

15. Economic Environment – Effects and Benefits

The economic benefits resulting from the Gorgon Development will have national, state and regional dimensions. The Gorgon Development will contribute substantial, positive economic benefits to Australia and Western Australia, derived from the combination of: export income the Development produces; tax and royalty revenue paid by the Joint Venturers; increased supply and competition in the domestic gas market; businesses and individuals employed; and the amount of money spent in the local economy.

Using two independent economic models, AE-MACRO and MMRF-GREEN, a number of major benefits to Australia and Western Australia's economies were identified. At the national level, some of the key benefits will include: some \$17 billion in revenue from company tax and Petroleum Resources Rent Tax (PRRT); an increase in Gross Domestic Product (GDP) of approximately \$3.6 billion by 2030 (depending on model and scenario used); and an increase of exports in excess of \$2 billion per year (at today's prices) during operation. At the state level, Western Australia's economic welfare is expected to improve by approximately \$4 billion, which is one-sixth of the total Australian economic welfare. Western Australia will also benefit from significant improvements to business investment and Gross State Product (GSP).

In response to increased revenues and economic growth, governments may increase expenditures, and reduce the average personal income tax rate to keep the ratio of public debt to GDP from falling. In turn, such income tax reductions would stimulate further economic growth. This general growth will provide flow-on benefits for business, employment and government revenues. Western Australia and the Pilbara region will benefit from increased demand for goods and services that will further stimulate business development and employment opportunities. The Gorgon Development is predicted to generate and sustain over 6000 jobs on average through the decades of operation, with 1700 generated in Western Australia.

Currently the regional economy of the Pilbara is not large enough to provide all of the labour, goods and services that will be required by the proposed Development. With increased labour and service demand, there is a risk that regional prices for goods and services will increase. This impact may be compounded by the influence of other large resource project activity scheduled for the area. Both economic models examined the potential for crowding-out investment opportunity and predicted that the Gorgon Development will have limited impact on this opportunity.

15.1 Introduction

This chapter is a description of the potential economic impacts of the Gorgon Development at national, state and regional levels.

The economic impact of the Gorgon Development was assessed using macro-economic modelling by Chevron Australia in 2003 in the Environmental, Social and Economic (ESE) Review (ChevronTexaco Australia 2003) and by modelling undertaken on behalf of the Government of Western Australia (The Allen Consulting Group 2003). These earlier economic modelling studies have been reviewed and assessed by an independent consultant. The model assumptions and results are summarised in this chapter of the Draft EIS/ERMP. Details of the modelling studies are in Technical Appendix F1. For a description of the existing regional, state, and economic setting for the Development refer to Chapter 8.

A number of other economic impacts were identified, on a qualitative basis, during these assessments and are also outlined in this chapter.

15.2 Economic Analysis

15.2.1 Assumptions

The national and state economic impacts of the Gorgon Development have been assessed using two independent macro-economic models of the Australian economy: AE-MACRO and MMRF-GREEN.

AE-MACRO is a dynamic model developed in 1992 by Access Economics (Access Economics 2002). Results from the AE-MACRO modelling studies have been published previously in Chapter 11 and Appendix K of the ESE Review (ChevronTexaco Australia 2003).

MMRF-GREEN is operated by the Centre of Policy Studies at Monash University, and is based on the same economic principles as AE-MACRO (Allen Consulting Group 2003).

In addition to running different Development scenarios, the economic models were based on the following important assumptions:

- tax revenues from the Development are used to reduce overall income taxes to maintain the budget balance
- there is no assistance or tax concessions by federal, state, or local governments
- Australian and international economies develop along steady, long-term economic paths
- the Gorgon Development is wholly foreign-owned, and entirely financed by equity. All cash surpluses are distributed as dividends
- the export price of the hypothetical gas-based resource Development grows by 2% annually in US Dollar terms. Prices of condensate are constant in inflation-adjusted terms, while the price of LNG experiences real price declines.

The results from the AE-MACRO work undertaken for the ESE Review by Chevron Australia most closely reflect the development scenario that forms the basis of this Draft EIS/ERMP: two trains of LNG and 300 TJ/day of domestic gas production. Therefore, the AE-MACRO model is generally referred to in this chapter. The MMRF-GREEN outcomes are discussed in detail in Technical Appendix F1 and the Allen Consulting Group Report (2003). Differences between the development scenario used for the modelling and the current concept include a later start-up date for the proposed Development and a higher estimate for direct employment. These will have the effect of shifting the impacts in time and increasing the benefits derived from direct employment, respectively.

