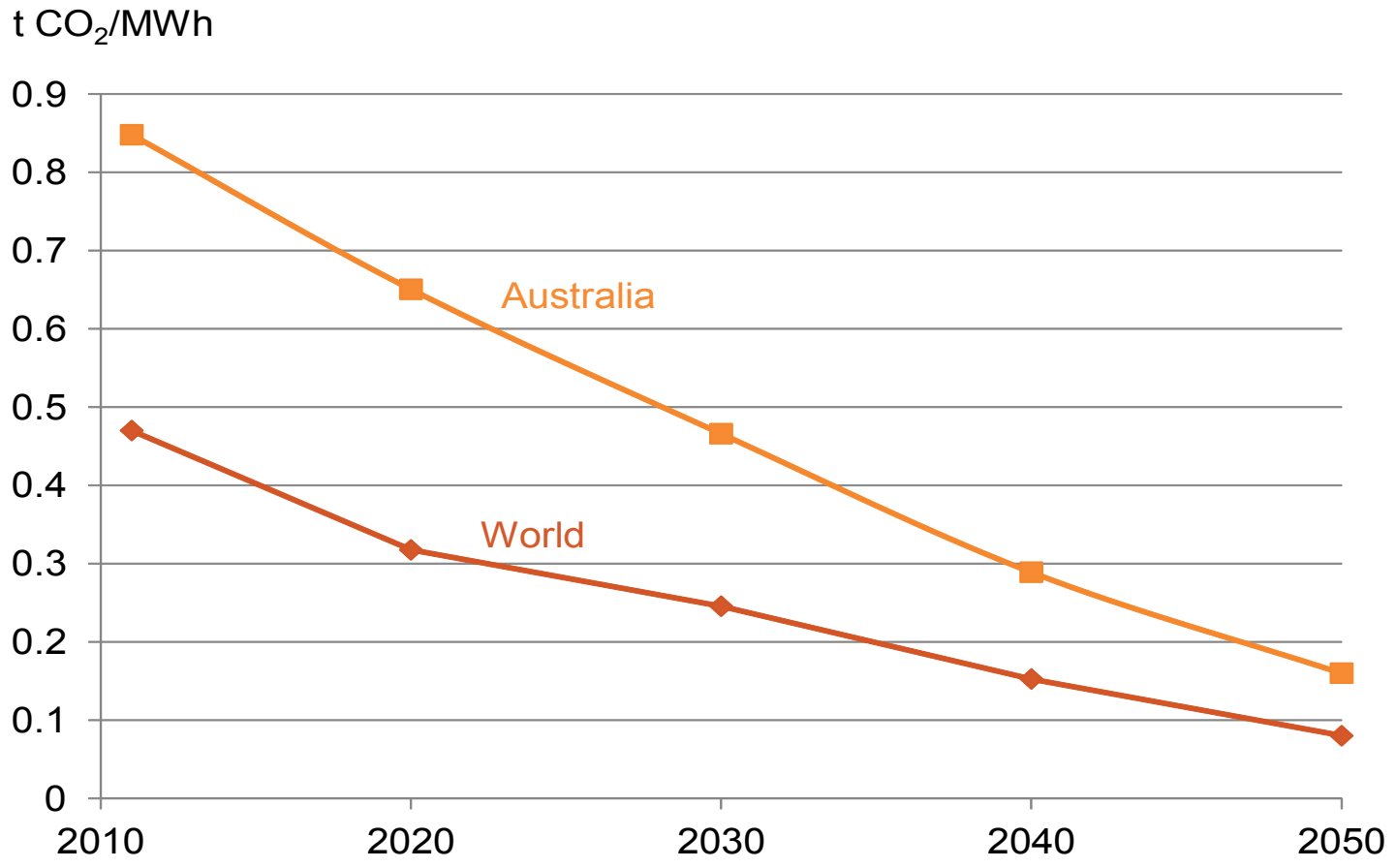
Tony Wood
28 October 2014

Outline

- Clean (low-emission) energy investment shares the same challenges as all new technologies, with the added, and major challenge, of needing policy drivers.
- Successes have generally been narrow and volatile, so there are still lessons to be learned about what works, what doesn't and unintended consequences
- Effective policy needs to build on clear objectives and understand the arguments of vested interests.

