

# Department of Environment, Climate Change & Water NSW

## *Industrial Ecology Drivers and Government Support*

### **Rod Clare Business Partnerships**

# **SUSTAINABILITY ADVANTAGE PROGRAM**

## **Key points**

- **DECCW helping businesses improve their environmental performance and create their own sustainable future**
- **Going for about 10 years under different names – SA for about 3 years**
- **Available to businesses within NSW**
- **Partnerships the pathway to sustainability**
- **Program is a “journey” – continuous improvement**

# THE PROCESS – WHAT IS INVOLVED ?

- 1. Join Sustainability Advantage**
- 2. Undertake a Diagnostic**
  - Series of questions that cover different aspects of the business
  - Helps to identify strong points and areas for improvement.
  - Helps to select Modules from the SA program
- 3. Select Modules**
  - Select 2-3 Modules (topics) best suited to the business
  - Modules usually go for 6 -12 months (give or take a bit)
- 4. Select groups to participate and select projects from Modules**
- 5. Participate in Cluster meetings**
  - Small group meeting 2-3 per year - by industry sector or location
  - Share experiences/exchange ideas
- 6. Record results and monitor**
  - How we are going? Are we using less? Are our projects working?
- 7. Plan new projects/initiatives – Continuous Improvement**

## THE PROCESS – WHAT IS INVOLVED ?

- **Get some \$25K to \$30K worth of environmental consultancy for \$3K (Depends on modules selected)**
- **Potential eligibility for a 50% to 70% rebate on energy auditing. Max \$80K per company!**
- **Potential assistance with strategic intervention projects and implementation incentives**

# THE MODULES – WHAT ARE THEY ?

## 1. Supply Chain

Deliveries from Suppliers, Products to Customers

## 2. Vision, Commitment and Planning

Develop a mission statement and road map

## 3. Staff Engagement

Sustainability training programs, seek “staff buy-in”

## 4. Environmental Risk and Responsibility

Current E-laws and risks. Training to ensure compliance

## 5. External Stakeholder Engagement

Work with external groups to overcome issues/achieve understanding

## 6. Climate Change

Measure carbon footprint from process, reduce GHG emissions

## 7. Resource Efficiency

Measures utilities/materials used and how these might be reduced/used more efficiently

# RESOURCE EFFICIENCY – WHAT HAPPENS ?

## 1. Determine “base-line data”

- Major spend items (e.g. energy, water, raw materials etc.) for a 12 month time frame

## 2. Brainstorming meeting

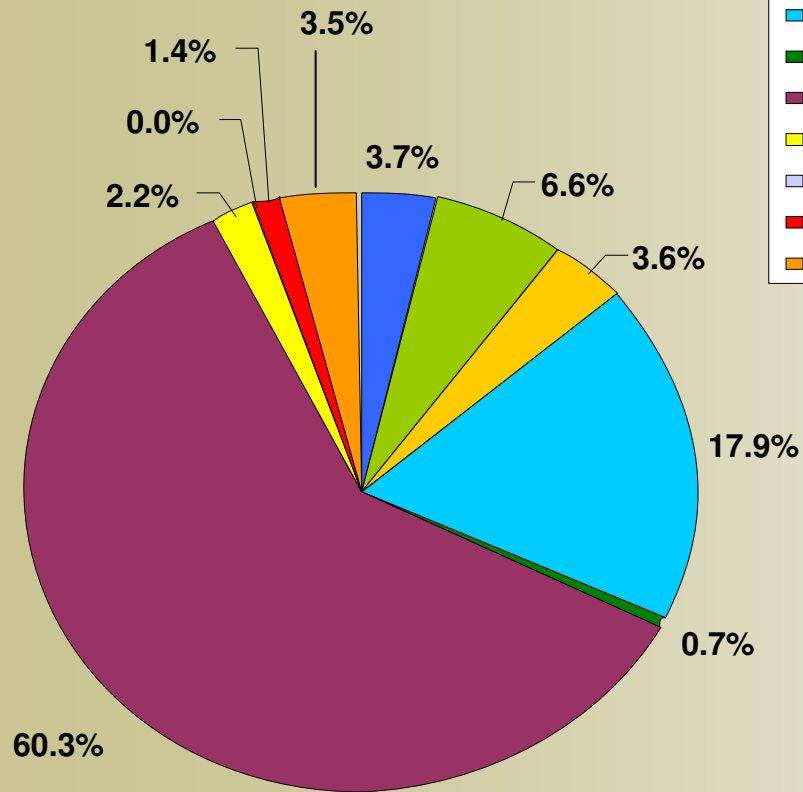
- Involves departments – not just production/operations etc.
- Capture all ideas