15.2.2 National and State Economic Growth

It is estimated that the Gorgon Development will make a major contribution to Australian and Western Australian economic growth by:

- contributing some \$11 billion of investment expenditure (at current prices) between now and the mid-2020s (note: approximately \$6 billion will be spent in the initial construction phase of the Development with the rest being additional capital to fully utilise the Gorgon gas field, for example drilling and future compression facilities) (refer to Figure 15-1)

- generating net exports averaging in excess of \$2 billion annually (at current prices) over the period from 2012 to 2030
- permanently adding around 6000 direct and indirect jobs to national employment, 1700 of which will be in Western Australia (refer to Figure 15-2)
- contributing company tax and PRRT payments totalling \$17 billion (at today's prices) over the life of the Development. In net present value terms, this amounts to \$7 billion at a 5% real discount rate.

The best measures of the overall impact of the Development on economic welfare as predicted by the modelling are the increases in:

- annual flows of private consumption and public sector final expenditures that it allows
- public and private sector wealth at the end of the simulation period.

As modelled, in net present value terms, the benefit is mainly to the private sector. At a real discount rate of 5%, the Development will improve Australian economic welfare by an estimated \$24 billion (net present value in 2002).

Figure 15-1:

Gorgon Development – Contribution to National GDP and Western Australian GSP (Net Present Value in 2002)

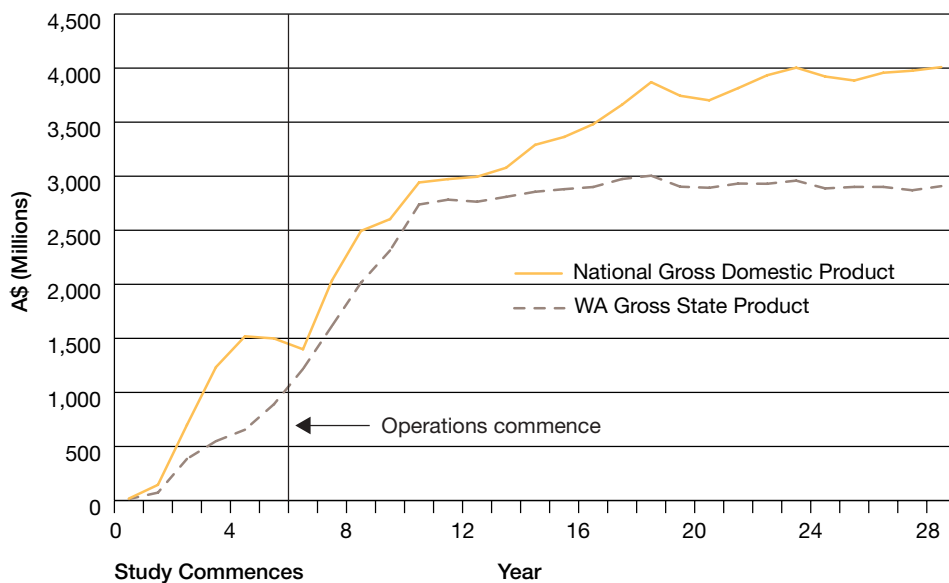
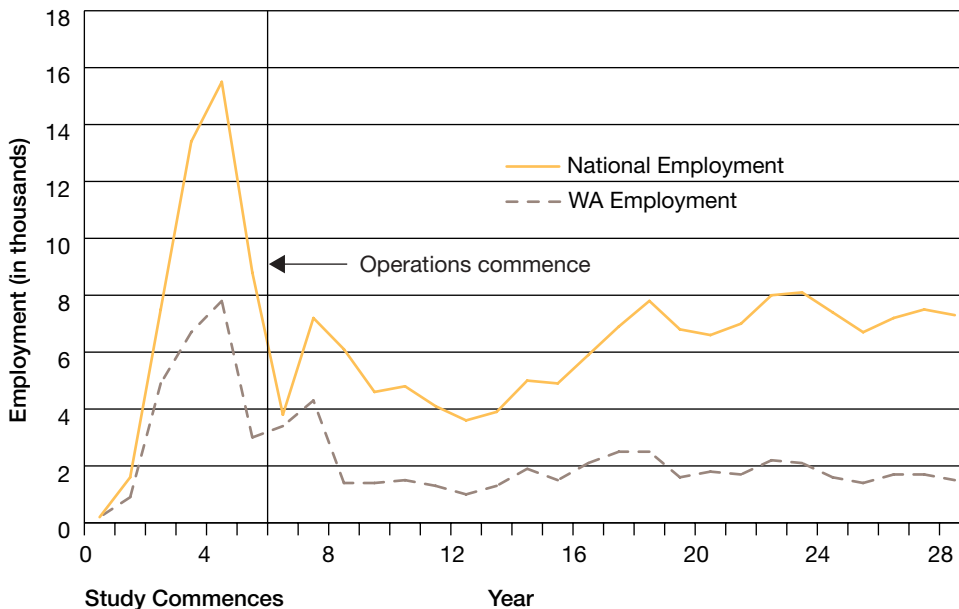


