

Wells Economic Analysis

Report to the Wilderness Society

on

Economic Impact Assessment Report
Gunns Limited Pulp Mill

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Summary

This report analyses the Economic Impact Assessment Report for the Gunns Limited Pulp Mill which has been conducted by the Allen Consulting Group. The four most important conclusions are:

1. If the change in welfare of State residents is measured by per capita private consumption, then the change in welfare is relatively small – an increase of less than half of one per cent over the ‘no pulp mill’ or basecase scenario;
2. This welfare change could be significantly affected by effects of the pulp mill on the State budget which have not been modelled in the present Impact Assessment;
3. The Impact Assessment follows standard practice in modelling the employment effects of the construction and operation of the pulp mill. However, there is considerable uncertainty as to whether the labour supply response assumed in the modelling will actually be realised;
4. The Impact Assessment analyses a single, ‘best estimate’, scenario. However a number of risks can be identified
 - to the Managed Investment Schemes and hence to the supply of logs from short-rotation forest plantations,
 - to the dividend payable by Forestry Tasmania and to State economic activity generally, flowing from volatility in the world price of paper pulp.

It is important that the Resource Planning and Development Commission undertake further work to quantify the issues identified in 2, 3 and 4.

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Introduction

The Economic Impact Assessment Report (EIAR) carried out by the Allen Consulting Group comprises two parts. The first and most important part uses a computable general equilibrium (CGE) model to calculate the sectoral impacts of the construction and operation of the pulp mill from 2007-2030. The second and conceptually separate part offers supplementary analysis of issues not covered by the CGE model, including discussion of tourism and property values in the Tamar valley, possible arrangements with TAFE Tasmania for skilling the workforce, and so on. Since this discussion is not dependent on the results of the CGE modelling, it is not reviewed here.

CGE model

The CGE model used for the EIAR is an application of a well-known generic class of models developed by the Centre of Policy Studies at Monash University. This class of models is regarded as the industry standard in Australia and is widely used in policy analysis overseas. The particular version of the CGE model used in the EIAR is MMRF-Green but for brevity this report will refer to it as the CGE model.

Models of this kind have undoubted strengths because they attempt to model outcomes in a consistent way – for example, the enforcement of budget and resource constraints ensures there is no double counting of costs and benefits. They offer a considerable advance over older input-output models because they take account of the adjustment of firms and households to changes in relative prices, rates of return and incomes¹. Nevertheless, it is important to ask whether the structure of the model, and the way in which the specific project is modelled, captures all the important economic aspects of the pulp mill proposal. It is also important to interpret the results in a useful way. These issues are discussed in the following sections.

a). Thumbnail outline of Modelling Strategy

A CGE model is a set of algebraic equations which describes²

- the output, demand for intermediate inputs, employment, and capital investment decisions of competitive firms. Firms are differentiated by industry (54 in MMRF-Green) and produce differentiated products (58). Each industry is disaggregated by State (8) and sub-State region (56);
- the spending and saving decisions of households. There is a single ‘representative’ household in each State, so the model is not intended to analyse income-distribution issues;
- the spending, taxation and budget balances of State and Federal governments;
- the response of real wages to deviations from the long run equilibrium rate of unemployment, and the determination of rates of return in each of the 54*8 industries. Changes to these prices induce movements of labour between industries and/or States, and induce changes in the rate of investment in the State-specific industries. While productive capital equipment and agricultural land are assumed to be industry-

¹ It is now generally recognised that the older input-output approach to impact assessment tends to overstate the impact of new projects because it ignores the relevant resource and budget constraints, and so ignores the response to consequent changes in relative prices and rates of return induced by new projects.

² Parmenter et. al. (2001) and EIAR, Appendix B provide more detailed descriptions of MMRF-Green.

specific, labour is assumed to be homogeneous. In other words, the model does not differentiate between different skill or occupational classifications of labour;

- international exports and imports of the 58 products (differentiated by State), together with the income flows consequent on changes in borrowing from abroad.
- the evolution of output, the stock of productive capital, and employment in each industry over time.

Modelling of this kind is very computing and data-intensive – adding more realism is not a trivial exercise.

In conducting an assessment as in EIAR, the starting point is to transform the business plan for the pulp mill into a time profile of industry and State-specific demands for additional capital investment and employment³. The effects of these demands are then modelled as changes to the baseline scenario – that is, model outputs represent changes to the ‘no pulp mill’ or baseline case. Model output can be quite detailed. For example, it is possible to quantify the effect, over time, of construction of the pulp mill on the demand for Food and Beverages on the Gold Coast (it would, of course, be negligible).

What is more important is a broad picture of the mechanisms at work.

The baseline case is one where the Australian economy and all the regions within it are assumed to be in long run equilibrium.

Now consider the changes that take place in the pulp mill case. In the first instance, increased demand for capital and labour needed to construct and then operate the pulp mill is met by increased labour supply (which leads to a higher real wage); increased supply of goods with which to produce the required capital equipment; and increased borrowing from abroad (which appreciates the real exchange rate).

