



> THE MARK
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*Feeding People
Enriching Lives*



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Teys Australia – Red Meat Processor

- Beef Processor and Exporter
- 10 Eastern Seaboard locations;
- Exporting to 40 Countries;
- Teys Family operated since 1946;
- Over 4000 employees;
- Potable water user;
- Large Energy Demand.



Energy Productivity Opportunities

- What are the emerging technologies in energy, water and waste in the next 5 years?
- What technologies will drive up Energy productivity?

Renewable energy and storage, 3D printing, biodigesters, waste to energy, drones, “the internet of things”....what investments are bringing progress?



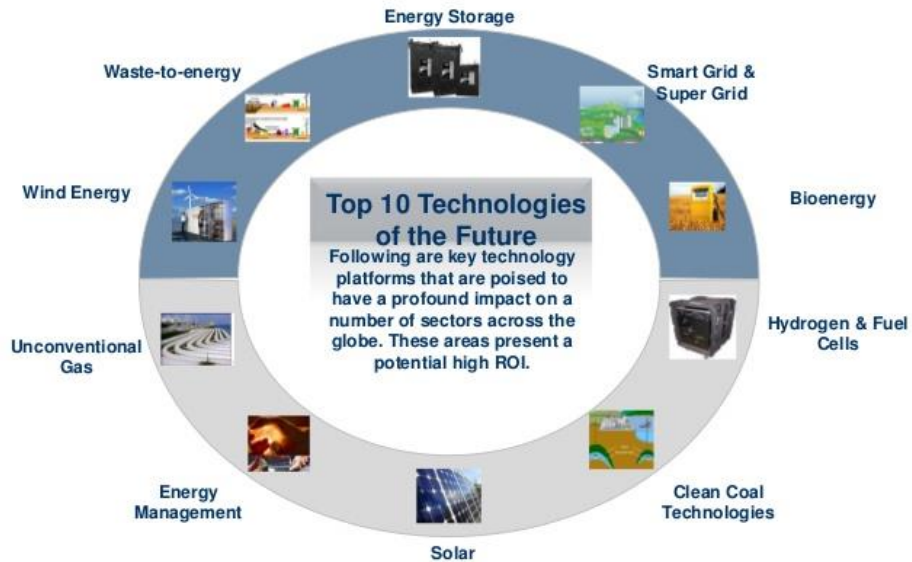


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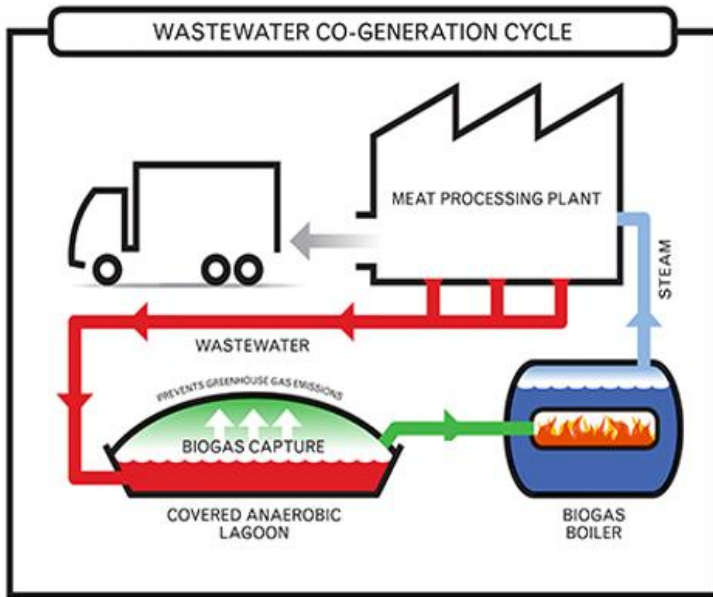
Focus area	Possible Savings in site energy spend Recent action - Nothing done	Paybacks (yrs)
Utility waste cutting in operations*	1% - 5%	< 1
Strategic energy procurement	5% - 10%	< 1
Water management*	2% - 10%	1 - 4
Management systems*	1% - 5%	1 - 4
Boiler/steam system optimisation	2% - 15%	2 - 4
Refrigeration systems	1% - 15%	2 - 5
Biomass projects	5% - 30%	4 - 10
Solar PV	2% to 10%	3 - 5
New biogas projects	10% - 20%	5 - 10

* Waste management and management systems go together to get maximum savings

Top 10 Energy Technologies to Watch by 2020



Covered Anaerobic Lagoons (CAL's)



- Bacteria convert organic compounds (COD) to Biogas in an environment without oxygen;
- This removes organic compounds from effluent, generating renewable energy.

Covered Anaerobic Lagoons



- CAL's feature 100% Biogas capture in their design;
- Biogas produced when red meat processing effluent is digested, is methane rich (55 – 70%). High calorific value and presents a significant opportunity to offset conventional fossil fuels for thermal energy.



