

Submission on North Galilee Basin Rail Project Environmental Impact Statement

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Introduction

The North Galilee Basin Rail Project (NGBR) is a proposal to build and operate a standard gauge rail line from the northern Galilee Basin to the port of Abbot Point, some 300 kilometres away. The project would have the capacity to move 100 million tonnes per annum (Mtpa) of thermal coal, largely sourced from mines proposed by Indian company, Adani.

The environmental impact statement (EIS) of the project is currently on display. The Australia Institute welcomes the opportunity to make a submission on the EIS, particularly the economic aspects of the project.

The economic justification for the project (EIS chapter 22, section 22.3) is flawed, as it does not examine the costs and benefits to Queensland of this project and its related mining and port projects. Instead, the economic justification emphasises indirect economic impacts, derived through the use of an input-output (IO) model:

Economic assessments estimate that at a regional level, the NGBR Project is expected to generate a significant and positive economic impact in the Mackay, Isaac and Whitsunday (MIW) region and Queensland. The NGBR Project will involve a capital investment of approximately \$2.2 billion which includes capital expenditure on earthworks, drainage, bridges, road works, rail track and signalling, communications and construction management costs.

Economic modelling estimates that the NGBR Project will generate approximately 6,150 jobs (1,700 direct and 4,452 indirect) in the MIW region and just under 7,000 jobs (2,017 direct and 4,981 indirect) in total across Queensland during the peak construction year of 2015. In 2015, modelling estimates that the NGBR Project will contribute \$791 million to Gross Regional Product in the MIW region and \$909 million to Queensland's Gross State Product.

Once fully operational, modelling estimates that the NGBR Project will contribute \$209 million to Gross Regional Product in the MIW region per annum and \$369 million per annum to Queensland's Gross State Product. Operation of the NGBR Project is also estimated to generate 1,097 (277 direct and 820 indirect) full time equivalent positions each year in the MIW region and 1,940 (369 direct and 1,571 indirect) full time equivalent positions each year across Queensland over the life of the NGBR Project.

This evaluation alone is inappropriate as the model:

- Assumes the project and its related mining projects are economically and financially justified.
- Does not examine which coal market conditions are required for any economic benefits to be realised.
- Does not transparently outline government contributions to the project.
- Does not examine alternatives to this project.
- Assumes there are no environmental or social costs to the project.
- Assumes that the project and its related mining projects have no adverse impacts on other industries, contrary to other results in the economic assessment.

These points are some of the reasons that the Queensland Department of Infrastructure and Planning guidelines recommend using cost benefit analysis over IO modelling:¹

¹ (Qld DIP, 2011) p18

The primary method of economic evaluation of public sector policies and projects is cost-benefit analysis. Input-output methodology (or the use of multipliers) is not a preferred methodology for economic evaluations.

Cost-benefit analysis generally assesses the impact of a project on the economic welfare of the community, and is therefore a key element in any public sector cost-benefit analysis.

In recognition of its shortcomings, IO modelling for project evaluation has been described as “biased” by the Australian Bureau of Statistics, “deficient” by the NSW Land and Environment Court and regularly “abused” by the Productivity Commission.² These bodies have all been critical of the assumptions inherent in this model, particularly that there is a limitless amount of labour and capital available in the economy.

Assumption of viability

All the economic impacts calculated by the IO model derive from the expenditure of capital and operating costs. A key assumption is, therefore, that this expenditure of \$2.2 billion will indeed occur. However, this spending is reliant on the development of coal mines in the Galilee Basin. Many financial analysts and economists are concerned about the viability of these projects:

Development of the Galilee Basin looks increasingly remote, Macquarie Group Ltd., Australia’s biggest investment bank, said in a May 1 research note. Prospects for project paybacks look extremely poor, the bank said. Further delays are likely unless “deep pocket” backers are able to ignore conventional economics, Sydney-based Macquarie said.³

The economic impact statement of the NGBR project makes no consideration of whether Galilee Basin projects are justified from a financial perspective, or if they result in a net economic benefit to Queensland as a state. Without this consideration, the economic analysis of the NGBR project merely recognises that if more than \$2 billion dollars is spent in the Mackay, Isaacs and Whitsunday region, output will be increased and more people will be employed, regardless of the value of the project it is spent on. Similar economic modelling results would be achieved whether the spending was focused on something unproductive such as paying people to dig holes in the ground and fill them in again, or focused on something productive such as spending on health and education or rail infrastructure.