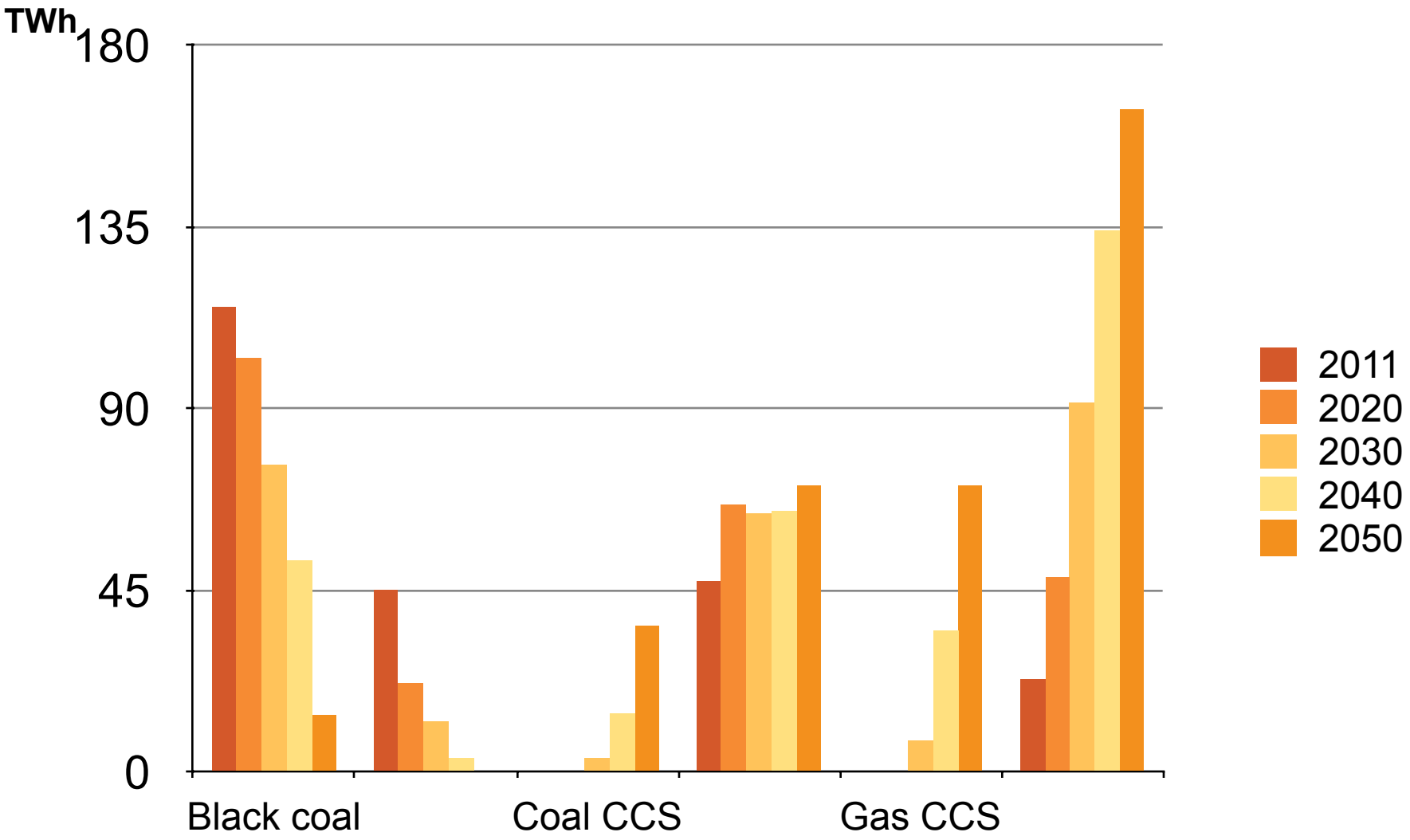
Low-emission energy has value in a broader context

Projected electricity emissions intensity (450/550 ppm)