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Waste to Energy:- close up

- Waste water anaerobic digestion –
 - Fuel to boiler = ***Renewable energy generation;***
 - 18 GJ (MW*h) energy generated
 - Nutrient rich by products = ***Soil conditioning;***
 - Local landholder agreements
 - High quality treated water = ***Reuse;***
 - Up to 1 ML/site
 - CO₂ abatement = ***Captured biogas (CH₄);***
 - 113 000 tonnes CO₂e emissions

CAL's → *Biolac BNR*



- The significant organic nutrient removal produced by the CAL's, facilitates downstream, aerobic treatment processes (***Biolac BNR***);
- High quality effluent for discharge helps to support sustainable operation (***reuse opportunities***).

**Biological Nutrient
Removal (BNR)
system Clarifier**



**CAL (Covered
Anaerobic Lagoon)**





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What else are we focussing on?

- ***Utilities Reduction Team***, is working on:
 - *Process improvements;*
 - ***Behavioural change;***
 - *Technology and investment: getting it right;*
 - *Quarantined funds to support.*
- ***Decisions are driven both by ROI and by commitment to demonstrate CSR at the highest level.***
 - *Energy improvements have a lot of other benefits...*



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Strategic Fit: A CSR framework aligned with international standards

- Global Reporting Initiative (GRI) G4 Reporting Framework
 - A tool for understanding and reporting the organization's sustainability performance terms of social, economic and environmental impacts – whether positive or negative.
 - Greater organisational transparency and accountability.
 - 2014-2015 Financial year published.
- Review ISO 26000; ***Alliance for Water Stewardship***
 - Guidance document
 - Encourages organizations to discuss their social responsibility issues and possible actions with relevant stakeholders.



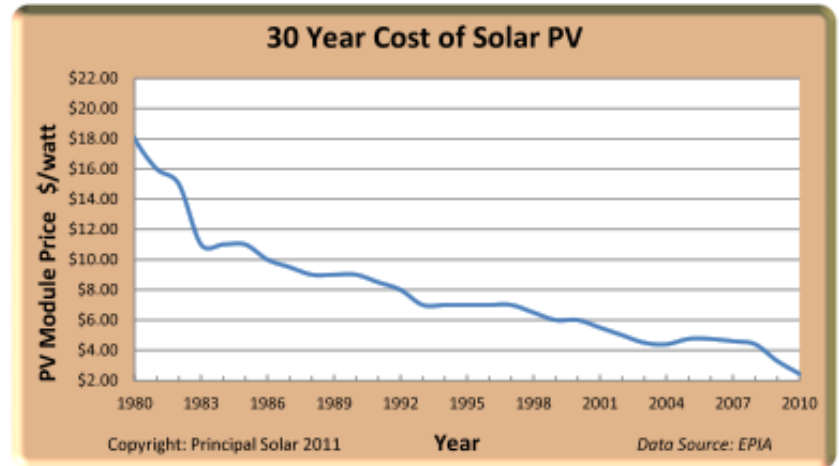
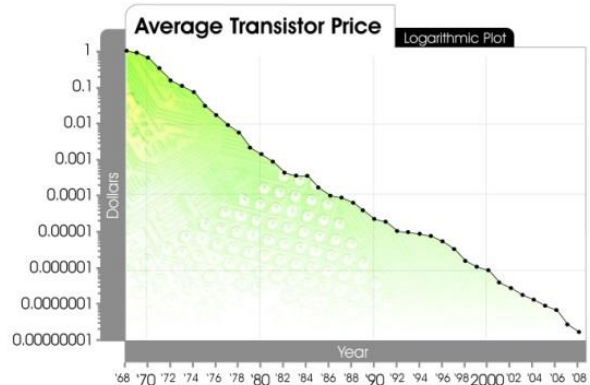
Recognition as a leader in CSR

- Early Adopter GRI reporting G4 Framework (from GRI data base)
 - 73 organisations in Australia
 - 1 organisation in 'Agriculture' sector
 - 4 organisations in 'Food & Beverage Products' sector
- External Awards (Nov 2014 – December 2015)
 - **Business Eco efficiency Award** (2015 QLD Premiers Sustainability Awards)
 - **Premiers Award** (2015 QLD Premiers Sustainability Awards)
 - **Excellence in Sustainability** (Tamworth Business Chamber Quality Awards)
 - **Sustainable Food Business Award** (Logan Eco Awards)
 - **Energy and Sustainability Award** (QLD regional achievement & Community Awards)
 - **Manufacturing and Engineering Award** (Northern Inland Innovation Awards)
 - **Four** highly commended award nominations in FY2014-2015



What does the future look like?

“We see the same trajectory, probably being accelerated one-to-three times faster for the balance of plant and battery than what we experienced with solar over that same time horizon,” Ken Munson told Renew Economy.*



* Ken Munson is the founder and head of smart energy systems start-up “Sunverge”



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What does the future look like?

- ***Continued investment in renewable energy projects.***

This may be:

- ***By products*** diverted from markets as an energy stock;
- Convert what has been typically disposed of as solid waste for ***use as biofuel***;
- Convert renewable energy sources to electricity: ***biogas fuelling a Cogen plant***;
- Explore (medium term future) potential for facilities to ***provide electricity back to the grid***;

- ***But what is the disruptor?***