



ENVIRONMENTAL CLEAN  
TECHNOLOGIES LIMITED

***Presentation at the 2009 Annual General Meeting***

**18 November 2009:** Environmental Clean Technologies Limited (ASX:ESI) is pleased to lodge the following presentation by the Chairman and Chief Executive at the 2009 Annual General Meeting held on Wednesday 18th November 2009 at 11:00 AM at Level 15, 485 Bourke Street, Melbourne.

*For further information contact:*

*Chief Executive Kos Galtos +61 3 9684 0888*

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# Environmental Clean Technologies Limited



**Annual General Meeting – Corporate Presentation  
18 November 2009**

# Corporate Overview

## Board and Executives

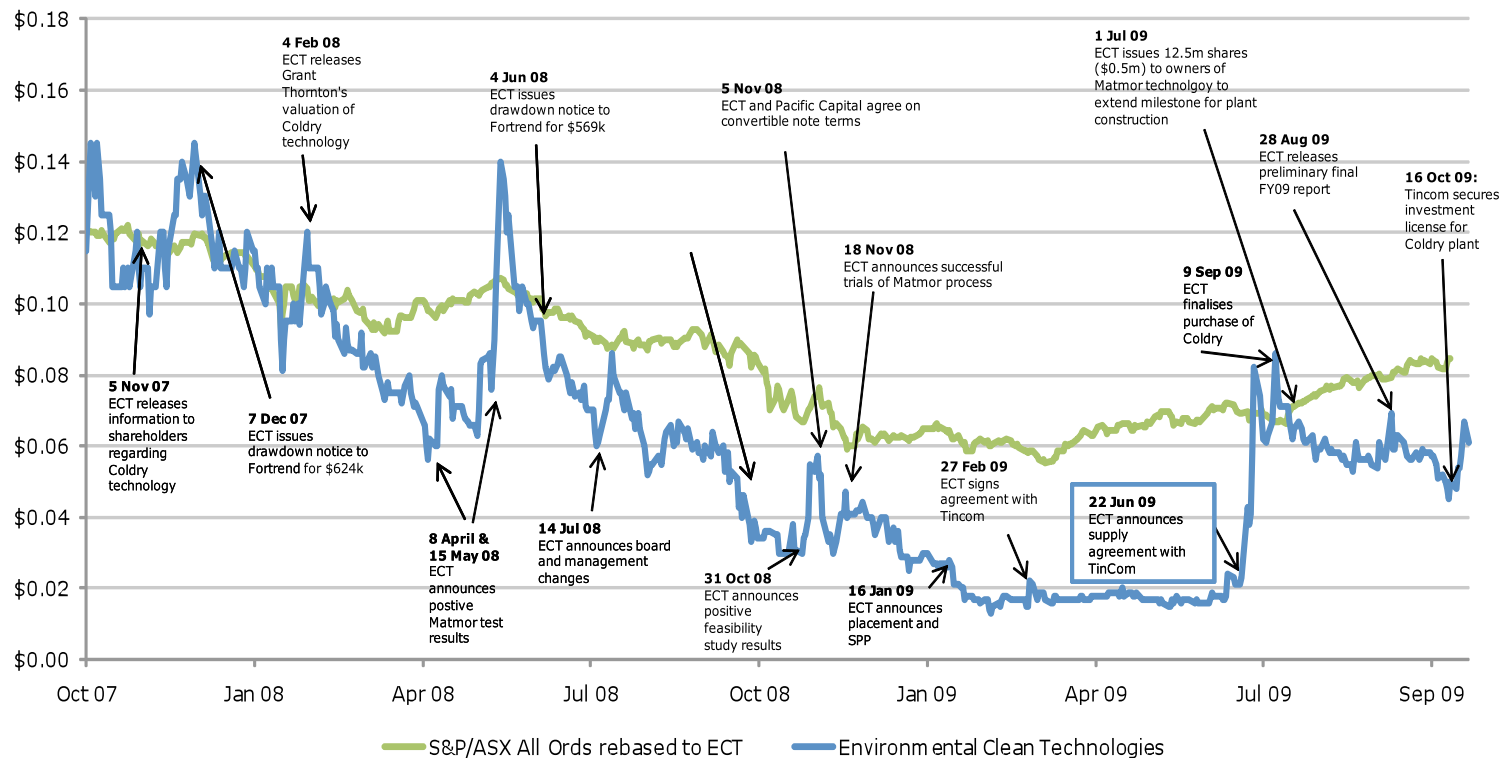
<i>Dave Woodall</i>	<i>Chairman</i>
<i>John Hutchinson</i>	<i>Non-Executive Director Deputy Chairman</i>
<i>Dennis Brockenshire</i>	<i>Non-Executive Director</i>
<i>Stephen Carter</i>	<i>Non-Executive Director</i>
<hr/>	
<i>Kos Galtos</i>	<i>Chief Executive</i>
<i>Ashley Moore</i>	<i>Business Manager – Coldry</i>
<i>Adam Giles</i>	<i>Manager – Technology Development</i>

## Strategic Partners

<i>Deacons</i>	<i>Legal</i>
<i>PKF</i>	<i>Auditing</i>
<i>RSM Bird Cameron</i>	<i>Accounting</i>
<i>Phillip Capital</i>	<i>Financial Advisory</i>
<i>Fortrend</i>	<i>Standby Subscription Agreement</i>
<i>Radar Group</i>	<i>Relations – Investor</i>
<i>Monsoon Communication</i>	<i>Relations – Media</i>
<i>Markstone Group</i>	<i>Political Advisory</i>

# Corporate Overview

## Capital Structure



### ASX Code

ESI

### Shares on Issue

584 million

### Options on Issue

490 million

### Market Capitalisation (at AUD0.054/share)

AUD31.5 million (undiluted)  
AUD58.0 million (diluted)

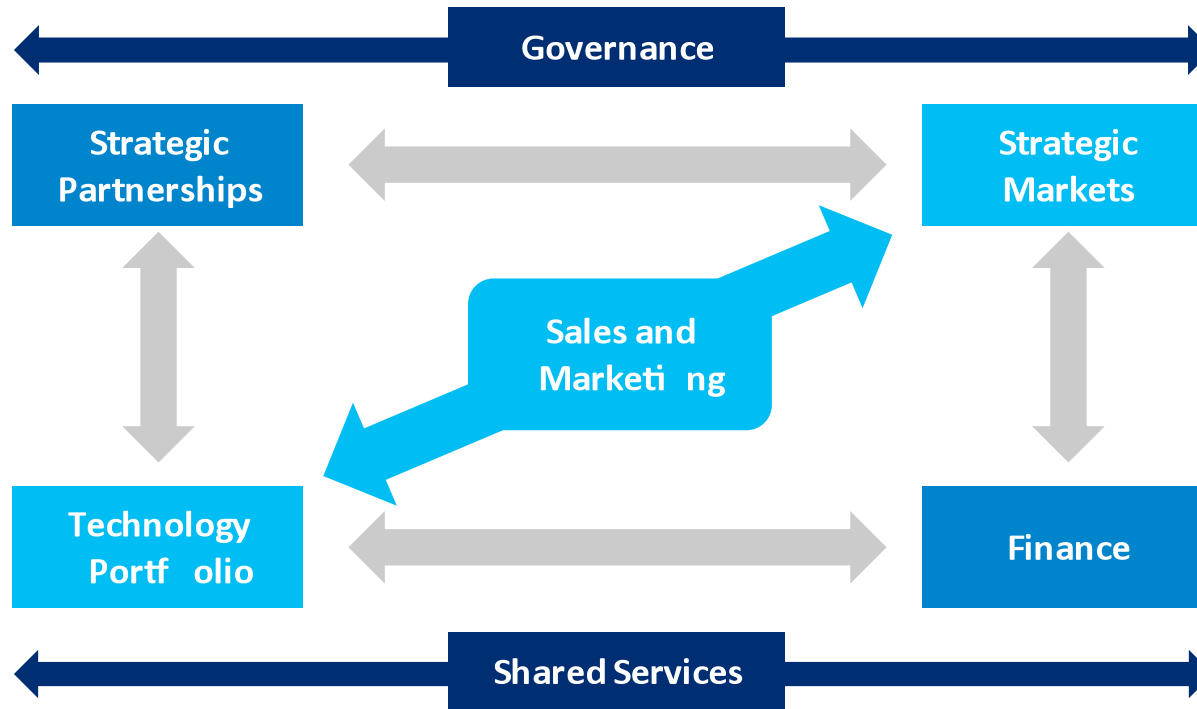
### Top 20 Shareholders

30.4% ownership



# Our Core Business

Environmental Clean Technologies Limited is in the business of commercialising and selling disruptive technologies that have game-changing potential within the energy and resources sector capable of delivering significant environmental and commercial benefits.