Figure 15-2:

Gorgon Development – Contribution to National and Western Australian Employment



15.2.3 Regional Development

The Pilbara region will benefit significantly from this Development. The extent of those benefits will be a function of:

- goods and services required for the construction and maintenance of the Development that is sourced from the region
- the workforce sourced from the region
- the workforce sourced from outside of the region, but who may choose to relocate to the region.

It is estimated that approximately 10% of the construction and operational workforce could be sourced from the Pilbara region. This workforce will create flow-on economic benefits through spending in the region.

The biggest economic impact will come from the goods and services required for the Development that are purchased in the region. At present, the Pilbara region has insufficient capacity to manufacture suitable plant and equipment and to supply major construction services to support the Gorgon Development. It is expected that most of these requirements will be met by companies located outside the region. In the first instance, supplies will be sourced from Perth. Failing that, then from other parts of Australia, or if needed, from international suppliers. However, there are potential opportunities for Pilbara-based companies to supply a share of these goods and services. These could include general logistics provision, site development, provision of elements of ship-berthing facilities, project buildings,

construction materials and services, aggregate and pre-cast concrete, erection and maintenance of the construction village, and supply of general services.

During the operation phase of the Development, supply base and general logistical activities will add to the economic and social welfare of the Pilbara region. These activities will add to the general level of activity in the region and allow further capacity building in local businesses.

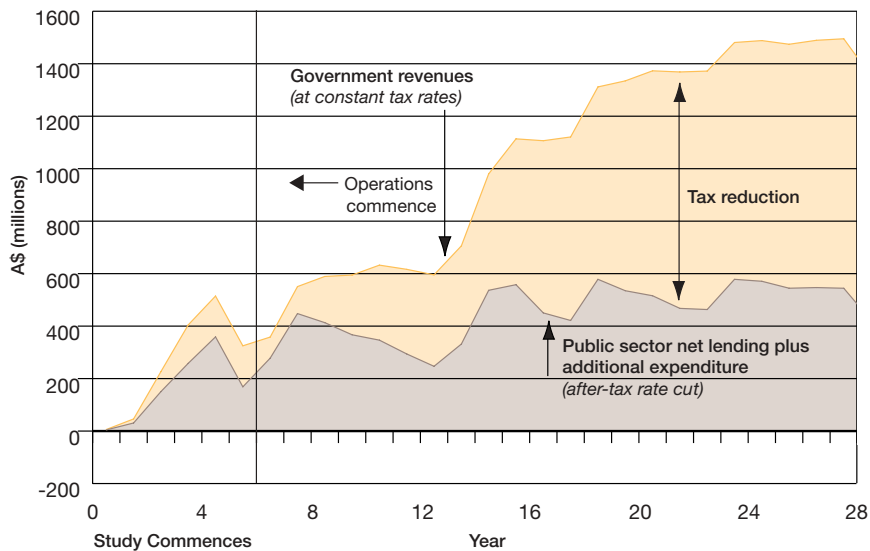
15.2.4 Government Revenue

Specialist studies conducted by Access Economics for the ESE Review (Access Economics 2002) indicate that the Gorgon Development will add substantial revenue to public sector finances, particularly at the Commonwealth level.

In response to these increased revenues and economic growth, governments may increase expenditures, and reduce the average personal income tax rate to keep the ratio of public debt to GDP from falling too rapidly. These income tax reductions, in turn, will stimulate further growth.

The impact on government revenues, with and without the income tax reduction is illustrated in Figure 15-3. The shaded portion of the chart shows the dollar value of the income tax reduction that the public sector is able to provide (rather than accumulating higher budget surpluses).

