ENVIRONMENTAL CLEAN TECHNOLOGIES LIMITED

Revenue Model

29 November 2018

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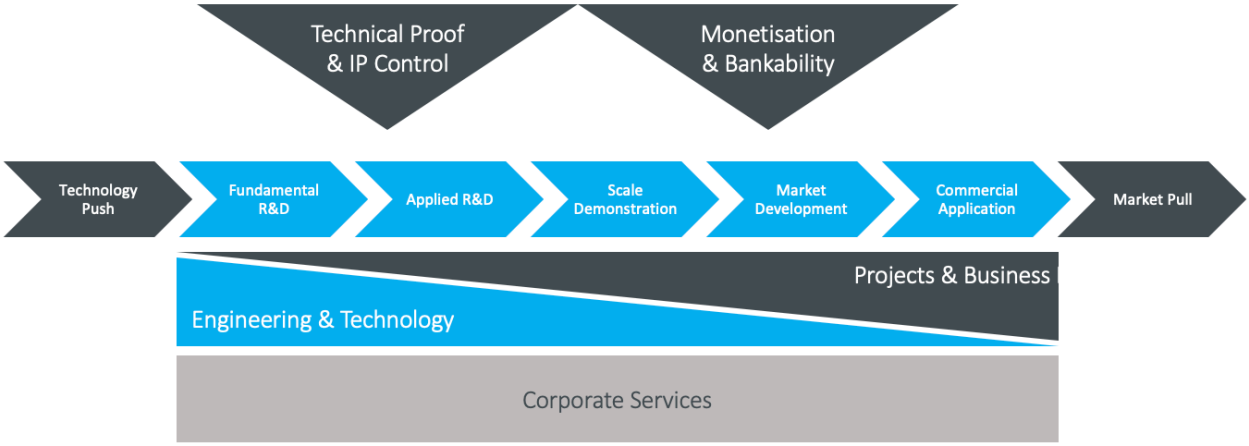
Technology Commercialisation Strategy

For the past two years, and in parallel to our major project initiatives, ECT has been developing and refining its strategy for the commercialisation of its core technology families; Coldry and Matmor.

In simple terms, the commercialisation strategy defines a pathway of research, development and deployment that aims to answer the question: how far does ECT plan to take each technology?

The technology commercialisation pathway can be conceptualised as follows:



The various stages may include sub-activities. For example, the scale demonstration stage may require several, incremental scale-up points to achieve the objective of techno-economic validation.

Two further examples of commercialisation sub-activities include the design for tender program conducted in 2015 (Coldry), and the techno-economic feasibility study completed in June 2016 (Matmor). Each of these activities have been fundamental to our commercialisation program in establishing commercial scale plants (600,000 tonnes per annum (tpa) for Coldry and 500,000 tpa for Matmor) and factored capital estimates (circa AUD 210M for Coldry and AUD 300M for Matmor).

Coldry

The Coldry process is the Company's leading technology in terms of state of development and progress along the commercialisation pathway. ECT anticipates that it will partner with commercial groups for investment in the deployment of commercial Coldry facilities, and will provide technology licensing, engineering and project development support to facilitate these projects.

The potential revenue streams include:

- Direct sales of product (for example Coldry fuel sales into the domestic multi-feedstock boiler market)
- ECT's share of licensing fees and/or royalties from the India SPV
- Project development fees where ECT supplies engineering and project management support for the development of specific Coldry and Matmor projects.
- Original Equipment Manufacture (OEM) fees from the supply of proprietary plant and equipment
- Investment returns: In the future, with an enhanced balance sheet structure and access to capital, ECT may consider direct investment in operating plants.

Technology Scale

This measure reflects the incremental advancement of the technology at increasing size (scale) of the technology unit:

Stage of Development	Capacity	Status
Theoretical models	NA	Achieved
Lab Scale	<10kg, batch	Achieved
Test Scale	~5 tonne, batch process	Achieved
Pilot Scale	15,000 tpa, continuous, simulated waste heat	Pending
Commercial demonstration	30,000 tpa, continuous, simulated waste heat	Target
Commercial scale	600,000 tpa +	Target
Industrial scale	1.8M tpa +	Target

Timeframe

Current timeframe for full commercialisation is estimated at 3 years (January 2022), with industrialisation estimated within 6 years (January 2025). There are many dependencies and assumptions underlying these timeframes, meaning that these are necessarily a subjective view as to what may be achievable. Key dependencies include prompt commencement of the India Project and a successful R&D stage of the India project.