# Technology Portfolio

## Core Technologies

### *Coldry – Unique Coal Drying and Water Recovery Technology*

**An economic method for dewatering lignite and sub-bituminous coals, creating an energy rich Black Coal Equivalent for local consumption or transport to remote markets.**

### *Matmor – Unique Iron Making Technology*

**A one-step method for producing low-carbon iron from abundant and low economic value brown and sub-bituminous coals and metal bearing media.**

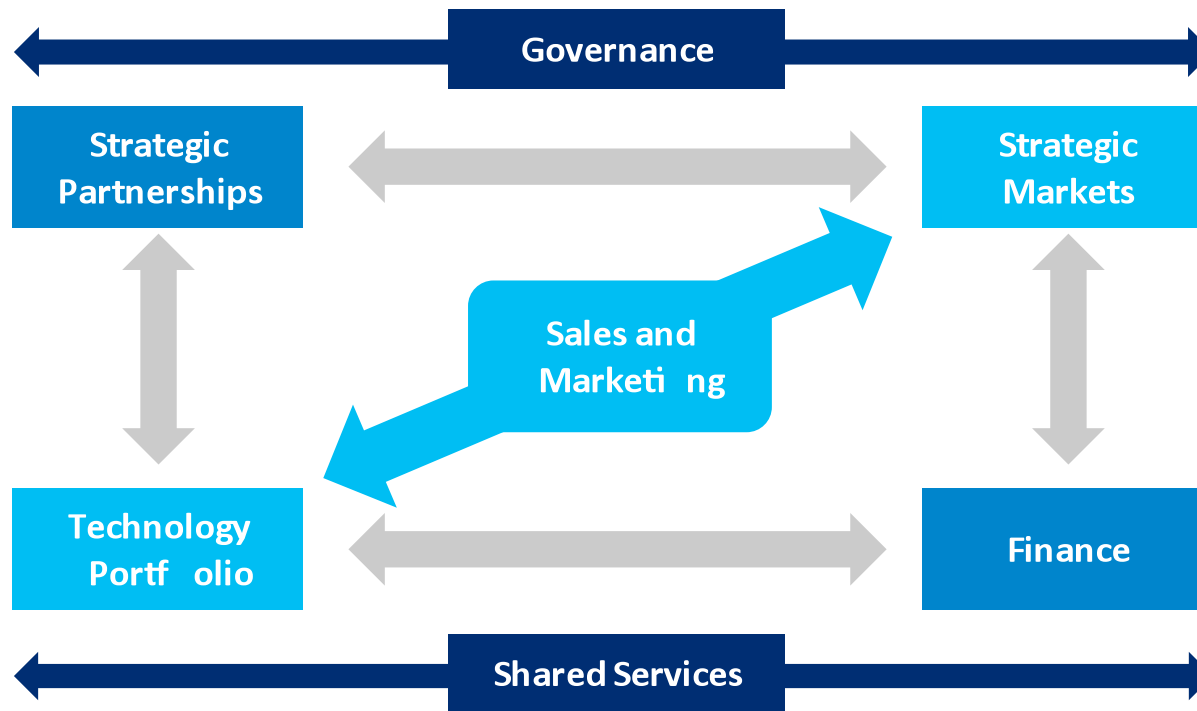
## Expanding the Technology Portfolio

**Focused on advancing our two core portfolio of core game-changing technologies enabling us to secure sustainable profits through licensing royalties or other commercial mechanisms.**

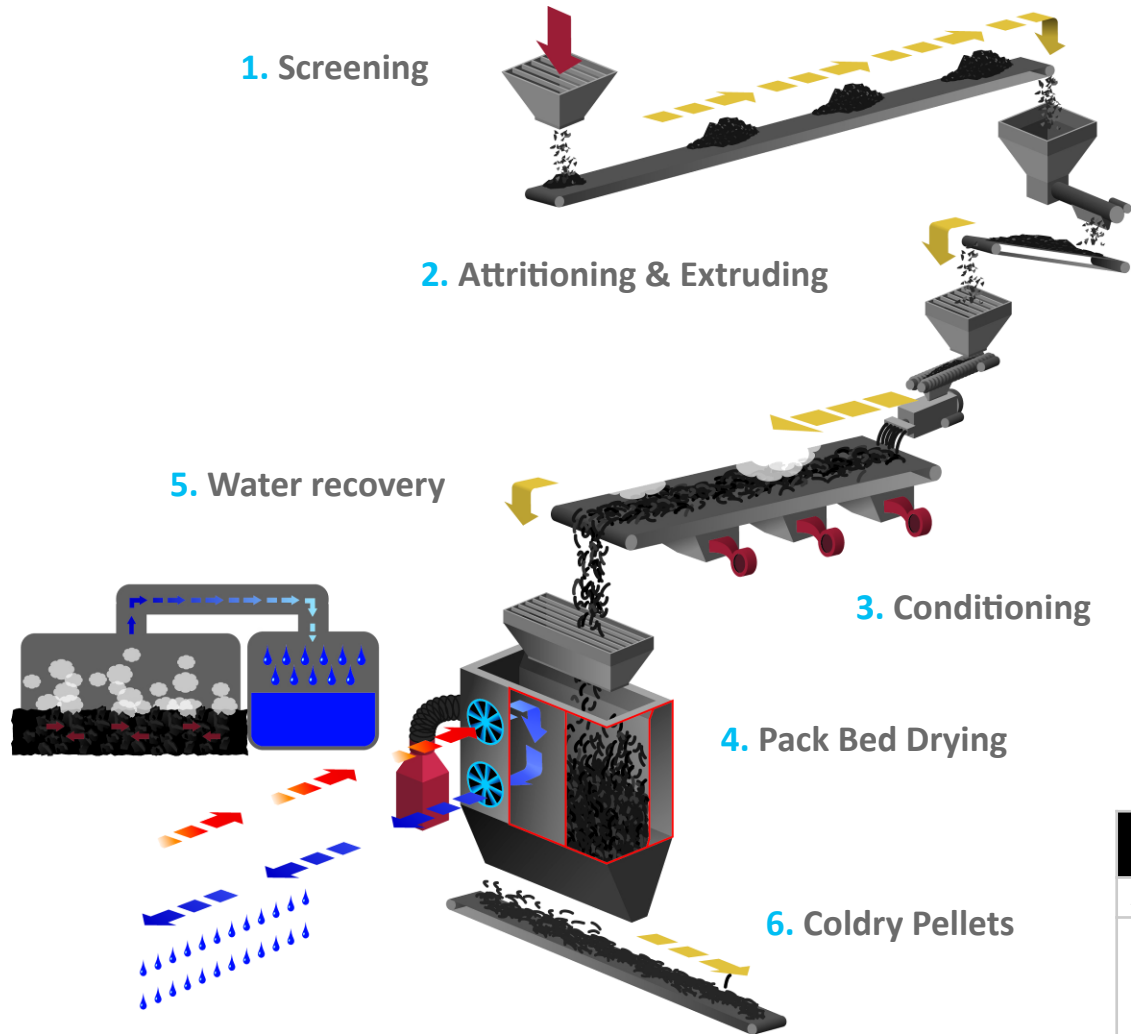
**We will surround our core technologies with complementary technologies that expand market size, increase value created and captured, or enhance likelihood of adoption.**

# Our Core Business

Environmental Clean Technologies Limited is in the business of commercialising and selling disruptive technologies that have game-changing potential within the energy and resources sector capable of delivering significant environmental and commercial benefits.



# Coldry: In Focus



Screening to remove foreign objects and addition of a small quantity of water to the raw coal .

Initiating an exothermic chemical reaction to expel water through attritioning. Extrusion under low pressure accelerates the chemical reaction.