Also of concern is that the economic assessments of the mine projects themselves do not answer these questions. For example, the economic assessment of the Carmichael Mine contains no cost benefit analysis, no quantification of royalties to Queensland and no calculation of financial benefits to Australia.⁴ Given these projects are largely foreign-owned, with most of their financial benefits accruing to foreign interests,⁵ these unresolved issues should be of great concern to decision makers. Without more detailed and appropriate analysis, decision makers are unable to determine whether these projects represent a benefit either to their immediate proponents or to the Queensland public.

² (ABS, 2011; Gretton, 2013; Preston, 2013)

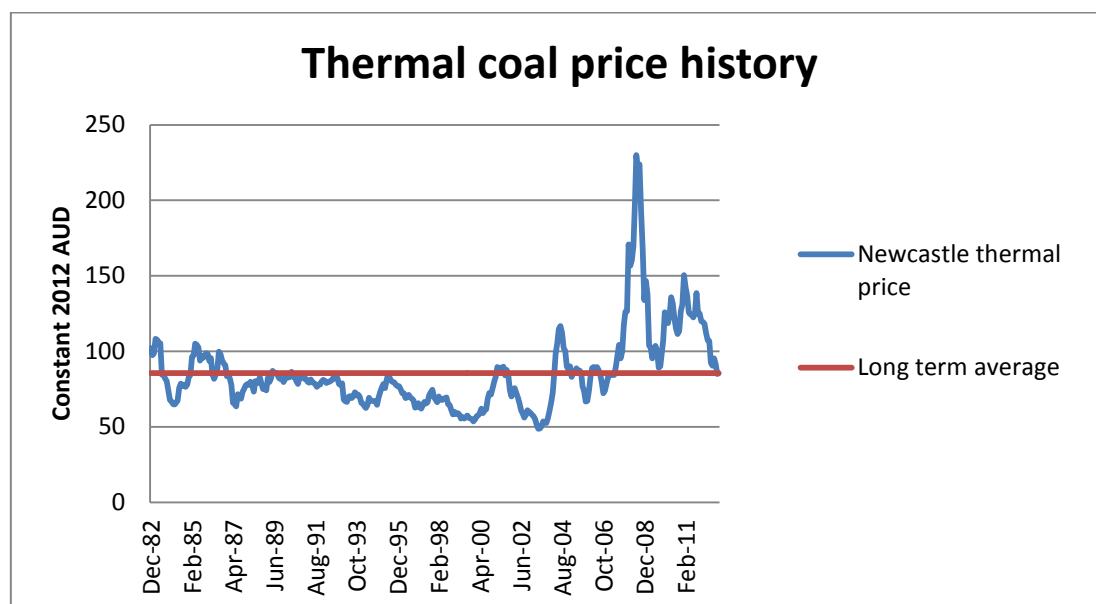
³ (Scharples, 2013)

⁴ (GHD, 2013)

⁵ (Edwards, 2011)

Coal market conditions

The long term operation and viability of the NGBR project and its related coal mining projects are dependent on coal market conditions remaining sufficiently favourable over the life of the projects. However, there is no indication in the economic assessment of any of these projects as to what prices are required to ensure these projects are financially viable and able to generate returns for the state. This should be of concern to decision makers as coal prices have returned to historical levels following historic peaks in 2008 and 2011:



Sources: Indexmundi, Reserve Bank of Australia

Forecasters such as the World Bank and the Australian Bureau of Resource and Energy Economics are predicting coal prices will remain subdued over the near and long term. The World Bank is forecasting Australian thermal coal prices of under \$100 per tonne (nominal US dollars) out to 2025.⁶ These forecasts place pressure on the economics of the Galilee Basin mining projects, including the NGBR project.