## 3. Future meetings

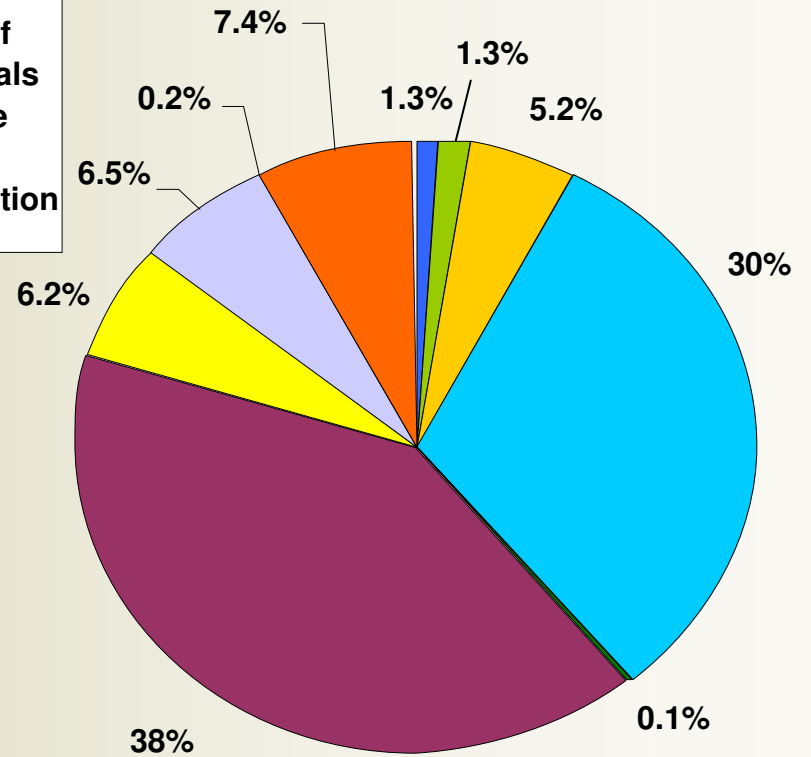
- Prioritise ideas (“lowest hanging fruit” to longer-term ideas)
- Determine tasks/projects
- Measure improvements
- Keep going.....

# Resource Efficiency Results

**Total Annual Savings  
Industry Partnerships program  
October 2000 - October 2006**



**Total Annual Savings  
Sustainability Advantage  
October 2006 - October 2008**



## Resource Efficiency Savings

- **Documented case studies with 103 companies (2000-2008) has realised:**
- **Annual savings for completed case studies totalling over \$10M**
- **On average each company saves \$80,000 PA**
- **An average payback on capital of less than 10 months**

## Some Issues for Raw Materials

- **Yields and material utilisation e.g. Dunlop**
- **Measurement and tracking (KPIs)**
- **Waste due to “Out of Date” stock**
- **Unnecessary packaging for raw materials (and products)**
- **Paper, IT solutions and document storage**

## Some Issues for Energy

- **Lighting technologies e.g. Iplex**
- **Turn equipment & lighting off if not needed**
- **HVAC and Refrigeration**
- **Peak Demand charges**
- **Processing and equipment efficiency**
- **Fuel efficiency and waste heat recovery**
- **Compressed air systems – leaks etc**

## Some Issues for Water

- **Fix leaks**
- **Dry sweep, don't hose down**
- **Vacuum pumps**
- **Waterless wok**
- **Stormwater harvesting**
- **Look for re-use opportunities e.g. drill mud**

## **Emerging Issues and opportunities**

- **Gains through visual lean e.g. Rondo**
- **Appropriate waste segregation**
- **Industrial ecology and other eco-efficiency opportunities outside the gate**

## Industrial Ecology – the Next Wave

- **Alternative raw materials and fuels offer significant savings**
- **Massive quantities of potentially recyclable materials currently lost to the productive economy e.g. 1 million tpa plastic waste to landfill**
- **NSW DECCW has a process to deal with exempting these materials from the waste levy and allowing them to be recycled**

## **Industrial Ecology Conference Aug 2009**

- **International directions in resource recovery**
- **Industrial ecology best practice in NSW & Australia**
- **Industry take on state jurisdictions waste exemption/recovery regulatory framework**
- **Challenges for business**
- **Challenges for regulators**
- **Conclusions/recommendations**