These changes have knock-on effects to households, government, and to other industries. For example, appreciation of the exchange rate reduces profitability in industries exposed to international competition. Similarly, the rise in the real wage reduces profitability in labour-intensive industries. These ‘crowding out’ effects mean that, over time, a significant impact of the pulp mill is to attract resources away from other industries and/or States.

In the long run, this reallocation effect is the *whole* of the story as far as labour is concerned, because the long run equilibrium of the model is one in which total Australian employment reverts to its baseline level. Australian GDP is higher in the long run, however, because there is more installed capital in the long run. But the reallocation story is important here too. The entire *rise* in product occurs in Tasmania – by 2030 real Tasmanian Gross State Product is \$675.8bn higher than in the baseline, and in the rest of Australia, real GDP is \$351.6b lower than in the baseline.

In the EIAR, only one ‘pulp mill’ case is presented which is presumably the ‘best estimate’ scenario. In business planning it is more usual to assess the sensitivity of the results to changes in important assumptions so as to get a feel for the likely range of variation in the results. In the present case, the obvious and important alternative scenarios to consider would take into account the volatility in the world price of pulp since it is assumed that 90% of the pulp is exported. This could be accomplished in the CGE model by running alternative ‘pulp mill’ scenarios with shifts in the world demand curve for paper pulp. This would be an

³ See EIAR, p.18.

important and policy-significant exercise as it would indicate to stakeholders the likely volatility in employment, economic activity and tax collections.

b). Welfare Measure

The welfare measure identified by EIAR is based on private consumption expenditure measured on a national accounting basis. The limitations of the national accounting measure of consumption as an indicator of welfare are well known but that is not the issue here. The national accounting measure provides a measurable common language. However, many economists would argue that

- Government consumption expenditures yield private consumption benefits. In other words, publicly-provided consumption goods are a close substitute for some categories of private consumption expenditure. For example private health expenditures are a close substitute for publicly-provided health services; public and private expenditures on schools are close substitutes, and so on. So if an aggregate consumption measure is to be used to gauge welfare effects, it should be based on private *consumption* rather than private *consumption expenditure*.
- Per capita measures are a more relevant basis for welfare measurement than aggregates.

To calculate the impact of these two points, it is necessary to estimate the change in private consumption and population from their baseline levels.

In 2005/06 the trend estimate of real private final consumption expenditure in Tasmania was \$11285m; trend real general government consumption expenditure was \$4011m⁴. Conservatively, assume half of general government consumption expenditure yields private consumption benefits. Then real private final consumption expenditure in 2005/06 is 85% of total private consumption.

- The EIAR assumes that there is no change to real government consumption expenditure as a result of the expansion in economic activity consequent on construction of the pulp mill. (EIAR, Table C.1) indicates that in 2030 real private consumption *expenditure* is 2.49% higher than it otherwise would be, so the increase in private consumption is 85% of this figure.
- The average employment impact in the operating phase (2007-2030) is an increase in the number of persons of 2.0% over what it otherwise would be. Although the change in State population is not modelled it is reasonable to assume that by 2030 the State population will increase by roughly the same proportion as the increase in employment satisfied by interstate migration which, from EIAR, Table C.2, can be calculated as 84% of the total increase in employment in 2030.

Although both assumptions – the change in State population and the extent to which government consumption expenditure yield private consumption benefits – seem reasonable, they could be challenged. However, the present assumptions imply that the CGE model estimates only a relatively small overall welfare improvement, since in 2030 the overall change in per capita consumption is

$$\begin{aligned} & \textit{Estimated percentage change in per capita consumption} \\ & = 0.85*2.49 - 0.84*2.0 \\ & = 0.43\% \end{aligned}$$

⁴ ABS cat.no. 5206027, downloaded 19 September 2006.

So the EIAR suggests the project would lead to a relatively small increase in per capita private consumption in Tasmania, making it around half a percentage point higher than it otherwise would be in 2030.

c). Effects on State government budget

As outlined in the previous section, the change in a welfare measure which is based on per capita private consumption (rather than private consumption *expenditure*) necessarily requires an assumption about the evolution of government consumption expenditures. In the EIAR real government consumption and investment expenditures, at both State and Federal levels, are fixed at basecase values. However, revenues change. State revenue collections change with changes in tax collections based on State-specific activity.

The model then incorporates an automatic adjustment of direct transfer payments to households so as to ensure that the overall budget balance is the same in the ‘pulp mill’ case as in the baseline case. For example, if the pulp mill generates greater State tax revenues than in the baseline case, these are assumed to be returned to households via higher transfer payments which, in turn, increase household consumption expenditures and are reflected in the welfare measure.