Warm air toughening of extruded mixture on a conditioning conveyer prior to delivery to the pack bed dryer.

Formation of Coldry pellets and collection of moisture in the pack bed dryer.

Storage of distilled water ready for use or transport.

Stockpiling of high-energy Coldry pellets ready for use or transport.

*The Coldry process is covered by patents in all major markets with significant lignite deposits. Engagement with potential partners and customers will also be covered by standard legal agreements.*

Country	Patent Application No	Filing Date
Australia	767268	Sep 2004
Brazil, Canada, China (including Hong Kong), Europe, India, New Zealand, and USA	PCT/AU2004/001319	Feb 2006



# Coldry: In Focus

## The Coldry Process

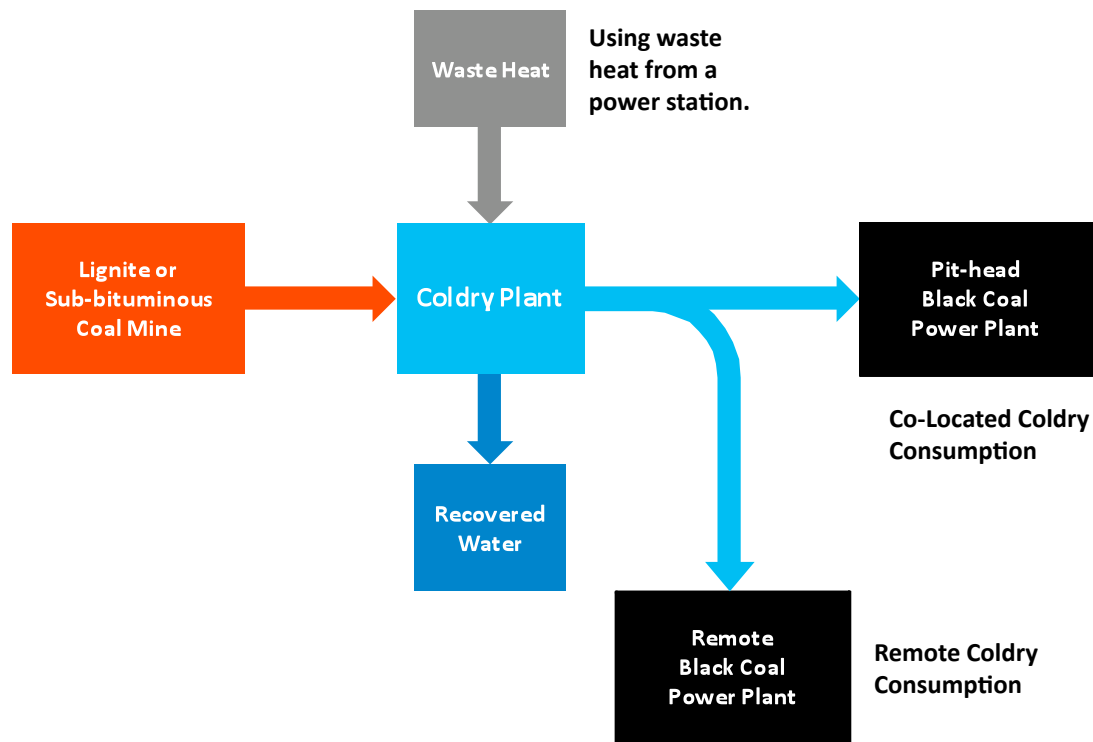
- High Gains
- Mechanical
- Low Heat
- Low Pressure
- Water Recovery
- Sensitive to the Environment

## The Coldry Plant Design

- Immediately Deployable
- Flexible
- Scalable
- Cost Effective
- Power Station Integration Synergies

## Coldry Black Coal Equivalent

- Stable
- Valuable
- Versatile



Coldry pellets can be used in local black coal power plants and transported to remote black coal power plants.

10-30% Coldry:Lignite mix can be used in lignite-fired plants for emissions reduction.

100% Coldry possible in significantly upgraded lignite plants.

# Coldry: In Focus

## Pilot Plant

The company's Coldry Pilot Plant was established as a batch production facility in 2004.

It underwent modification in 2007 to achieve continuous production and integration of its water recovery system.

## Strategic Relationships

Environmental Clean Technologies Limited entered into strategic relationships with leading organisations in Australia to advance the Coldry technology in Australia:

<b>Arup</b>	<i>Coldry Core Design Partner (Global) Coldry Design Engineer (Australia)</i>
<b>McConnell Dowell</b>	<i>Coldry Construction (Australia)</i>
<b>Transfield Services</b>	<i>Coldry O&amp;M (Australia)</i>
<b>Deloitte</b>	<i>Coldry Financial Modelling (Australia)</i>

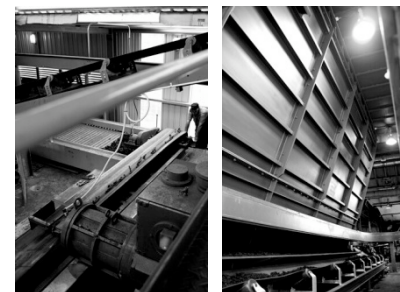
**Strategic relationships will underpin commercialisation in global markets.**

## Commercial-scale Design

The Coldry Pilot Plant has informed the design of the commercial-scale Coldry modules that will underpin commercial plants.

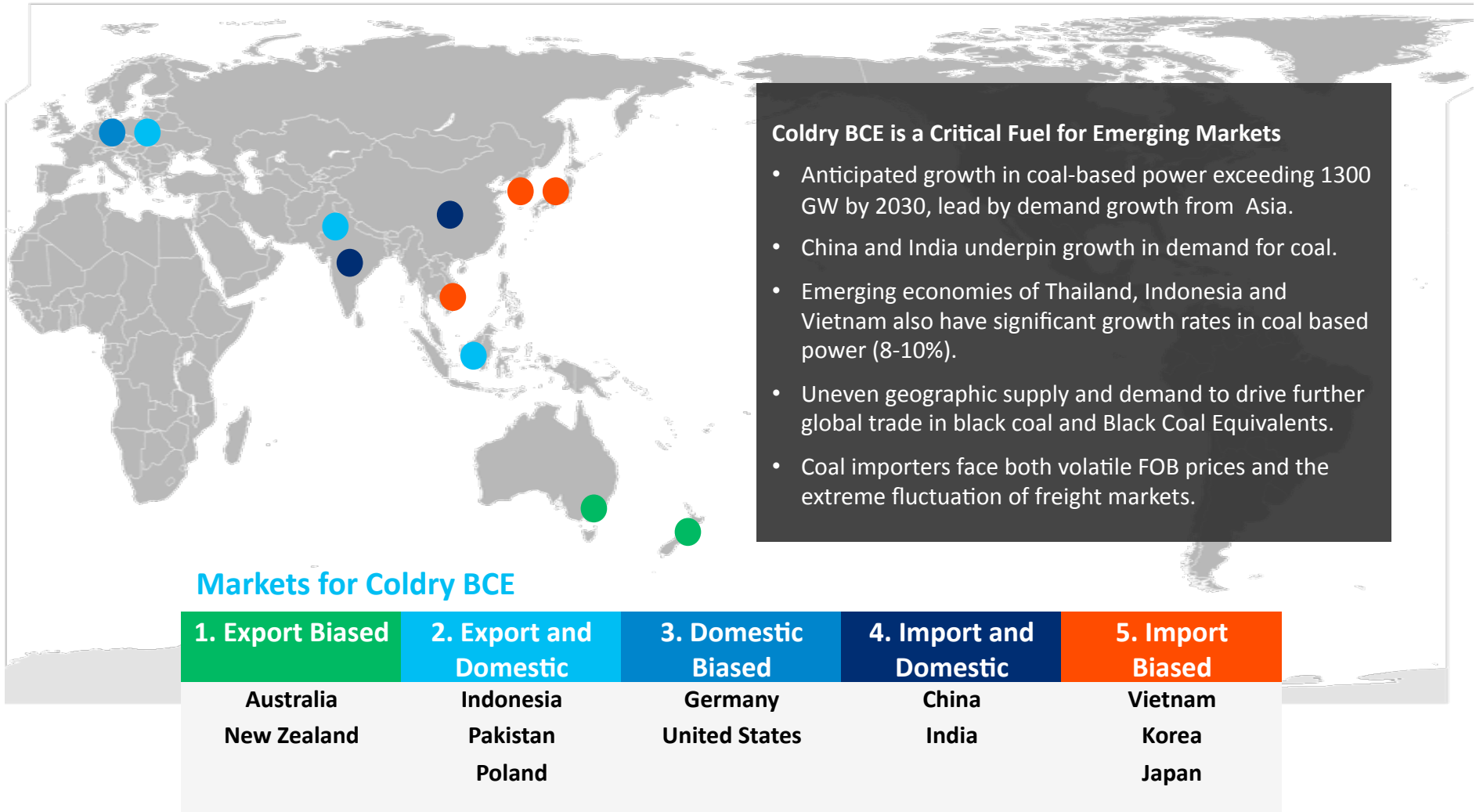
These modules have been designed to produce:

- 167,000 TPA of Coldry from 60% moisture coals,
- 220,000 TPA of Coldry from 50% moisture coals, or
- 300,000 TPA of Coldry 40% moisture coals.