Capacity Targets

Targets for installed capacity are based on estimates of the base technology scale (unit size), the level of demand and views on achievable market share. Current capacity targets include:

- Pilot Plant: ~15,000 tpa for the Bacchus Marsh site, moving to ~30,000 over the next 24 months. The primary target for this test product will be servicing the solid fuel boiler market in Victoria and Tasmania.
- India Project R&D Phase: integrated Coldry-Matmor pilot project in India. This plant will primarily focus on the production of 'composite' pellets but will also be capable of producing regular Coldry pellets.
- 600,000 tpa Latrobe Valley Project. This project is currently the focus of a further feasibility study.
- 1,800,000 tpa Latrobe Valley expansion. This capacity target looks at the Company's potential share of existing and new markets (such as front-end supply to pyrolysis and other industrial uses) supplied by multiple technology units from one central location.[1]

[1] For reference, a Coldry-fired 1000MW high efficiency, low emission (HELE) power station in the Latrobe Valley would require a Coldry plant with a capacity of 3 million tonnes per annum.

Matmor/Hydromor

Similar to Coldry, Matmor is progressing through scale up toward commercialisation.

As exemplified by our India project where ECT has partnered with two of India's leading Public Sector Undertakings (PSU's) for the development of the pilot plant, ECT expects (if the current India project is successful) to partner with commercial groups to invest in the deployment of commercial plants for production of Matmor products.

Following successful completion of the R&D phase of the India project, the Special Purpose Vehicle (SPV) will provide the licensing of this technology globally, with ECT retaining responsibility for engineering and project development support to facilitate future commercial projects.

Income for ECT would be derived from its respective share in licensing fees (royalties), project development fees and fees from the supply of proprietary plant and equipment. Direct investment in operating plants may be considered where financing is achievable.

Technology Scale

This measure reflects the incremental advancement of the technology at increasing size (scale) of the technology unit:

Stage of Development	Capacity	Status
Theoretical models	NA	Achieved
Lab Scale	<10kg, batch	Achieved
Test Scale	~40kg/h, semi-continuous	Achieved
Pilot Scale	~1 tph, continuous (India Project)	Pending
Commercial demonstration	India Plant 1 (500 ktpa, billet steel basis)	Target
Commercial scale	India Plant 2 (2.0 mtpa)	Target
Industrial scale	India Plant 3, Global Plant 4, Global Plant 5 (6.0 mtpa)	Target

Timeframe

Current timeframe for full commercialisation is estimated at 5 years (Jan 2024), with industrialisation estimated within 8 years (January 2027). There are many dependencies and assumptions underlying these timeframes, meaning that these are necessarily a subjective view as to what may be achievable. Key dependencies include prompt commencement of the India Project and a successful R&D stage of the India project.

Capacity Targets

Targets for installed capacity of Matmor are stated in terms of tonnes of finished steel product (billet steel). Current capacity targets include:

- 2024 – India Plant 1 – 500,000 tpa
- 2026 – India Plant 2 – 2,000,000 tpa
- 2028 – India Plant 3 – 2,000,000 tpa
- 2026 – Global Plant 4 – 2,000,000 tpa
- 2028 – Global Plant 5 – 2,000,000 tpa

Note: A significant development resulting from Matmor R&D was lodgement of the Hydromor patent. Going forward, Hydromor will replace Matmor.

COHgen

As previously announced (22 November 2017), COHgen is our newest discovery.

COHgen is a unique coal-to-hydrogen process that builds on learnings from the development of the Matmor process.

COHgen is in its formative stage, undergoing fundamental research, however testing confirms hydrogen can be generated at lower temperatures than traditional methods and with most of the carbon remaining fixed in the process, rather than being emitted.

Successfully commercialised, COHgen could provide a scalable solution for low emission hydrogen production from one of the cheapest and most abundant sources: lignite, adding another potentially valuable technology for ECT.

COHgen is not included in the revenue model due to its early stage of development, with the focus instead being on filing a provisional patent during CY2019.

One possible pathway to accelerate the development of COHgen is to move early to engage with a leveraged partner where ECT might retain a minor holding in the intellectual property (IP) rights or minor equity interest in a development company in exchange for the lead-in development by an organisation with the necessary resources and expertise to take it forward to commercialisation.

Revenue Mechanisms

As outlined above, there are several potential revenue mechanisms available, providing diversification and flexibility in how the Company can monetise its intellectual property.

Some of these revenue mechanisms have structures defined in the agreements which are in place and proposed for major projects such as India and the Latrobe Valley.

We understand investors will want to know the exact calculation or financial basis for each potential revenue stream for a given project, however such a disclosure could prejudice future commercial negotiations, which is not in shareholders' best interests. Continuous disclosure and statutory reporting obligations will inform the market of the financial performance of commercial arrangements at the appropriate time.

Below is a summary of some of the various mechanisms and how they may be applied.

Direct Sales Revenue

ECT has entered into a number of supply agreements for Coldry solid fuel produced from R&D activities at its Coldry High Volume Test Facility (HVTF). Further, the Company has been trialling the implementation of 'turnkey' steam package arrangements in which fuel supply is but one component. Revenue is generated on either a 'dollar' per ton of fuel supplied, or through additional service and equipment financing fees, or a combination thereof.

