



Information  
*when you need it*

# Farm Energy Efficiency: Policy initiatives and grid connected bore pumps

This project is supported by funding from the Australian Government



is a joint venture between



Best Practice



# Australia: The “Saudi Arabia” of the renewable energy world

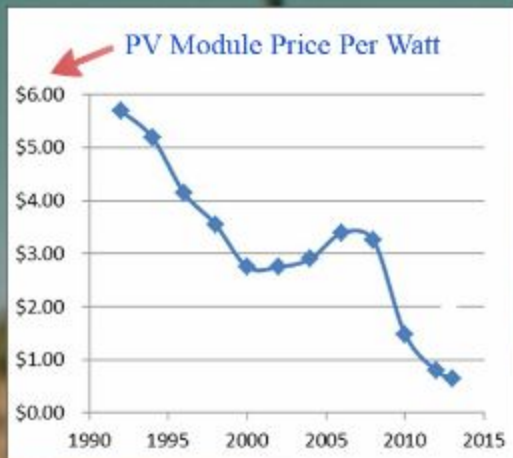


**JEREMY RIFKIN**

Author, *The Third Industrial Revolution*

Australia has more solar radiation per m<sup>2</sup> than any other country on Earth

# Solar PV Technology now more affordable than ever



PV prices around \$1300-\$1600 per KW  
(solarquotes.com.au) for domestic systems

# Welcome!

## CFI Extension and Outreach Project

- Nitrogen Management
- Climate Risk Management
- **On farm Energy Use**
- Natural Assets



**Objective:** Improve Energy and Input Efficiency on cotton farms, that incorporate emissions management issues endorsed by industry



# Agenda

1. **Energy Policy** incentives
  - Emissions Reduction Fund
  - Renewable Energy Target
2. **Solar/Grid** Case Study
  - Results
  - Implications



# Emissions Reduction Fund

Policy framework designed to deliver emissions reduction by 2020 under the Kyoto agreement

A range of 'methods' (or rules) to access \$2.55 billion dollars in incentive funding to reduce emissions

- Cotton-Nitrogen and
- Energy Efficiency Methods applicable to irrigators

**DIRECT  
ACTION  
PLAN**



WHITE PAPER

# Emissions Reduction Fund Cont'd

## Energy Efficiency Method

- Implement & document changes to improve energy efficiency from a 'business as usual scenario'
- Register an ERF 'Project' and register a bid for CO2 in the reverse auction process
- Critical mass for abatement will require aggregation across farms for ERF participation (Min bid 2,000t CO2)

Clean  
Energy  
Regulator



# Renewable Energy Target

Two components to the RET:

**Large scale** creation of Renewable Energy Certificates (REC's) traded forward or on spot prices

**Small Scale** REC's  
Household and small scale commercial generation  
Upfront REC payment for Mwhrs credited for 15 years of project





# Namoi Valley Case Study #1

Irrigation Bore User at Wee Waa,  
NSW

Model assumptions

1 bore: **600 MW hrs** per year

150kw grid connected pump

Installed **100kw** Solar System

**6c/kwhr** Feed-in-tariff

**13c/kwhr** variable cost of electricity



# Case Study (interim) Results (user over 160 MW/p.a)

|                           |                        |
|---------------------------|------------------------|
| Avoided Electricity (p.a) | 78 MW of 600MW (13%)   |
| Surplus (Grid Fed p.a)    | 100MW of 178MW (56%)   |
| Gross Capital Cost        | \$274,000              |
| REC Contribution          | \$104,000 (38%)        |
| Payback Period            | Year 15 of 25          |
| Avoided Emissions         | 2,134t CO <sub>2</sub> |

Cost of Solar (LCE) = \$0.054/kwhr  
Cost of Grid (Wholesale) = \$0.13/kwh



Namoi Valley Case Study #2  
(user under 160MW per annum)

50KW Bore

50KW Solar installed

106MW/p.a used

25% of demand offset

107t CO<sub>2</sub> emissions avoided

Payback Year 11 of 25

# Implications



- **Moderate returns** plus significant GHG emissions abatement on RET policy initiative (case study)
- ERF energy efficiency methods **require scale** and a may require aggregation
- Industry working on 'pilot' ERF projects on nitrogen and energy efficiency methods with DotE to further analyse economics

# Conclusion



*\*Take  
home message*

- **Emissions abatement** can be achieved through solar PV and irrigation pumps
- Economics of solar: **dependent on RET** to reduce capital costs
- ERF Tender: **\$C unknown**: est. \$5-\$17/t
- **Aggregation likely** for ERF projects; audit costs substantial

Thank you  
Follow cotton e-news for updates



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