# Coldry: Strategic Markets

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# Coldry: Strategic Markets – Focus on China

## Import and Domestic Market for Coldry BCE

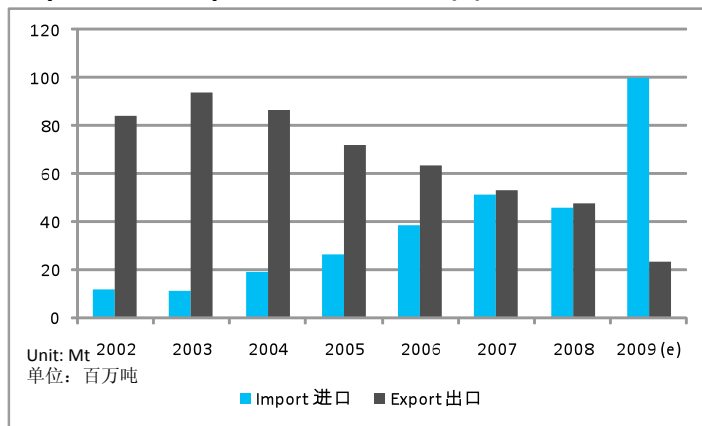
World's largest producer and consumer of coal. China has shifted from a net exporter to a net importer.

China's exports and imports are both affected by the international coal price. At current international coal price levels, China's coal imports are substituting some domestic production.

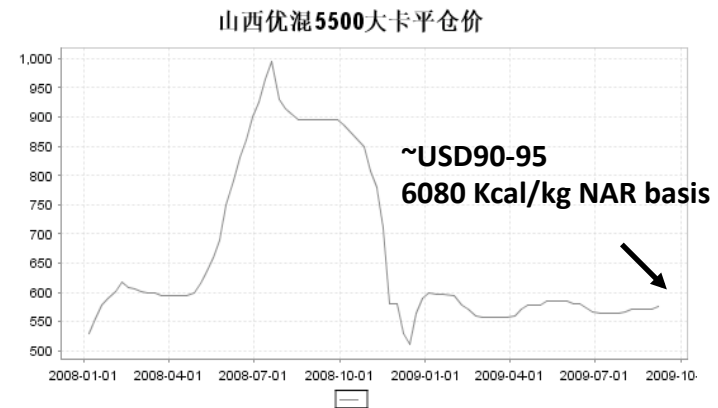
From January to August of 2009, China imported 73.8 Mt black coal and exported 14.83 Mt black coal.

Coal is a major energy security challenge for China. At current levels of production, China's current proven reserves will run out by 2050.

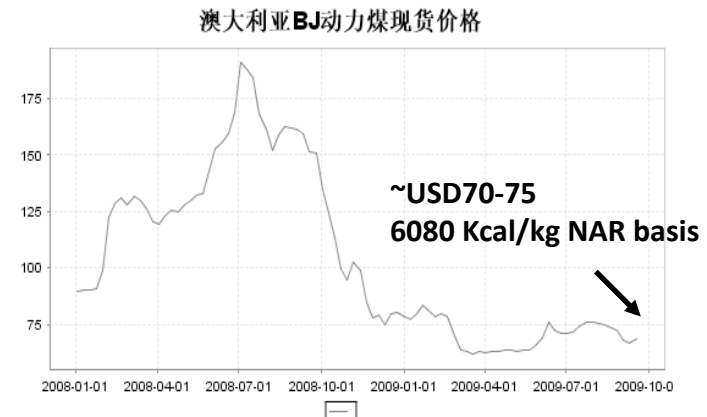
Imports and Exports 2002 – 2009(e)



Qinhuangdao FOB Steam Coal Price (5500 kcal/kg NAR)



Australia BJ FOB Steam Coal Price (6080 kcal/kg NAR)



Sources: Coal Information 2009, Shenhua (中国神华)

# Coldry: Strategic Markets – Focus on India

## *Import and Domestic Market for Coldry BCE*

### Challenges Facing Power Sector

#### Coal supply shortages affecting coal-based power

Growth in demand and the need to retire current supply. Critically low coal stock levels creating partial shut-downs.

#### Coal is plentiful – but of low quality

High ash content (up to 40-50%) and often low heating values. SOx and NOx issues creating environmental hazards and pollution.

#### Plant efficiency – extremely poor

Average efficiency of installed base of power plants is 29%, partly due to poor quality of coal.

#### Emissions

High costs associated with current scalable low-emissions technology and fuel sources.

### Challenges Facing Coal Sector

#### Significant supply and demand imbalance.

Projected growth in demand for coal is significant, with the gap between coal supply and demand continuing to grow.

#### Increasing dependence on coal imports.

Coal imports in 2009 projected to be approx 40 MTPA and growth to over 100 MTPA by 2013. Over-reliance on imports creates new energy security risks.

#### Private sector parties involved in the coal sector have faced significant planning challenges.

Challenges of land acquisition and government approval resulting in less than 20% of allottees offered captive coal blocks have managed to start production.

#### Development to realise growth

Public and private stakeholders will need to increase investment, develop and deploy newer technologies and enhance productivity.

*'Thirty-four out of 78 thermal power stations in the country have a coal stock that barely can last a week. And in 12 of them, the position is worse – the stock will suffice for less than four days.'* (Business Today, 26 July 2009)

# Coldry: Strategic Markets – Focus on Indonesia

## Export and Domestic Market for Coldry BCE

### Leading Thermal Coal Exporter

Indonesia is the world's leader in thermal coal exports, and is an export hub for supplies to Asia (86.9%).

Thermal coal demand from China and India will continue to drive Indonesian coal production and export capacity higher.

### Export Destinations in 2008

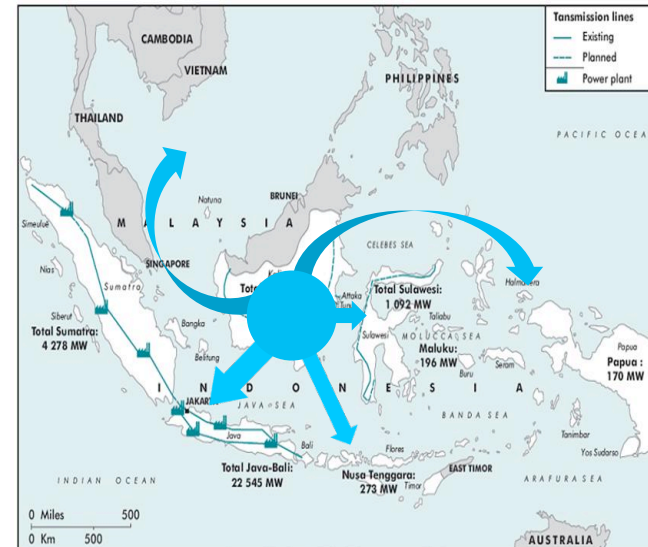
Country	Quantity (Mt)
Japan	26.60
Chinese Taiwan	25.96
Korea	25.33
India	20.67
Hong Kong	12.65
China	11.46
Other Asia	25.88
Other World	22.40
Total Export	171.00

### Domestic vs Export Tension

Indonesia's urbanisation and economic development driving strong increase in annual power demand. To support domestic power demand the Government may limit coal exports to 150 MTPA in the future

### Significant Low Value Coal Reserves

Indonesia has enormous coal resources and an estimated 15 billion tonnes are above 35% moisture.