Source: Australian Treasury

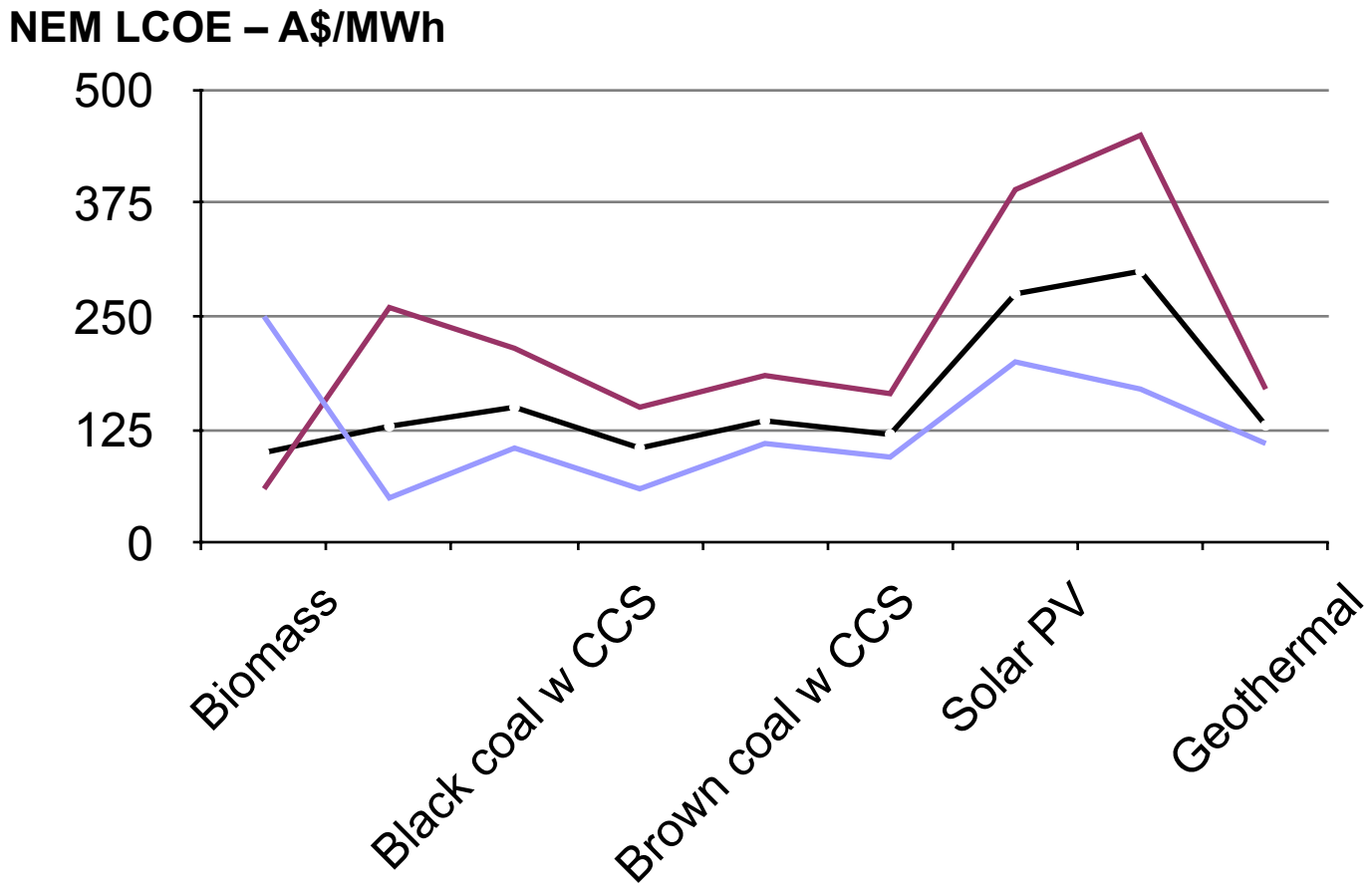
A dramatic transformation is implied



Source: Australian Treasury

Easy to model, hard to deliver

Cost estimates: illuminating and unhelpful



Source: Grattan Institute from industry estimates

They are all to expensive, unless the market values "clean"

And, they face real, non-cost barriers

- Grid infrastructure: wind, solar, geothermal, bioenergy
- Grid integration: wind, solar
- Resource data: solar thermal, geothermal, CCS
- Regulatory framework: geothermal, CCS, nuclear
- Scale and finance: CCS, nuclear, possibly solar thermal

Why governments should intervene

- The challenge is to decarbonise Australia's electricity sector within forty years, whilst maintaining security of supply and affordability

- Despite current projections, none of the assessed technologies can produce power at a scale and at costs similar to today's electricity

- Pricing emissions is the best start, but will not be enough, due to:

    - Government regulatory barriers, including transmission and subsidies for existing technologies

    - High costs and low returns:

        - Finance, minimum scale, resource data and regulation

        - No premium, systemic under-pricing of carbon

How government should intervene

- Promote an efficient market
  - Provide a credible, long-term pricing signal maximise predictability
  - Map resources
  - Reduce existing subsidies
  - Reform network regulation
- Support low emission technologies
  - Research and development – national interest and comparative advantage (ARENA)
  - Demonstration and early deployment – support a variety of options (CEFC?)

