Review of brown coal projects and programs funded by the Victorian Government

Findings and Recommendations - Summary

May 2017

Summary

Victoria’s brown coal reserves are among the largest in the world and are a major resource for the State. The reserves have been mined on a large scale since the 1920s, to supply the coal-fired electricity generation industry in Victoria.

Over the past 15 years, the Victorian Government has developed a suite of programs to support the development of the brown coal resource focussed on lowering the carbon emissions from energy generation and the transformation of coal into other products. These programs were often co-funded by the Commonwealth or leveraged existing Commonwealth program funding. The programs have been developed to address issues across the innovation chain but with particular emphasis on applied R&D and large scale pilot/demonstration plants.

Figure 1 The innovation chain

This flow diagram shows the three phases of innovation:
The Research and Development phase that includes basic research, and technology research and development;
the Demonstration and Commercialisation phase that includes Pilot/Market demonstration and pre-commercialisation; and the Market Uptake phase that includes commercial deployment and market diffusion.
The first two phases are described as a 'technology/supply push', the final phase a 'demand pull'.

Source: Adapted from Garnaut (2011)

The current Victorian Government has placed a high priority on jobs and investment with the Back to Work Plan, Premier’s Jobs and Investment Fund, the Regional Jobs and Infrastructure Fund, the development of six priority industry sectors and a $200M Future Industries Fund. The focus of these programs and policies is to deliver jobs and economic outcomes in the short to medium term. Within this context, alongside a tightening budget, the government needs to consider its appetite for longer-term, more speculative, projects such as those identified in the coal development work over the last 15 years.

The Victorian Government commissioned the Review in November 2015 to examine the effectiveness of current and past programs relating to brown coal and to understand the possible future pathways for project assessment. In particular, the government is seeking a decision-making framework to inform future government consideration of investments in coal projects.

1. About the Review

The terms of reference ask the Review to provide an evidence base to help inform future government consideration of investments in coal projects, through examining:

* the effectiveness of government programs related to coal over the past 15 years to identify the key learnings that could be applied to the preparation of future programs;
* the commercial, technological, environmental and social factors that will influence the future alternative uses of brown coal in a low emissions context; and
* parameters for determining the suitability of future investments in brown coal projects.

The Victorian Government appointed an independent external expert, Mr Rhys Edwards from RDME Consulting, to lead the Review. Mr Edwards was Secretary of the Tasmanian Department of Premier and Cabinet and the Tasmanian Senior Official to the Council of Australian Governments.

In conducting the Review, Mr Edwards was provided with research and administrative support by a secretariat comprised of officers from the Department of Premier and Cabinet, the Department of Treasury and Finance and the Department of Economic Development, Jobs, Transport and Resources. The Review also received advice from an interdepartmental steering committee. The report is prepared on the basis of the documentation and information provided to the Reviewer by the secretariat and departments.

The Review’s approach involved the following elements:

* research and analysis by the secretariat, across the range of tasks in the terms of reference;
* targeted consultations with a limited number of key stakeholders and representative bodies including industry, unions, environmental and community groups, and government (including local, State and Commonwealth); and
* commissioned work including expert reports on the effectiveness of past and present coal programs (Frontier Economics), potential future technologies and products using brown coal (GHD), infrastructure requirements for these technologies and products (GHD), and economic modelling of future scenarios involving brown coal (EY).

The Review made its final report to government in May 2016.

2. Summary of findings and recommendations

#### **Finding 1 – Program objectives and program success**

#### Taken as a whole, the programs to date have not delivered ultimate outcomes; that is, no technology or project — which has received funding support from the Victorian Government — has reached commercial scale nor generated substantial economic, social and environmental benefits for Victoria (for example, additional jobs, exports, income or reductions in carbon emissions).

#### **Finding 2 – Program objectives and program success**

#### Despite little in the way of ultimate success, Victorian brown coal programs have, in many cases, achieved their stated objectives as evidenced by a range of intermediate outcomes. The R&D programs have been assessed as broadly effective. The D&C programs have been more mixed. In many cases failure to reach milestones was the result of external factors such as market conditions or changed policy settings in relation to carbon.

#### **Finding 3 – Program objectives and program success**

#### There is the lack of a cohesive, over-riding objective to tie all the activity together. This in part may be due to the lack of a comprehensive coal policy. Previous attempts to develop high-level strategy documents have not been publicly released.

#### **Finding 4 – Program design**

#### Approximately $360 million has been announced with at least $100 million actually spent. The remainder remains unspent, has been reallocated within the suite of programs or returned to consolidated revenue.