### Indonesian Coldry Domestic Production and Export Hub

Source: Ministry of Energy and Mineral Resources, Indonesia

# Coldry: The Compelling Case

***Coldry will fuel emerging markets – it supports the growing demand for energy at lower CO2 emissions than would be otherwise possible.***

**For both China and India strong domestic black coal demand requires increased imports. Coldry will help them more efficiently use local lignite and reduce their dependence on black coal imports.**

**Indonesia, the worlds second largest coal exporter and largest thermal coal exporter, suffers from exporting high-moisture resources.**

**Other emerging markets, such as Bangladesh, Thailand, Vietnam and the Philippines, with planned growth coal based power are expected to require significant imports of coal over the next two decades.**

**Clear opportunity for undeveloped lignite and sub-bituminous resources to be efficiently utilised.**

**Reduce coal transportation costs by shipping less water.**

# Coldry: The Compelling Case

## Indicative Production Costs – Emerging Economies

### Plant Capacity: 1 MTPA Off take

Raw Coal Moisture Content	35%	40%	45%	50%	55%	60%	65%	70%	75%
<i>Key Plant Parameters</i>									
# Modules at Plant Capacity	2.86	3.48	4.10	4.73	5.35	5.97	6.59	7.21	7.83
Annual Coldry Output Per Module	349,638t	287,203t	243,687t	211,623t	187,016t	167,535t	151,730t	138,650t	127,646t
Water Recovered	354 KL	467 KL	600 KL	760 KL	956 KL	1,200 KL	1,514 KL	1,933 KL	2,520 KL
Electricity Consumed per tonne	157 KWh/t	191 KWh/t	225 KWh/t	259 KWh/t	293 KWh/t	327 KWh/t	361 KWh/t	395 KWh/t	429 KWh/t
<i>Processing Cost Breakdown</i>									
Maintenance	\$1.17	\$1.43	\$1.68	\$1.94	\$2.19	\$2.45	\$2.70	\$2.96	\$3.21
Labour	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59	\$0.59
Electricity	\$7.05	\$8.58	\$10.12	\$11.65	\$13.18	\$14.72	\$16.25	\$17.78	\$19.31
Licensing & Royalty Fees	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00
<b>Processing Costs</b>	<b>\$13.81</b>	<b>\$15.60</b>	<b>\$17.39</b>	<b>\$19.17</b>	<b>\$20.96</b>	<b>\$22.75</b>	<b>\$24.54</b>	<b>\$26.32</b>	<b>\$28.11</b>
<i>Feedstock Cost Breakdown</i>									
Feedstock Required Per Off take Tonne	1.35t	1.47t	1.60t	1.76t	1.96t	2.20t	2.51t	2.93t	3.52t
Feedstock Mining Cost	\$9.53	\$9.03	\$8.53	\$8.03	\$7.53	\$7.03	\$6.53	\$6.03	\$5.53
<b>Feedstock Cost</b>	<b>\$12.90</b>	<b>\$13.24</b>	<b>\$13.65</b>	<b>\$14.13</b>	<b>\$14.73</b>	<b>\$15.47</b>	<b>\$16.42</b>	<b>\$17.69</b>	<b>\$19.47</b>
<b>Coldry Black Coal Equivalent Cost (\$/tonne)</b>	<b>\$26.71</b>	<b>\$28.84</b>	<b>\$31.03</b>	<b>\$33.31</b>	<b>\$35.69</b>	<b>\$38.21</b>	<b>\$40.96</b>	<b>\$44.01</b>	<b>\$47.58</b>
<b>Capital Costs (\$m)</b>	<b>\$58.7m</b>	<b>\$71.4m</b>	<b>\$84.2m</b>	<b>\$96.9m</b>	<b>\$109.7m</b>	<b>\$122.4m</b>	<b>\$135.2m</b>	<b>\$147.9m</b>	<b>\$160.7m</b>
<b>Simple Payback Period (years)</b>	<b>1.2</b>	<b>1.5</b>	<b>1.9</b>	<b>2.3</b>	<b>2.8</b>	<b>3.3</b>	<b>4.0</b>	<b>4.8</b>	<b>5.9</b>
<b>Simple Return on Investment</b>	<b>82.3%</b>	<b>64.6%</b>	<b>52.2%</b>	<b>43.0%</b>	<b>35.9%</b>	<b>30.1%</b>	<b>25.2%</b>	<b>21.0%</b>	<b>17.1%</b>

#### Assumptions

Currency used is USD.

30% capital cost reduction from Australian estimate

70% labour cost reduction from Australian estimate

Equity 100% to enable competitive comparison

Water sales: Value to be informed by local conditions

Raw coal based on indicative supply costs

Maintenance: 2% of CapEx

Labour: Significant economies of scale in larger plants

Electricity cost of USD0.045 per KWh

No Depreciation

Royalty: Standard cost per offtake tonne of USD5.00

Offtake moisture level: 12%

Offtake characteristics reflective of the dry energy value of source coal

Coldry sale price of \$ 75 /t for payback period and ROI



# Coldry: The Compelling Case

## Comparison of Indicative Electricity Production Costs

Lignite Feedstock 45% Moisture 11.6 GJ/tonne		Electricity Production Costs (USD/KWh)			
Mining Cost (Per Tonne)	Mining Cost (Per GJ)	Lignite	Coldry	Black Coal No shipping	Black Coal Incl shipping
\$6.00	\$.52 /GJ	\$0.0328	\$0.0361	\$0.0508	\$0.0579
\$8.00	\$.69 /GJ	\$0.0346	\$0.0373	\$0.0508	\$0.0579
\$10.00	\$.86 /GJ	\$0.0364	\$0.0384	\$0.0508	\$0.0579
\$12.00	\$1.03 /GJ	\$0.0382	\$0.0395	\$0.0508	\$0.0579
\$14.00	\$1.21 /GJ	\$0.0401	\$0.0407	\$0.0508	\$0.0579
\$16.00	\$1.38 /GJ	\$0.0419	\$0.0418	\$0.0508	\$0.0579
\$18.00	\$1.55 /GJ	\$0.0437	\$0.0430	\$0.0508	\$0.0579
\$20.00	\$1.72 /GJ	\$0.0455	\$0.0441	\$0.0508	\$0.0579

### Assumptions

Currency used is USD

Electricity generation costs include both calculated fuel costs and Australian-based estimates of annualised capital and fixed O&M costs of black coal and lignite power generation\*

Black coal power generation at 42% efficiency

Lignite power generation at 34% efficiency

Delivered black coal cost of USD75/tonne with a 24 GJ/tonne (5732 kcal/kg) calorific value