Several options have been tried

- Investment incentives
  - Capital grants, low-cost debt or equity

- Contracted revenue support
  - Feed-in tariffs, government-backed power purchase agreements

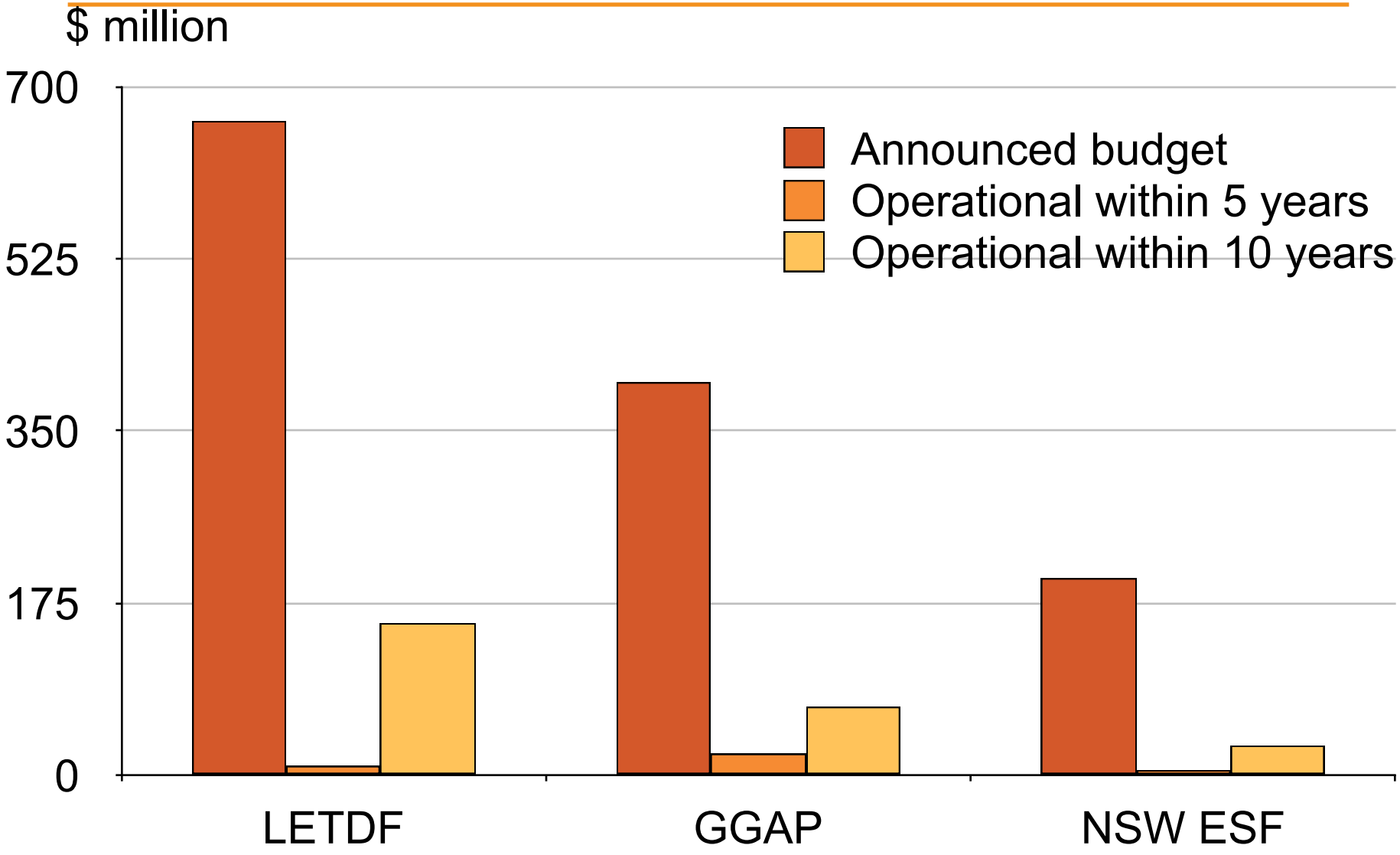
- Tradable green certificate schemes
  - Australia: Renewable energy target
  - UK: Renewable obligation
  - USA: Renewable portfolio standards