Given the isolation of coal reserves in the Galilee Basin there are significant costs associated with bringing coal to market. Therefore it is important to know:

- if the project will remain viable if World Bank predictions prove accurate;
- what price the proponent is anticipating;
- the break even coal price, or market conditions required to maintain production.

The risk for decision makers is that they approve projects that are damaging to Queensland's environment, local communities and other industries, but which do not have the underlying financial viability that will provide the claimed economic benefits.

Government contributions

The economic assessment of the NGBR project and related projects does not consider the costs of these projects to the Queensland and Australian governments through direct subsidy, provision of infrastructure, tax concessions or reduced royalty arrangements. The Queensland government has promised royalty "ramp ups" as part of developing the Galilee

⁶ (BREE, 2013; World Bank, 2014)

Basin coal mines.⁷ These subsidies directly reduce the value of the mining projects to the Queensland public and reduce state government revenues.

Research by The Australia Institute estimates that fossil fuel industries such as coal mining receive around \$4.5 billion in federal government assistance.⁸ Without analysis of state and federal assistance in the economic assessment of projects, decision makers cannot accurately assess the benefits and costs of projects to the Queensland public. Government assistance to the NGBR project and related mining and port projects should be a key part of their economic assessment.

Project alternatives

In the EIS executive summary, the proponents claim to have considered several alternatives to developing the NGBR project. However, the economic assessment offers no considerations of these alternatives and whether they may have resulted in a greater economic benefit for Queensland. The current proposal represents the preferred option of the proponents, but not necessarily the option that provides the best outcome for the Queensland public.

The type of economic modelling used in the EIS, IO modelling, is not able to consider the relative net benefits of different project alternatives. If cost benefit analysis had been used, as recommended by Queensland departmental guidelines, these alternatives could have been considered and a decision made in line with departmental guidelines and the interests of the Queensland public.

Input-output model

The limitations of IO models are well understood among economists. Firstly, they assume that there are no limits on the amount of resources available in the economy, such as labour. This means that under the model, labour can be used in one project without taking it away from another project. The ABS describes this as a “lack of supply-side constraints”:

***Lack of supply-side constraints:** The most significant limitation of economic impact analysis using multipliers is the implicit assumption that the economy has no supply-side constraints. That is, it is assumed that extra output can be produced in one area without taking resources away from other activities, thus overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.⁹*

As noted in the project’s EIS, the local and regional areas are close to capacity in skilled labour, with low unemployment and large amounts of the projected workforce needing to be sourced from further afield. In other words, anyone who already has a job who goes to work on this project is double-counted. It is as if there is a “ghost workforce” waiting to be employed, but not appearing in unemployment figures. This was noted in a case in the NSW Land and Environment Court looking at similar economic modelling of a mine in the Hunter region. In rejecting the proponent’s modelling, the judge noted:

I accept [The Australia Institute’s] evidence that the assumption of the input-output model that there is a ghost pool of highly skilled yet unemployed people in the Hunter region, from which labour for the extension of the existing mine would be drawn, is unrealistic.

⁷ (Queensland Government, 2013)

⁸ (Grudnoff, 2013)

⁹ (ABS, 2011)

The IO model used for the analysis of the NGBR project uses a modified approach to traditional models to account for some of this limitation in relation to employment:

When new jobs are created, it should be determined where the people come from to fill those jobs. In some cases, these jobs will be taken by previously unemployed locals or by someone who is currently employed locally but whose own job is taken by a previously unemployed local. In both cases, the impact of the newly created job and associated income is partially offset by the fact that someone who was previously receiving unemployment benefits is no longer doing so. To calculate this effect requires estimates of the parameter rho (refer Appendix A). Rho represents the proportion of new jobs that are likely to be filled by previously unemployed locals. For the construction phase, it was estimated to be 50 per cent for the local area and 60 per cent for Queensland as a whole. (p6)