Black coal shipping cost of USD20/tonne

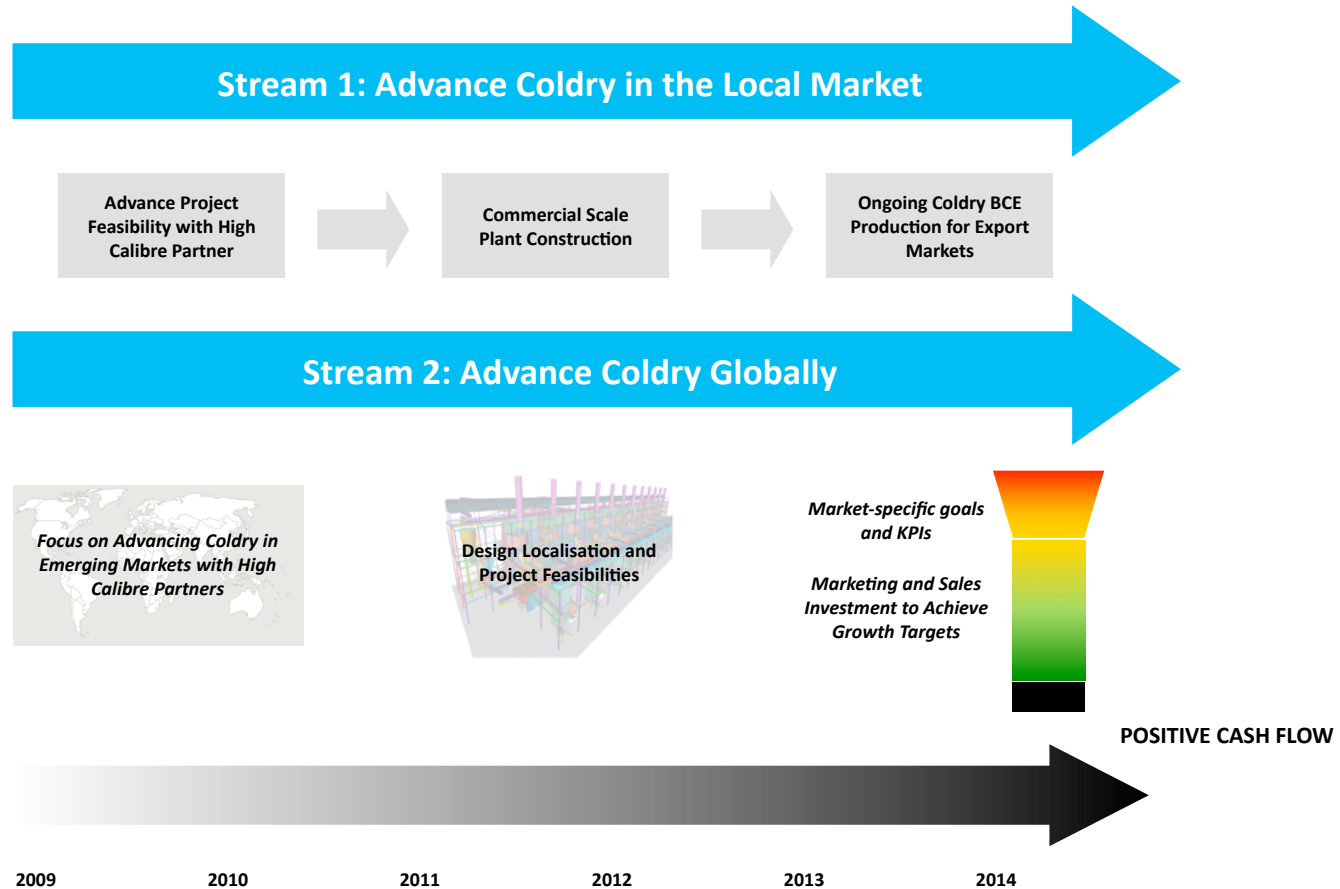
Coldry BCE with a 24 GJ/tonne (5732 kcal/kg) calorific value

Does not include anticipated decreased drying time (and hence better project economics) for co-located Coldry consumption

Costs of carbon not included.

# Coldry: Our Growth Strategy

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## Coldry: Advance in the Local Market

Commercialisation underpinned by commitments to Coldry Project Feasibilities.

Working vigorously with a number of qualified parties to build investment-ready Business Cases.

Parties have a keen interest in our domestic market and select global markets.

Coordination Agreement with TinCom (Vietnam):

Produce Coldry from 2 MTPA to 20 MTPA over 10 years, and  
Produce 20 MTPA of Coldry over 50 years beyond this milestone.

Agreement provides ECT Limited with:

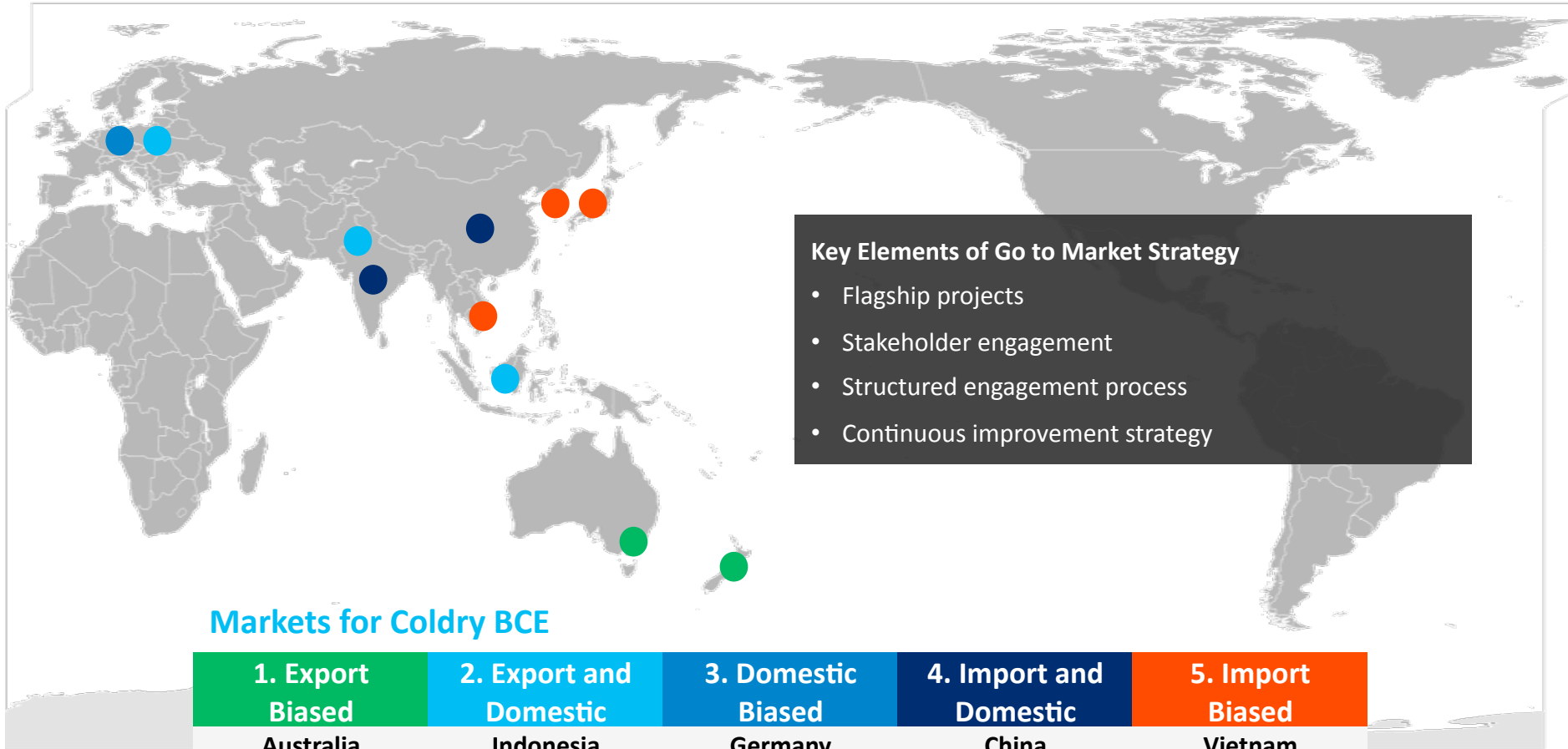
- AUD5/tonne royalty
- 10% free carry equity

Agreement provides TinCom with:

- The first right of refusal to construct and fund Coldry Plants in Victoria, Australia,
- The non-exclusive right to construct and fund Coldry Plants in other Australian states, and
- The right to purchase up to 100 MTPA of Coldry product.

# Coldry: Advance Globally

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- Key Elements of Go to Market Strategy**
- Flagship projects
  - Stakeholder engagement
  - Structured engagement process
  - Continuous improvement strategy

## Markets for Coldry BCE

1. Export Biased	2. Export and Domestic	3. Domestic Biased	4. Import and Domestic	5. Import Biased
Australia New Zealand	Indonesia Pakistan Poland	Germany United States	China India	Vietnam Korea Japan

## Coldry: Advance Flagship Projects

Flagship Projects demonstrate technical viability and present strategically and economically compelling returns to project participants.