Several options have been tried

Policy	Strengths	Weaknesses
Capital support	*Can address spillover risk* *Removes policy risk*	*Does not lead to scale* *History shows poor deliverability*
Firm revenue support (Feed-in tariff, PPA)	*Provides strong investor certainty*	*Price setting is usually a fraught process* *Can drive "winner's curse"*
Market based support (RET, RPS, RO)	*Delivers a target efficiently*	*Delivers on-the-shelf technology* *Creates confusion within an ETS*

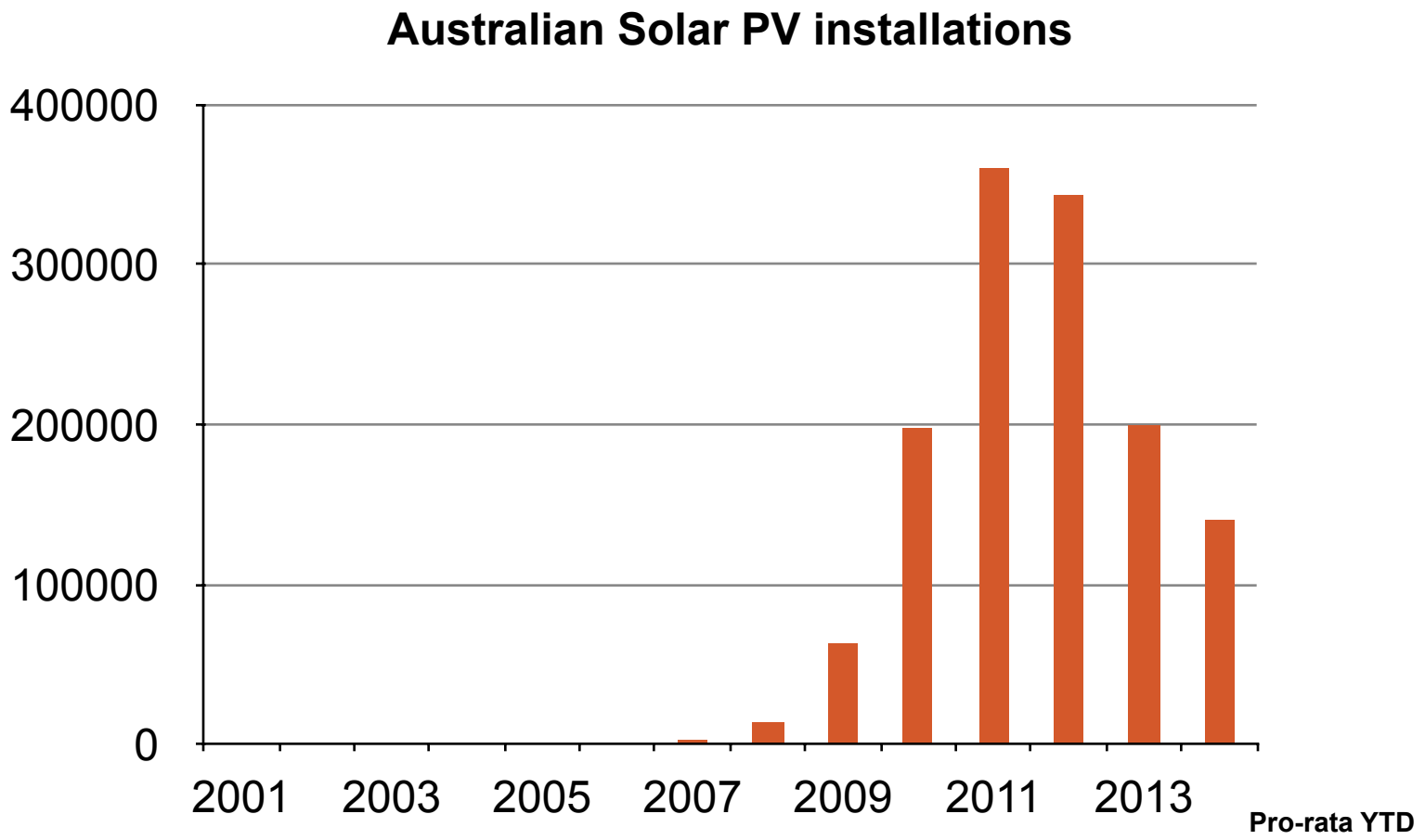
Unintended consequences and political cycles are constant features

Capital grants generally under-deliver



Source: Grattan Institute analysis (2011)