Figure 15-3:
Government Revenue Associated with the Gorgon Development



The Commonwealth will receive company tax and PRRT payments from the Development’s investors. Commonwealth tax receipts will also benefit from the overall increase in economic activity. Expenditures will also rise in an expanding economy. The predicted total of PRRT and company tax payments from the Joint Venturers to the Commonwealth is \$17 billion in nominal terms (\$7 billion expressed as a net present value at a 5% real discount rate).

This additional economic activity will generate a further \$2 billion (net present value at 5% discount rate) in revenue for the Commonwealth. The net present value of the overall Commonwealth budget gain is estimated at over \$9 billion.

The Gorgon Development will have modest direct impacts on Western Australian public sector finances. The main impact on revenue will be the additional payroll tax generated from employment associated with the Development. On the expenditure side, it is assumed that there will be no Western Australian Government subsidies. There is also no requirement for Development-specific investment in infrastructure by state authorities.

Indirect effects may be more substantial. The AE-MACRO modelling predicts that the Development will increase both revenues and expenditures. As production rates stabilise, the Development’s national economic impacts will flow through in the form of higher consumption expenditure and Goods and Services Tax (GST) revenues.

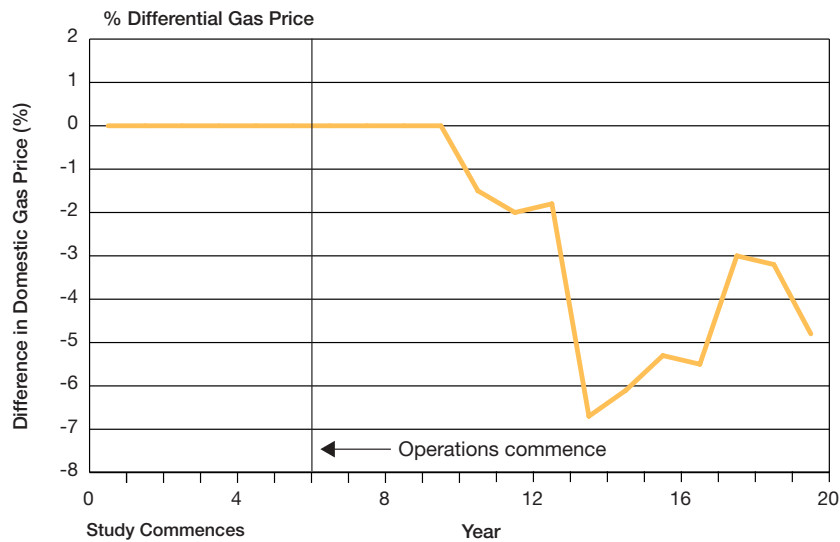
15.3 Impacts on the Domestic Gas Market

The Western Australian gas market may benefit greatly from the addition of another major gas supply to meet a continuing growth in demand. The sources of natural gas supply to Western Australian customers with and without the Gorgon gas field was modelled as part of the economic analysis conducted for the ESE Review. This modelling predicted a supply gap caused partly by the decline in existing production and by an increase in demand which could be filled by the Gorgon Development. This demand-gap is comprised of potential new industrial and domestic gas projects, such as minerals processing projects (refer to Chapter 1 for a list of potential projects). Industrial growth in Western Australia, such as in mineral processing or gas-to-liquids conversion, could be stifled or delayed without the introduction of gas from the Gorgon gas field.

The contribution of the Gorgon Development to enhancing gas market competition will have important implications for the continued international competitiveness of the Western Australian economy. The additional availability of gas in Western Australia will bring benefits to customers from the downward pressure on delivered gas prices.

Modelling conducted for the Joint Venturers predicted that the increased competition associated with the introduction of a major new gas supply may reduce delivered gas prices to domestic gas consumers on a state-wide basis by 2–7% over a 10-year period, compared to pricing without an additional major gas supplier (refer to Figure 15-4).

Figure 15-4:
Predicted Impact of Gorgon Development on Domestic Gas Prices



These predicted price reductions are particularly significant for industrial development in the South-West and Goldfields regions, where there is great potential for expansion in minerals processing and energy-intensive metal production. For example:

- in the South-West, more competitive gas supplies could stimulate further expansion of alumina and titanium pigment production
- gas-fired electricity generation (both stand-alone and co-generation), together with the introduction of a fully competitive electricity market, will contribute to achieving electricity prices which are competitive for energy-intensive processing such as aluminium smelting
- further development of laterite nickel processing and other industries in the Goldfields–Esperance region will be enhanced.