Typically, Flagship Projects will be linked to:

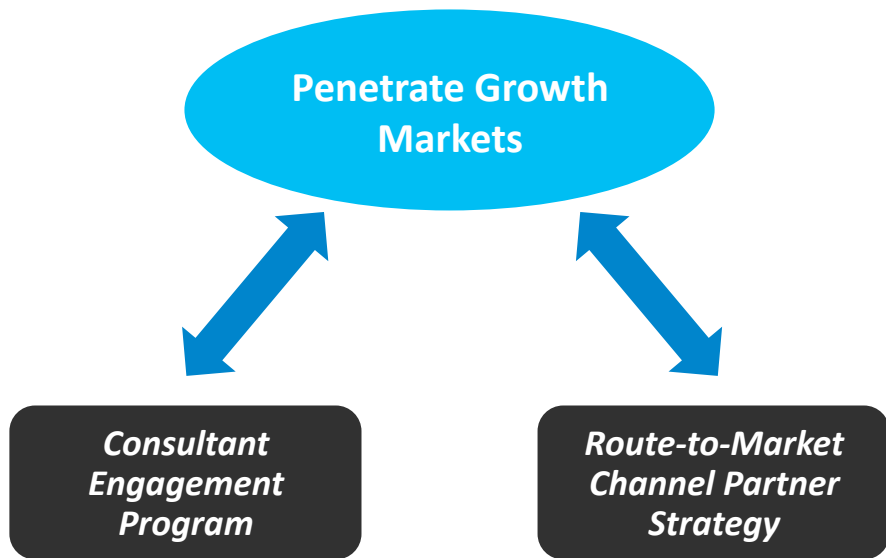
- Severe structural challenges,
- Growing population,
- Escalating incomes,
- Strong demand,
- Plant proliferation,
- Accelerating exploitation of coal as a fuel source,
- Need to enhance plant performance, and
- Pressure to deliver environmentally responsible outcomes.

ECT will continue to work with credible partners to develop and commit to strong business cases.

Assist early movers in each growth market to gain a strong market position and a competitive advantage.

# Coldry: Value Creation for Multiple Stakeholders

ECT's business model delivers value to multiple stakeholders:



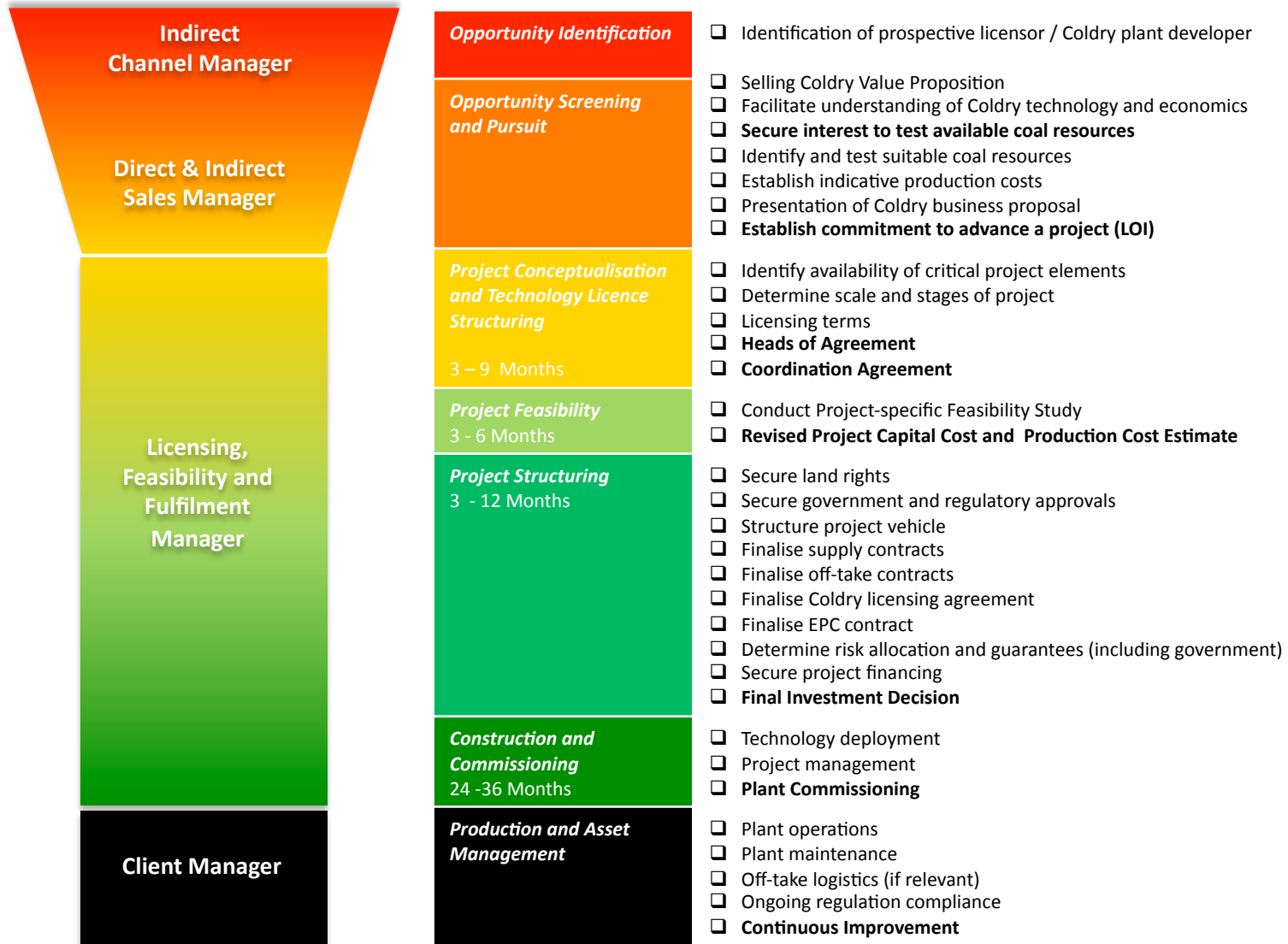
## Stakeholders benefitting from Coldry:

- Asset Managers
- Carbon Credit Consultants and Origination Firms
- Coal Resource Suppliers
- Coal Traders
- Coldry Project Developers
- Community
- Constructors
- Consultants to Power Generators
- Design Engineers
- ECT Shareholders
- Environmental Groups
- Government and Regulators
- Operators and Infrastructure
- Owners of Power Generators
- Power Generators (As Coal Consumers)
- Power Generators (As Waste Heat Suppliers)
- Project Debt Capital Providers
- Project Equity Capital Investors
- Project Financiers and Financial Advisors

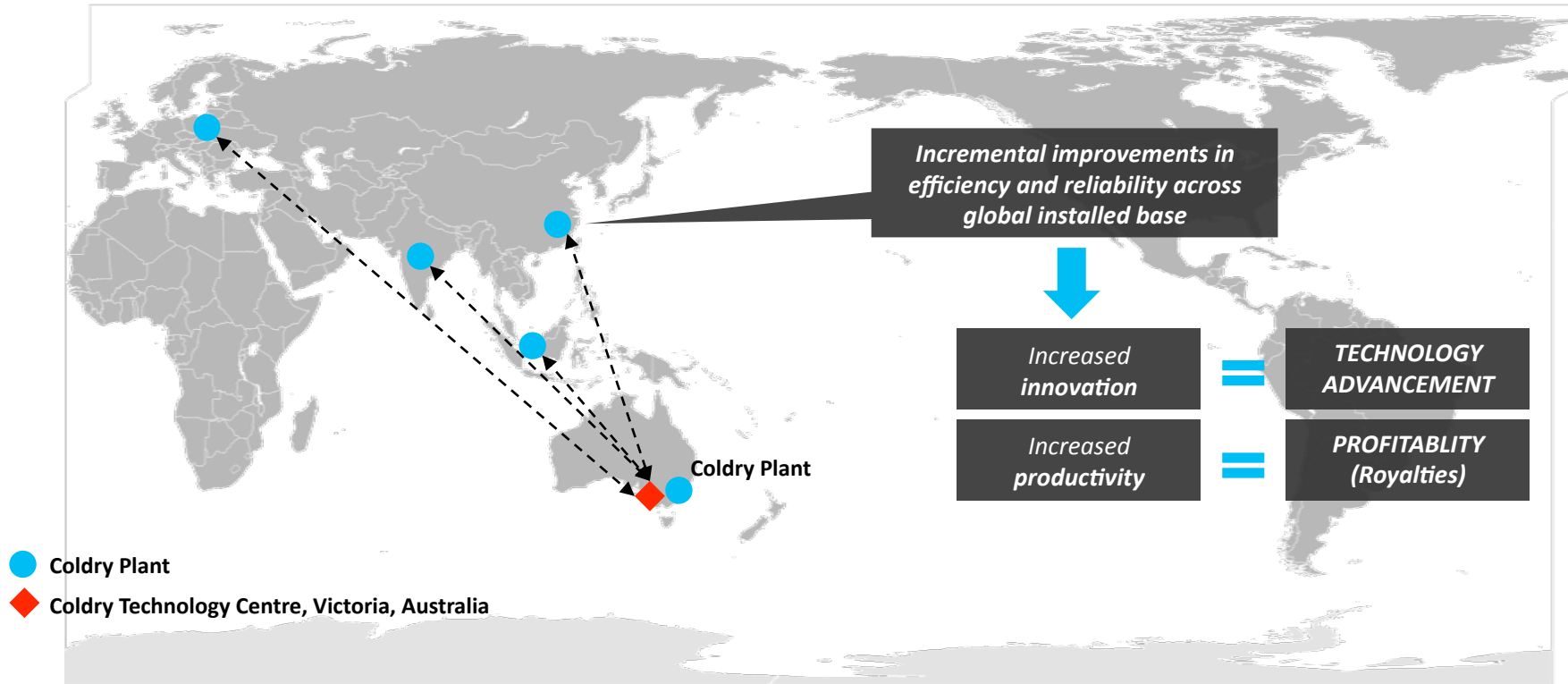
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# Coldry: Engagement Process