Feed-in tariffs feature boom and bust

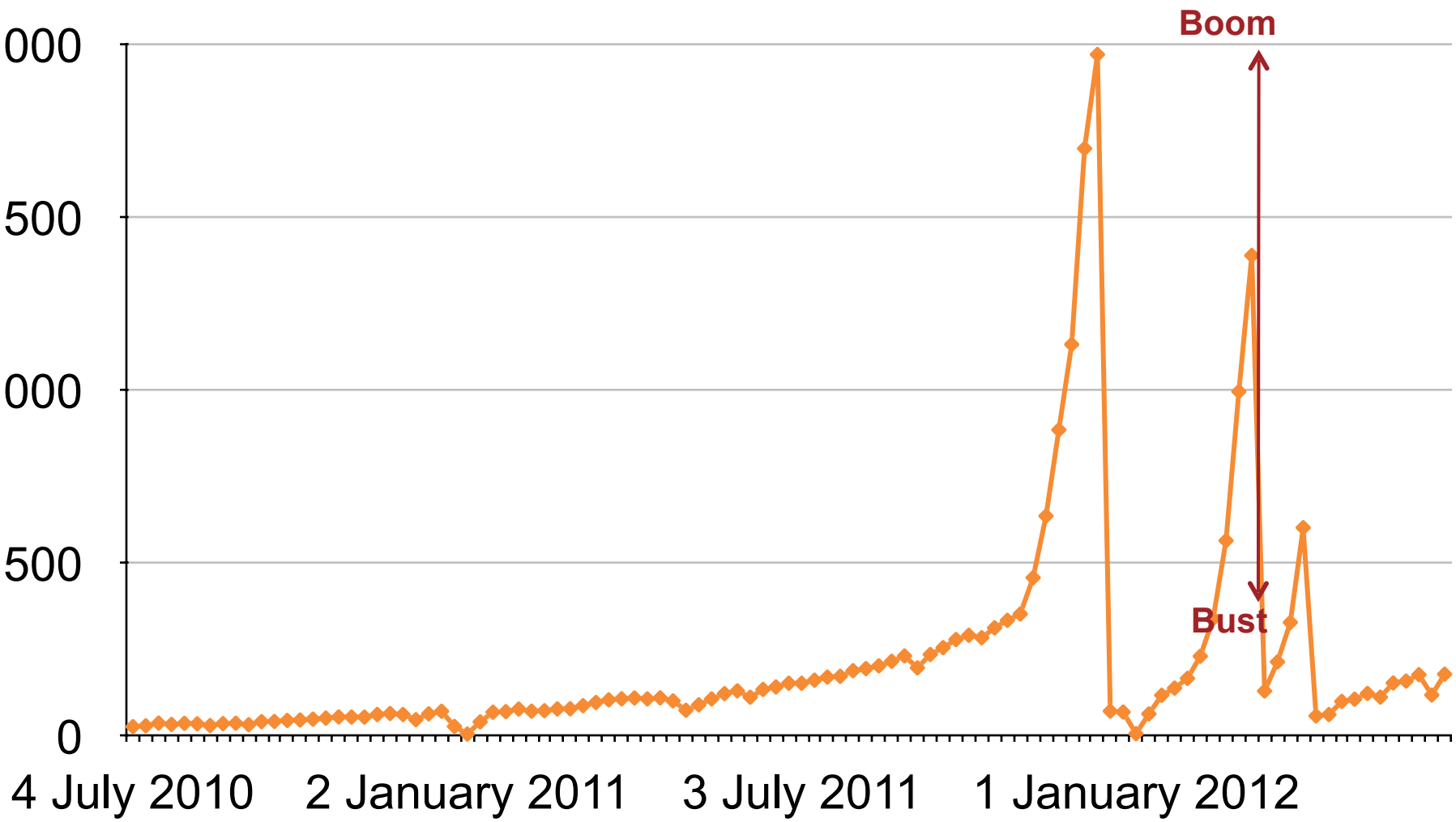


Source: Clean Energy Regulator

1.3 million systems and 3.6 gigawatts of capacity

The Australian experience is not unique

Total weekly solar PV installations in the UK



Source: Department of Energy and Climate Change

So, what?

•There is great uncertainty regarding policy drivers for low emission demand and technology developments for supply of clean energy technologies.

•Clarity of objective is the first step. The rest of the policy framework should be based on addressing market failures and barriers once an emissions constraint has been introduced, however that is structured.

•Other objectives for clean energy can sound appealing but will ultimately lead to the fatal flaws.

•The requirements of policy are credibility, flexibility and predictability. Certainty is an illusion

•Governments need to address early-mover technology and carbon market risks.

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