# Existing Industrial Ecology Parks

- **Kalundborg, Denmark**
- **Kwinana, Western Australia**
- **Botany Industrial Park, Sydney**
- **Portland, Ontario**
- **Burnside, Nova Scotia**
- **Kawasaki, Japan**
- **Gladstone, Queensland**
- **Tampico, Mexico**
- **Map Ta Phut, Thailand**

## Some NSW Opportunities

- **Coal washery fines**
- **Fly ash**
- **Steel slag fines**
- **Timber**
- **Glass Fines**
- **Tyres**
- **Plastic**
- **Fibre cement**

## Some NSW Opportunities (cont.)

- Foundry sands
- Aluminium smelter wastes
- Steel ladle refractory
- Iron cast house waste
- Carpet off-cuts and mattresses
- Coke oven gas residue
- Biomass

# What's Required for Success?

- **Partnerships are the pathway to sustainability**
- **Self-organisation between businesses**
- **Facilitation and support for the interactions**
- **Resources to investigate potential synergies**
- **Appropriate environmental legislation**
- **Appropriate industry policy**

From Industrial Symbiosis as an Integrative Business Practice in the Kwinana Industrial Area – Bossilkov, van Beers and van Berkel, 2005

## What's the Size of the Prize?

- **In NSW its easy to identify wasted resources worth up to A\$2 billion**
- **This conservatively equates to between A\$5 billion and A\$10 billion nationally**

### Some NSW Industrial Ecology Opportunities

| Material                  | Annual Arising (T) | Unit Value \$/T | Nett Position \$ |
|---------------------------|--------------------|-----------------|------------------|
| Coal washery fines ®      | 2,000,000          | 30              | 260,000,000      |
| Flyash ®                  | 6,000,000          | 30              | 780,000,000      |
| Steel slag fines ®        | 125,000            | 30              | 16,250,000       |
| Timber ®                  | 300,000            | 40              | 42,000,000       |
| Glass ®                   | 100,000            | 30              | 13,000,000       |
| Tyres ®                   | 60,000             | 30              | 7,800,000        |
| Plastic ®                 | 100,000            | 250             | 350,000,000      |
| Fibre cement ®            | 30,000             | 30              | 3,900,000        |
| Foundry sand ®            | 15,000             | 30              | 1,950,000        |
| Aluminium smelter waste ® | 15,000             | 30              | 1,950,000        |
| Steel ladle refractory ®  | 400                | 20              | 48,000           |
| Iron casthouse waste ®    | 400                | 20              | 48,000           |
| Carpet off-cuts           | 5,000              | 50              | 750,000          |
| Coke oven gas residue ®   | 400                | 30              | 52,000           |
| Biomass from livestock ®  | 7,000,000          | 30              | 210,000,000      |

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## **I.E. 2009 Conference - What's NSW Business Thinking?**

- **Discussions regarding at least 4 Industrial Ecology Parks in NSW**
  - **Southern Highlands**
  - **Lower Hunter**
  - **Bomen (Wagga Wagga)**
  - **Windsor**
- **No doubt there are others being considered**
- **Focus is on cost reduction when overall demand is dampened**

## **I.E. 2009 Conference - Summary of Business Challenges**

- **What forums are appropriate to take a collegiate approach**
- **WMAA Industrial Ecology Network**
  - **Identification of opportunities**
  - **Assessment**
  - **Promotion and leveraged partnerships**
- **How do we select and promote likely winners before regulatory authorities?**
- **How do we stop “cowboys” wasting limited regulatory assessment resources?**

## **I.E. 2009 Conference - Summary of Challenges for Regulators**

- **Balance between diversion from landfill and specific air/water/land quality objectives**
- **How much to investigate from scratch and where to adopt accepted best practice from other jurisdictions?**
- **What level of resourcing is appropriate?**

## **I.E. 2009 Conference – Summary of Conclusions**

- **In Australian jurisdictions we are not able to respond quickly enough, either yeah or nay**
- **We must both increase the resources applied to IE and maximise their efficiency**
- **Options to improve may include adoption of an independent Technical Review Panel system for assessment (ie NSW LBL)**
- **Responses will be critical for manufacturing**

## FURTHER INFORMATION

- DECCW - <http://www.environment.nsw.gov.au/>
- Environmental Trust - <http://www.environment.nsw.gov.au/grants/envtrust.htm>
- Rod Clare - (02) 8837 6004 or [rod.clare@environment.nsw.gov.au](mailto:rod.clare@environment.nsw.gov.au)