Given the low unemployment in the region it seems unlikely that 50 per cent of jobs would be sourced locally. The modelling estimates that 6,150 jobs would be generated in the region, of which 50 per cent is 3,075. Given that there were only 3,157 unemployed people in the region in the 2011 census, the value for rho of 50 per cent assumes that every unemployed person in the region will be employed in the project. No details are provided to support the estimated value, with the modelling appendix emphasising:

little or no published data are available to assist with estimation of this variable, particularly at a regional level. The DECON models have been constructed to enable the analyst to estimate this variable on the basis of the availability superior data or assumptions.¹⁰

While this modification to the traditional IO model is intended to overcome one of its major shortcomings, the EIS provides no discussion of the jobs that may be lost in other industries as a result of this project and related mining and port projects. This is despite figure 3-3 of the Economic Impact Assessment chapter showing that the rapid expansion of mining in the project area has accompanied declining agricultural employment levels. With reduced arable land and tighter competition for resources, such impacts are inevitable and should be discussed in the EIS. However, the assumptions inherent in IO models render them unable to calculate such impacts, ensuring any suggested economic impacts are overstated.

Another shortcoming of IO models is that they are not suitable for assessing projects in smaller regional economies. Smaller regions often lack the resources that the model assumes it has, meaning that local impacts are lost to the wider area. As the ABS explains:

Not applicable for small regions: *Multipliers that have been calculated from the national I–O table are not appropriate for use in economic impact analysis of projects in small regions. For small regions multipliers tend to be smaller than national multipliers since their inter–industry linkages are normally relatively shallow. Inter–industry linkages tend to be shallow in small regions since they usually don’t have the capacity to produce the wide range of goods used for inputs and consumption, instead importing a large proportion of these goods from other regions.¹¹*

Again, this is not acknowledged in the EIS of the NGBR project. Why this economic assessment is based on IO modelling and not cost benefit analysis is unclear.¹² The

¹⁰ unpaginated appendix, pdf page 55

¹¹ (ABS, 2011)

¹² For extended discussion on shortcomings of IO modelling for project assessment see (ABS, 2011; Denniss, 2012; Gretton, 2013)

Queensland Planning department should ensure its own guidelines are followed and insist on cost benefit analysis in the terms of reference (ToR).

External costs

Under standard cost benefit analysis practice, several important external costs of the NGBR project and accompanying projects would have been considered, giving decision makers a better understanding of costs and benefits, including impacts on health and the environment.

Health costs

Coal mining and power generation have substantial impacts on human health and these generate economic costs. As the Senate *Inquiry into Impacts on Health of Air Quality in Australia* found last year:

Coal is a potential source of dust and particulates throughout its lifecycle as a fuel. Coal is likely to be a source of significant air pollution if not properly managed during extraction, storage, and transport. It is also a source of significant CO2 emissions during burning. Evidence provided from the NSW EPA indicated the contribution of coal mining to emission levels in that State broadly, with mining for coal accounting to 27.6 per cent of PM2.5 in the greater metropolitan region of Wollongong, Sydney and Newcastle (GMR), 58.4 per cent of PM10 in the GMR. In the Upper Hunter region (UHR), those levels are higher, at 66 per cent of PM2.5 and 87.6 per cent of PM10 emissions.¹³

These high levels of particulate pollution are of concern primarily due to their impact on human health. Particulate pollution is linked to cardiovascular and respiratory diseases, types of cancer and premature death. For some particles there is no safe level of exposure, with even low levels of exposure leading to health problems.¹⁴

In the USA quantification of the health impacts of coal is more advanced than in Australia. Studies on the Appalachian mining region in the US estimate that the cost of health impacts and premature deaths in that region is US\$74.6 billion per year.¹⁵ This builds on another important study of the region which found:

Age-adjusted mortality rates were higher every year from 1979 through 2005 in Appalachian coal mining areas compared with other areas of Appalachia or the nation.¹⁶

This study refers to past research on coal mining regions that found elevated levels of chronic heart, respiratory, and kidney disease, and lung cancer, after control for socioeconomic factors. They found that the health impacts far outweighed the economic benefits of mines.