#### **Finding 5 – Program design**

#### Despite the complexity in funding arrangements, program design has generally been good. Wyld (2011) supported the view that ETIS has performed as well as similar national or international programs. Refinement of program design and assessment for ALDP continued to improve on the previous arrangements.

#### **Finding 6 – External influences and project timescales**

#### External influences have had a greater impact on success than program design. The government (and the community) needs to appreciate the uncertain and lengthy development lead time on R&D and commercialisation activity. For R&D this may be 30 years and for D&C 10 to 20 years. The government needs to consider its appetite for longer-term, more speculative, projects such as those identified in the coal development work over the last 15 years.

#### **Finding 7 – Opportunities for brown coal**

#### Victorian brown coal products could potentially be supplied to a number of large and growing domestic and international markets. Processing brown coal in Victoria to produce the following products within a carbon-constrained economy has been assessed by GHD (2016) and EY (2016) as potentially economically viable in the near to medium term:

#### - Diesel (as import replacement).

#### - Urea (as import replacement).

#### - Coal for pulverised coal injection (PCI, for export).

#### - Hydrogen (for export).

#### Other coal products may also be viable, either in smaller scale for niche markets or at large scale if there is demand growth above that currently anticipated or there are other favourable technological or economic developments.

#### **Finding 8 – Economic impacts**

#### Hydrogen and diesel have the largest medium term and long-term impact on GSP and, while not transformative to Victoria as a whole, could make a significant contribution to the Latrobe Valley economy if they can be produced with low or zero carbon emissions.

#### **Finding 9 – Infrastructure requirements**

#### For an individual product stream exported through a single port there are a number of transport options for volumes under 2 Mtpa.

#### Based on existing infrastructure, utilisation of multiple ports will be required to export products between the range of 2-10 Mtpa.

#### Significant investment in new infrastructure is likely to be required for transport of volumes in excess of 10 Mtpa.

#### **Finding 10 – Research and development**

#### Previously commissioned work has examined the issue of the market failure rationale for investment in R&D. R&D is a relatively low cost way of the Victorian Government attempting to preserve or increase the “option” value of the state’s brown coal reserves.

#### R&D and pilot scale demonstration projects have delivered, or are delivering, credible progress for their respective technologies with the co-benefits of supporting skills and knowledge development for the State. Given the particular characteristics of Victorian brown coal, and the desirability of having a body of expertise in the state, free riding on the coal research of others is not a viable strategy. The past evidence shows that the modest amount of R&D spending to date, at this end of the value chain, has delivered quantifiable intermediate outcomes and the leveraging of funds from other sources.

#### It is not possible to objectively identify the “right” amount to be spending on R&D, and tight budgetary conditions do raise the issue of opportunity cost for funding R&D in coal over R&D in other sectors of the economy.

#### If the State chooses to fund R&D then a model like BCIA is appropriate. The independence of BCIA is seen as a positive for attracting and distributing funding. Industry were more comfortable working with BCIA, the independence provided more flexibility and agility in the distribution of funding to suitable R&D programs.

#### **Finding 11 – Carbon capture and storage (CarbonNet)**

#### The government’s interest in and pursuit of CarbonNet seems generally consistent and proportionate given the relatively small amounts of public funding spent on the project so far.

#### CCS provides an “insurance policy” to facilitate the ongoing use of brown coal reserves for CTX projects in the face of a carbon-constrained future.

#### **Finding 12 – Community engagement**

#### Feedback from the limited number of community stakeholders shows a gap in communication and engagement (felt particularly keenly in the Latrobe Valley) following the decision not to reappoint members of the Coal Resource Victoria Advisory Committee. This, coupled with the absence of a clearly articulated position on coal developments, leaves the community and industry uncertain about the government’s support for activity in this area.

#### **Finding 13 – Coal allocation processes**

#### While the two coal allocation processes were probably effective at raising international awareness of the Victorian brown coal resource and its attributes, and delivered assets to three companies, they were not successful at generating on-the-ground investment and projects.

#### The Review supports the previously expressed position of the Firecone Review (2007) that a further allocation of coal should only be considered if there is evidence of credible, well-resourced new investors who face difficulty in agreeing reasonable terms to access the coal resource that has already been allocated.

#### **Finding 14 – Framework for decision making**

#### There are a number of investment facilitation pathways open to business looking to expand within, or move to Victoria. DEDJTR’s InvestAssist and InvestVictoria programs provide a flexible approach which tailors support based on their assessment of potential size of investment, the commercial readiness of the project, and the apparent seriousness of the proponents.