15.4 Local Content

Over the life of the Gorgon Development, the Joint Venturers are expected to invest over \$11 billion in upstream gas field development, LNG value-added manufacturing plant and domestic gas infrastructure. Operating expenditure over the same period of time is estimated to be over \$5 billion. This could act as a substantial economic catalyst to the Pilbara region.

For both the investment and operating phases of the Development, opportunities are expected for Australian and local suppliers to deliver a significant proportion of the labour, goods and services required. The Joint Venturers' Australian Industry Participation Policy is outlined and discussed in Chapters 2, 8 and 14.

In addition to the opportunities flowing to businesses and workers directly involved with the Development, there will be benefits to other businesses and workers throughout the economy. While the Gorgon Development will mostly benefit directly related activities, there will also be significant benefits for other manufacturing and service industries.

15.5 Capacity Building

The Gorgon Development presents many capacity building opportunities with significant flow-on effects to the Western Australian economy.

15.5.1 Technology and Skills Transfer

Proven and currently applied best practices will be employed throughout the Gorgon Development. These include:

- research and development of the first CO₂ injection facility in Australia with, most likely, the highest injection capacity in the world
- development of one of the largest subsea gas field installations in the world

- the possibility of the installation of one of the largest corrosion-resistant alloy, subsea gas pipelines in the world
- development of a world-class terrestrial and marine quarantine management and control system.

Opportunities will arise for transfer of some of these technologies to other industry participants. Where technologies are proprietary, contractors will gain experience in their application. The capacities of contractors and the skills of their employees could be enhanced as a result of working on the Development. These capacities and skills can be applied to other projects in Australia and other countries.

Australia is currently creating world-class research results in the utilisation of CO₂ injection technology through the Cooperative Research Centre for Greenhouse Gas Technologies (CO₂CRC) (refer to Chapter 13). The Development could provide an important critical mass in Western Australia to stimulate research and development in other areas such as petroleum production, health and safety, gas processing technologies, subsea technology and environmental management.

15.5.2 Development of a Petroleum Service Hub

Exploration and development of the petroleum industry in north-western Australia has stimulated strong growth in the petroleum service sector of Western Australia, which parallels the growth in the mining services sector. The petroleum service sector supplies a wide range of services including: exploration, engineering, equipment, training, education, environment, economic, community relations, and legal.

Service firms have developed the capacity to not only compete with foreign companies for work in Australia, but also to win work increasingly throughout the Asia-Pacific region. As a result, Western Australia is developing a reputation as a regional petroleum service hub.



15.6 Expansion of the Development

Development of the Gorgon gas field presents the opportunity to deliver the economic, strategic and social benefits identified in this document. In addition, the Development could lead to further exploration and development of other regional gas resource identified in the area, extending and expanding these economic benefits. It is estimated that the volume of gas in the region is sufficient to support additional LNG trains and/or large scale natural gas developments and industries in the future. Although the economic effects of this future expansion have not been modelled in detail, there are market advantages and considerable economic, strategic and environmental benefits. Competitive economic and market factors will determine the pace and extent of any such future developments.

15.7 Conclusion

Economic modelling studies show that the Gorgon Development will generate substantial, positive economic benefits for Australia and Western Australia. These benefits will be driven by export income generated by the Development, the amount of money spent in the local economy, and the taxes and royalties

paid by the Joint Venturers, and associated businesses and individuals. It is expected that the Gorgon Development will contribute approximately \$11 billion in investment expenditure at today's prices and pay \$17 billion in taxes and royalties over the life of the Development. The Development will stimulate 6000 direct and indirect jobs nationally, of which 1700 will be in the Western Australian workforce. It is estimated that approximately 10% of the construction and operational workforce could be sourced from the Pilbara region. This workforce will create flow-on economic benefits through spending in the region.

The Gorgon Development may provide the impetus for the expansion of existing services and industries and attract a number of new ones. It will help underpin the development of new technologies and skills, for example in disposal of CO₂ by injection and subsea technology, thereby creating regional capacity for future growth.

Development of the Gorgon gas field could lead to further development of other regional gas resources identified in the area, extending and expanding the benefits of the initial Development.