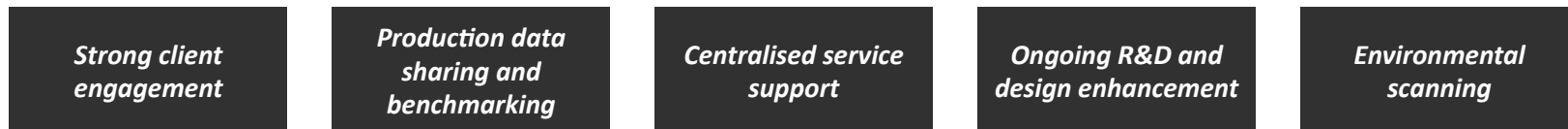
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# Coldry: Continuous Improvement Strategy



## Technology Centre and Continuous Improvement Strategy



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# Coldry: Sales Targets and Current Status



Potential number of Coldry plants (3 MTPA capacity) in operation to supply growth in coal based power demand in the following regions and countries:

Region and Country	2010 - Forecast	2015 - Forecast	2020 - Forecast
Asia	0	6	30
North America	0	3	11
Europe	0	2	7
Oceania	0	1	2
<b>Grand Total</b>	<b>0</b>	<b>12</b>	<b>51</b>

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# Matmor: In Focus

## The Matmor Process

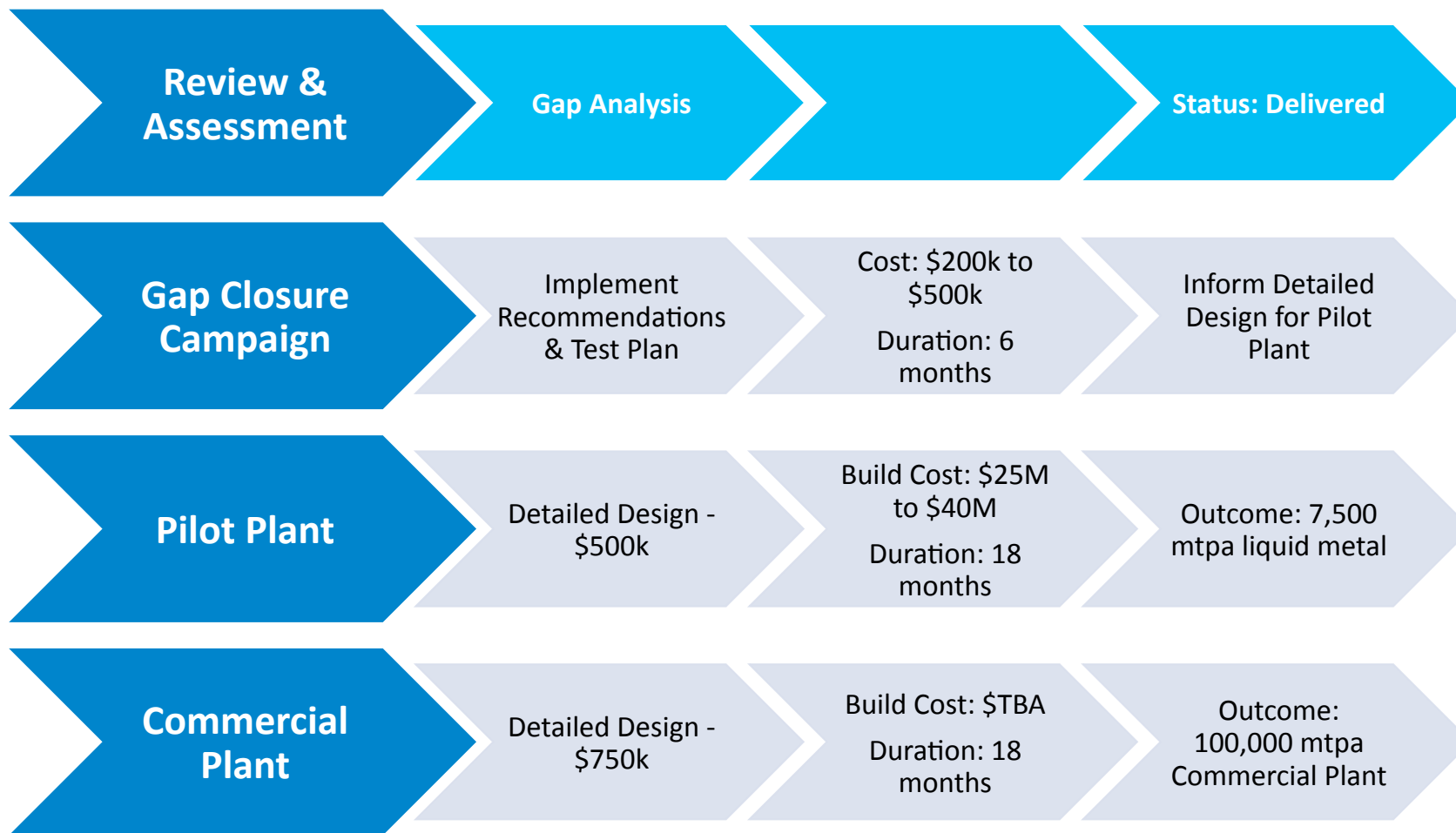
Compared to traditional blast furnace iron making, Matmor has the following benefits:

- Low cost lignite replaces expensive metallurgical coal
- Recirculation of waste gases minimises emissions
- Can reduce iron bearing waste such as mill scale and nickel tailings
- Small plant foot print
- Ideal product for foundry and steelmaking markets

## Strategy for Matmor

- Review & Assessment of Current State of Development (completed)
- Identify strategic partner to advance scale up
- Scale up through incremental steps:
  - Pilot Plant
  - Commercial Plant
  - Reassess scalability of individual plant versus modular expansion based on target market

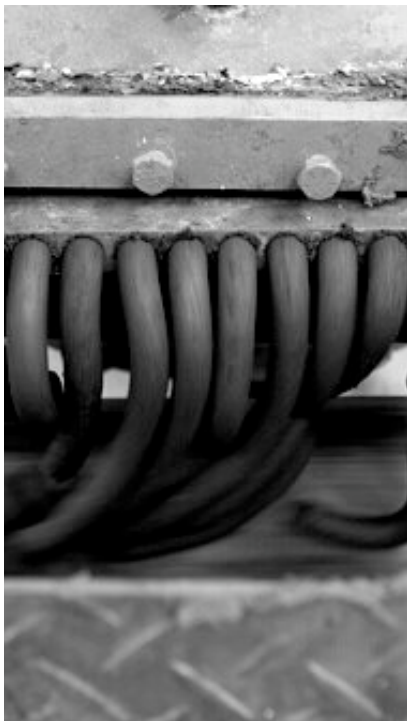
# Matmor: Next Steps



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# Environmental Clean Technologies Limited



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