#### Major projects, by their nature, warrant a degree of “bespoke” service from a development department.

#### Major projects utilising the coal resource may approach the government seeking assistance for feasibility work, site specific or resource specific studies, assistance with large scale demonstration projects and support for infrastructure or training.

RECOMMENDATIONS

#### **Recommendation 1**

#### There is a need for an overarching clear policy statement on coal development. This could sit within a broader energy policy statement and should clarify whether the “ultimate” or “implicit” aim for government is unlocking the potential value from the State’s brown coal resource, and creating jobs and investment particularly in the Latrobe Valley. Current industry players and potential project proponents are looking for clarity and certainty around whether the government is supportive of further coal development. Clarity is also required around any conditions or caveats on development. For example must development be low emission or no emission? Should resource come from the existing mines or are new mines acceptable/encouraged?

#### However, an overarching coal or broader energy policy statement should follow the development of a clear Victorian Government climate change policy that establishes the government’s intentions for medium to long term greenhouse gas emission reductions and renewable energy investment. Once that policy is established, the role of coal for energy generation, CTX and CCS can be more clearly articulated.

#### **Recommendation 2**

#### There is a legitimate rationale for government involvement in R&D across a wide range of sectors, including mineral endowments such as coal. R&D provides a relatively low cost way of preserving or increasing future “option” values of such endowments, particularly in cases such as brown coal where the composition of Victorian deposits is relatively unique compared to Australian and international equivalents.

#### A commitment to a relatively small amount of R&D funding would enable the leverage of other research funds and assist in maintaining a small core of expertise in the particular characteristics of Victoria’s brown coal resource. If future funding is agreed, an external body – like BCIA – is an effective mechanism and would provide continuity, industry buy-in and an existing body of knowledge around currently funded projects and future opportunities.

#### **Recommendation 3**

#### Amend the approach to funding D&C projects.

#### A significant problem is the long lead time and uncertain development process leads to program funding being tied up in allocations but unspent. This problem has become more acute as the government’s budget environment has tightened. With an ambitious economic development agenda focused on six priority sectors and the development of future industries, there is a real opportunity cost in having money tied up in siloed programs.

#### An alternative approach should be considered based on four elements:

#### - No standing program allocation;

#### - An “open for business approach” where proponents can approach the government at any time;

#### - Gated evaluation of projects; and

#### - Decision-making process to explicitly consider the relative merits of this particular project versus other economic development opportunities across the economy that also deliver investment and jobs.

#### The first gate would be an evaluation against a high level “Framework”. The Framework is outlined in the Summary.

#### Removing a standing program allocation while supporting an open-for-business approach requires that funding sources or other avenues for financial assistance need to be identified . The disadvantage of this approach is that there is no dedicated source of funds, but the advantage is that money is not tied up in program allocations (sometimes for years) when there are other opportunities that could use the funding to generate outcomes.

#### **Recommendation 4**

#### In the coal area, major project proponents may approach the government seeking funding for feasibility work, site specific studies, testing of the resource, or assistance with LSDPs.

#### The nature of major projects warrants a degree of “bespoke” service. The Government should continue to tailor support on an individual basis for major projects in the coal areas. Aspects of the Framework for decision making and the revised approach for funding D&C projects would be appropriate when considering requests for financial assistance.

#### **Recommendation 5**

#### The consideration of CarbonNet is proceeding independently of the outcomes of this Review.

#### The Review supports the Frontier (2016) analysis that a strategic option that provides the government with the opportunity to clarify the regulatory environment and remove barriers to private investment in CCS, without itself undertaking the more intensive geological and source capture testing, should be explored.

#### **Recommendation 6**

#### Mechanisms like CCV have played a role in the past in engaging with communities, particularly in the Latrobe Valley about the importance of coal and the potential future pathways for coal development. In the absence of this type of engagement mechanism the government should consider how else it might articulate its approach to coal and coal development. This will be aided by the implementation of Recommendation 1.

#### **Recommendation 7**

#### Coal allocation processes as a mechanism to drive investment have not produced proponents that have led to commercial scale project investment.

#### The appetite of industry and the community to support a new coal mine is uncertain and the government should evaluate any new request for coal allocation against the ability of the existing mines to supply the quantity required. This supports the previously expressed position of the Firecone Review (2007) that a further allocation of coal should only be considered if there is evidence of credible, well-resourced new investors who face difficulty in agreeing reasonable terms to access the coal resource that has already been allocated.

#### There is an opportunity to clarify the process around coal allocations in the coal policy development to be undertaken in 2016.

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