There are several points to note:

- In EIAR, it appears to be the case that GST revenues collected in Tasmania are treated as State government revenue and by the above mechanism affect State private consumption expenditure. This probably overstates the allocation of GST revenues that Tasmania would actually receive, and hence it overstates the effect on private consumption expenditure.

As outlined earlier, the CGE model details the way in which investment in relatively high productivity activities in one State attract resources from other industries and/or other States. The effect of the pulp mill is to increase Tasmanian GSP at the expense of other States, and as outlined on p.32 of the EIAR, there is a reduction in GST and other taxes collected by other States.

So, under the Grants Commission formula, less than 100% of Tasmanian-generated GST revenue would be redistributed back to Tasmania. In the longer run, this leakage is likely to be significant, and so it is likely that the increase in private consumption modelled in the EIAR is somewhat overstated.

- The EIAR also assumes that
 - there is no additional government investment expenditure on infrastructure such as road and water supply upgrades⁵;
 - there is no additional government consumption expenditure in areas such as provision of TAFE courses⁶;
 - there is no change in State or commonwealth tax revenues as a result of changes in tax foregone under the Managed Investment Schemes (MIS) applicable to plantation forestry, or to the dividend payable by Forestry Tasmania.

While this may be a reasonable approach to follow in the absence of specific commitments by the government, it is likely that all four of the above effects will

⁵ EIAR, p.33.

⁶ EIAR, p.30.

operate to change the Tasmanian government fiscal position if the pulp mill is approved. The effect of some of these fiscal parameters could be quantified using the same methodology as in the present EIAR, and it is recommended that this be done as part of the RPDC assessment.

For example, if the additional public capital expenditure on road and water infrastructure were known, this could be modelled as an additional expansion to final demand along with the expenditure on construction and operation of the pulp mill itself. Similar considerations apply to increased government consumption spending on TAFE provision. Adding these extra components would lead to a greater expansion in Tasmanian GSP than in the scenario modelled in the EIAR, but it is not clear whether it would increase or decrease welfare as measured by consumption per capita.

Modelling the tax and dividend effects is more problematic, although two significant risks can be identified.

- The pulp mill proposal is evaluated in the EIAR on the assumption that the mill itself is not associated with any change in the availability of logs –availability is the same as in the baseline case.

The supply of plantation timber is subsidised by the Australian government through Managed Investment Schemes (MIS) and this subsidy has no direct effect on the State budget. However changes to taxation treatment of MIS are currently under consideration. So it is important to analyse the risks associated with a cut in the subsidy to short-rotation plantation timber afforded by the MIS scheme which would, over the lifetime of the project, impact on the supply of logs.

That this risk is real is acknowledged by the Tasmanian government:

‘the proposed \$1.2 billion Gunns pulp mill and the \$130million Southwood project are dependent on establishing around an additional 50,000 hectares of plantations to provide the long-term sustainable fibre volumes necessary for investments of this size. The majority of these plantations are planned to be established through Managed Investment Schemes structures.’⁷

- The second risk is to the dividend paid to the State by Forestry Tasmania which is currently around \$2-\$3m per annum. The contractual arrangements between Forestry Tasmania and Gunns Limited are not known. However if competitive neutrality principles have been applied, the market value of logs would be determined by their residual value, which is obtained by subtracting harvesting, transport and processing costs from international prices of processed wood products⁸. If these principles are reflected in the contractual arrangements, then the Forestry Tasmania dividend is subject to risk from fluctuations in the world price of pulp. This effect, too, deserves further analysis.

d) Employment effects and the Labour Market

As outlined above, the CGE model assumes that all labour is homogeneous, and that changes in real wages together with changes in labour demand are sufficient to attract the required

⁷ DIER (2005), p.2.

⁸ Productivity Commission (2001), p.vii.

amount of labour to expanding sectors. Underpinning this process is the assumed starting point that the Australian economy and all the regions within it are in long run equilibrium.

While this approach is standard, the EIAR results need to be interpreted in the context of present conditions in Australia. There are ongoing and widespread problems with supply of skilled labour, and industry is making extensive use of short-term international migration to fill the shortfall, using '457' working visas⁹. Federal government concern with the lack of geographical labour mobility is reflected by its consideration of a new mobility allowance.

So present Australian conditions make it likely that the 'long-run equilibrium assumption' for the baseline is optimistic. It is likely that labour and training costs will be higher than assumed in the IEAR. This may have two effects

- the crowding-out effect on other activity via higher real wages will be more pronounced than in the IEAR;
- un-modelled government expenditures on training and assistance to mobility will be higher than presently assumed.

Both these effects are likely to be significant and should be investigated further by the Resource Planning and Development Commission.

References

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Productivity Commission (2001), 'Competitive Neutrality in Forestry', CCNCO Research Paper.

Department of Infrastructure, Energy and Resources (2005), 'Submission to the Australian government review of taxation of plantation forestry', 23 August.

⁹ It has been estimated that 40,000 '457' visas were granted in 2005-06. (*The Age*, September 6, 2006).