Direct sales revenue is expected to remain a part of any future revenue model. This opportunity can be expanded if ECT is able to negotiate off-take contracts from commercial plants funded by third parties (for example, Coldry supply contracts for a future Coldry plant in the Latrobe valley). This expansion will need to be supported by sales and marketing resources, third party logistic providers, and equipment suppliers. A number of these key relationships are in place, and developing, under the existing Coldry sales program to supply the domestic (Victoria and Tasmania) multi-feedstock boiler sector.

Technology Licensing Fees (Royalties)

As previously announced ECT is currently entering into a Research Collaboration Agreement (RCA) with NLC India Limited (NCLIL) and NMDC Limited (NDMC) in India. As part of this agreement, ECT retains 49% of all net global royalties from the Coldry and Matmor technologies. This arrangement does not require that ECT fund additional capital for development of commercial plants.

Royalties are typically annualised payments made on either installed capacity (plant output capacity in tonnes per annum) or annual production. In regard to Coldry and Matmor, ECT has established a global benchmark for both Coldry and Matmor that is linked to a percentage of the thermal coal and coking coal market index prices, respectively.

This mechanism acts as a base above which further royalty amounts can be applied, dependant on the comparative economic advantage that Coldry and Matmor offer over existing technologies in that location or specific market.

By example, in countries with a relatively low lignite price, and high availability of iron ore material, it is likely that a royalty fee will be above the global base amount. This accounts for the stronger economic advantage that Coldry and Matmor technologies can deliver, as an integrated plant. This economic advantage is one of the clear outcomes of the techno-economic feasibility study, produced by MN Dastur, and released in June 2016 and as recently updated on page 35 of the Company's 2018 Annual report (table below).

	TEF Study basis: 2015/16 average costs & sales prices			TEF model updated using 2018 September costs & sales prices		
	Traditional	**Indian Alt**	**ECT**	**Traditional**	**Indian Alt**	**ECT**
	BF - BOF	**CB DRI - EAF**	**C/M - EAF**	**BF - BOF**	**CB DRI - EAF**	**C/M - EAF**
	Blast Furnace - Basic Oxygen Furnace	**DRI Kiln – EAF**	**Coldry / Matmor - EAF + Power Generation**	**Blast Furnace - Basic Oxygen Furnace**	**DRI Kiln – EAF**	**Coldry / Matmor - EAF + Power Generation**
Case / Scenario	**Base Case**	**Base Case**	**Mid Case**	**Base Case**	**Base Case**	**Mid Case**
CAPEX (Index)	100%	90%	64%	100%	90%	64%
OPEX (Index)	100%	123%	103%	100%	106%	86%
SALES (Index)	100%	108%	103%	100%	109%	104%
ROI (index)	100%	70%	160%	100%	130%	250%

- BF – BOF: Blast Furnace-Basic Oxygen Furnace is the dominant, traditional steel making route
- CB DRI-EAF: Coal-based Direct Reduced Iron Kiln and Electric Arc Furnace is an established alternative steel making route.
- The above table is based on outputs from the TEF Study released in June 2016 and updated to reflect the impact on the Matmor business case of changes in commodity pricing

Original Equipment Manufacturer (OEM)

OEM refers to proprietary Coldry and Matmor equipment necessary for each individual project. ECT is in the process of establishing a strategic OEM relationship with a suitable manufacturer, to support the supply of proprietary Coldry and Matmor equipment components into future projects.

The supply of OEM plant and equipment, mandated within each technology license that is issued, adds a layer of protection to the IP for both technologies, in that manufacture of the specified equipment can be centralised and, to an extent, controlled.

Importantly, this also creates the opportunity for ECT to leverage a margin over the supply of OEM plant to third party projects. The scope of potential earnings is directly linked to the level of exclusivity for OEM that can be maintained, together with the volume and rate of industrialised capacity growth.

Project Development fees

Commercial rollout of the Company's technologies will involve a broad range of project-specific variables, including raw material specification (lignite, iron ore, etc) and supporting services (availability of power, water, land and other services).

It is anticipated that ECT will need to support each project by supplying experienced engineering, financial management and project management resources, for which it would earn concurrent fees. These fees will likely be set as a percentage of the overall capital cost of each plant.

Investment Income

ECT may also pursue direct investment in commercial plants from which it would expect to earn investment returns. This prospective rate of return of a model plant, compared with existing technologies of blast furnace and direct reduced iron (DRI) production, have been assessed as part of the techno-economic feasibility study (see table above).

In order to pursue direct investment, ECT may either direct efforts to enhance its capability for financing or negotiate an equity position in a development project in lieu of other forms of direct income (e.g. project development fees).

Future development of the ECT Revenue Model

As the Company advances its commercialisation program, the revenue model will continue to be developed in response to major milestone achievements and changes in prospective capacity targets. As required, announcements will be made when material agreements are established, allowing investors to track progress against the targets.

Future annual and half-year reporting will provide the financial information necessary for investors to draw their own conclusions on the value of the Company.