While it is difficult to extrapolate the widespread health impacts of coal mining in the USA to the Australian setting due to different mining practices and different pollutant levels, health costs will be imposed on populations close to mining operations, the NGBR project and port facilities. The economic assessment presented in the EIS makes no consideration of these costs.

¹³ (Senate Standing Committee on Community Affairs, 2013)

¹⁴ (Pui, Chen, & Zuo, 2013; Raaschou-nielsen et al., 2013; USA Environmental Protection Agency, 2009)

¹⁵ (Epstein et al., 2011)

¹⁶ (Hendryx & Ahern, 2009)p547

Greenhouse gas emissions

The economic justification of the project places emphasis on the indirect or downstream impacts on jobs and economic output. However, the indirect or downstream greenhouse gas emissions associated with burning the coal of the Galilee Basin have not been considered. This is inappropriate. If the EIS is to consider downstream economic impacts of using coal, it should also consider the downstream impacts on climate change. If the NGBR project goes ahead as suggested, the 100 Mtpa of coal it transports will create 240 million tonnes of carbon dioxide equivalent emissions each year.¹⁷

Coal industry proponents often adopt the defence that if we did not sell coal someone else would, and our actions therefore make no difference. This is true to a large extent - most coal that would be consumed in the world would be substituted from other mines, but not all of it. The expansion of the coal supply that the project represents will exert some downward pressure on prices which will result in an increase in the amount demanded.

In the absence of the NGBR project and related mining and port projects, not all of the coal exported would be offset by production in other mines. To argue otherwise is to suggest that coal supply is perfectly elastic and therefore that coal price should not vary. This is clearly not the case. There is no discussion of this reality in either the Economics or Greenhouse Emissions chapters.

Terrestrial and marine impacts

The NGBR project will destroy around 250 hectares of threatened ecological communities.¹⁸ The economic costs of this loss are not considered in the economic assessment. The implicit assumption is that offset programs will be perfectly effective, an assumption disputed by ecologists.¹⁹

The related T3 coal loader project at the Abbot Point coal terminal will result in the dumping of three million cubic meters of dredge spoil in the Great Barrier Reef Marine Park. The economic assessment of that project also fails to consider the economic costs of impacts on the environment.²⁰

¹⁷ (Department of Climate Change, 2013)

¹⁸ According to summary in EIS section 22.4.3

¹⁹ see for example (Bekessy et al., 2010; Gibbons & Lindenmayer, 2007; Walker, Brower, Stephens, & Lee, 2009)

²⁰ (Economists at Large, 2012)

Conclusion

The EIS of the NGBR project does not consider the costs and benefits of the project to the Queensland public. Instead, it relies on modelling of indirect impacts to give an unreliable picture of the project's economic influence. This approach is directly contrary to Department of Infrastructure and Planning guidelines. Instead of showing a net economic benefit to Queensland, this assessment downplays costs and emphasises indirect jobs and output to give a misleading impression of the project's value.

Key shortcomings of the economic assessment of the NGBR project:

- It assumes that all Galilee basin coal projects are economically viable, contrary to the opinions of many analysts.
- It provides no insight into what coal prices and market conditions will be required for this project and related mining and port projects to return the claimed economic impacts.
- It includes no discussion of royalties raised or of government assistance to these projects. Decision makers can have no clear understanding of the fiscal impacts of the project, particularly important as the Queensland Government is proposing royalty holidays for Galilee Basin projects.
- It makes no consideration of alternative rail projects and whether they may have provided greater economic value for Queensland.
- Despite some modifications to the traditional IO modelling approach, the model used still suffers from many shortcomings such as lack of resource constraints, fixed prices and problems with application to small regions. The assessment therefore overstates the beneficial impacts of the project.
- It makes no assessment of external costs, despite substantial impacts on human health, climate, terrestrial and marine environments.

Based on these many shortcomings, The Australia Institute believes the NGBR project and its related mining and port projects do not represent the best economic interests of the Queensland public and recommend against approval of the project.

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