

How much is Greater Sunrise really worth?

A revised potential revenue estimate for a disputed gas resource in the Timor Sea

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Contents:

- Introduction
- What are the “official” statements on the value of Greater Sunrise?
- Conclusion

Footnote:

- Introduction
- Footnote proper
 - Assumptions
 - Project evaluation results
 - Project economics

"If the project goes ahead Australia and Timor Leste could expect more than \$90 billion (US\$68 billion) in export revenues and about \$A52 billion (US\$39 billion) government receipts (taxes and royalties) ... The value of the field to Timor Leste must be seen as the sum total of the upstream plus downstream benefits. The US\$39 billion in government receipts is only half the story. Of comparable value are the downstream benefits arising from onshore infrastructure investment." Geoff McKee, Oil and Gas engineer

Introduction

This note is aimed at clarifying revenue predictions from a potential Greater Sunrise LNG export project.

Rob Wesley Smith, long time Darwin-based East Timor activist, has been pestering us to carry out a revised revenue estimate for the disputed Greater Sunrise gas resource. What is needed it seems are some numbers that can stand up to scrutiny. Rob is skeptical quite rightly in my opinion - about the figure of about \$3 billion reportedly being offered by Australia to East Timor to keep their government quiet on maritime boundaries for 100 years or so.

This valuation data is now important, since without knowing the true value of the Greater Sunrise gas resource, people will find it hard to assess whether or not the Australian government is making a fair and reasonable offer.

Conclusions outlined here, and discussed in detail in the footnote, are that potential government revenue arising from a Sunrise LNG project are approximately four times higher than the figures bandied about by the oil companies and those who take such advice as gospel.

The reason for this is that crude oil prices have climbed dramatically since 2002 when the oil companies first put the revenue estimates into the public domain.

What are the “official” statements on the value of Greater Sunrise?

Shell, Woodside's partner in the Sunrise development, stated in August 2002, that quote “[a Sunrise floating LNG project] is expected to deliver over A\$30 billion in export revenues and approximately A\$8 billion in

taxes to Australia and East Timor" (see submission #51 to Australia's Joint Standing Committee on Treaties, 2002).

This figure seems to have become the "official" word on the value of the Sunrise field, quoted in many academic papers and by media commentators since August 2002.

A footnote in a 2003 paper by Dean Bialek and Gillian Triggs (The University of Melbourne Faculty of Law, Public Law and Legal Theory Research Paper No. 45) repeated that "The Greater Sunrise reserves are estimated to contain recoverable gas reserves of about 8.5 trillion cubic feet and condensate reserves of around 335 million barrels, valued at approximately A\$30 billion: Government Press Kit: Timor Sea Treaty, 20 May 2002; see also Northern Territory Office of Territory Development, Greater Sunrise Northern Territory Oil and Gas Fact Sheet (2002)"

Over time, such estimates, repeated often, become accepted truth by the consensus of experts quoting each other.

More recently, in October 2004, Fr. Frank Brennan SJ recycled these numbers in his monograph paper entitled "The Timor Sea's oil & gas: what's fair?" written on behalf of the Australian Catholic Social Justice Council:-

"The Greater Sunrise fields contain about 8 trillion cubic feet of gas and 300 million barrels of condensate. If the project goes ahead Australia and Timor Leste could expect more than A\$30 billion in export revenues and about A\$10 billion A\$12 billion in government receipts (taxes and royalties)", reports Fr. Brennan.

We note A\$30 billion in export revenue is equal to US\$22 billion, and A\$10 billion to A\$12 billion in government receipts is equivalent to US\$7.5 billion to US\$9 billion.

Fr. Brennan does not give the readers the benefit of any source or basis for the data he presents, so it must be accepted as a simple fact. Such statements issued by credible commentators can be unhelpful to East Timor's case for compensation.

The conclusion arising from the analysis below is that these quoted revenue numbers are out of date, superseded by the new realities of the world crude oil market.

Based on a crude oil price of US\$50/bbl over the life of the project -- we would say instead:

"If the project goes ahead Australia and Timor Leste could expect more than \$90 billion (US\$68 billion) in export revenues and about \$A52 billion (US\$39 billion) government receipts (taxes and royalties)."

Rob Wesley-Smith wrote to the Timor Sea Justice Campaign discussion list on Feb 7, declaring "I have published before that the "government take" over say 30 years is more like \$35bn. Does Timor Leste believe this? Or will it be satisfied with a cash offer of an extra \$3bn, for example?"

Our figures show that these "back of an envelope" calculations by Mr. Wesley-Smith are certainly in the right "ball park". As is not unusual, it is the progressive activists who usually "get it right" first, especially in the case of East Timor's history.

Conclusion:

The revenue numbers for the Sunrise field quoted by Fr. Brennan only look about right only if we assume a base crude oil price of around US\$20 per barrel. This assumption we now know to be unrealistic.

Many oil analysts/commentators believe the crude oil price will stay at the high prevailing levels of close to US\$50 per barrel. This is because we are approaching the time of what is known as "peak oil" when world crude oil production rates will start to fall for the first time ever (in the next 20 years or so). The drastically reduced discovery rate is not able to replace the depletion of reserves currently occurring at the staggering rate of about 27 billion barrels per year.

In the light of the above estimates for the Sunrise field, the A\$3 billion cash offer that the Commonwealth Govt. wants to give the people of Timor Leste - to forestall boundary discussions for 100 years - can be seen as a paltry sum.

If the A\$52 billion (US\$39 billion) in government receipts from Sunrise, as we estimate, were split 18% - 82% in accordance with the "status quo" IUA that has already been signed but not ratified, then Timor Leste would get A\$9 billion (US\$7 billion) and Australia would get A\$43 billion (US\$32 billion). So a cash payment of A\$3 billion to Timor Leste represents a de-facto shift in Timor Leste's share of upstream benefits from 18% to only approximately 24%. Is this enough to settle the issue once and for all, enabling Woodside to move forward with development?

If Timor Leste agreed to settle for a de facto 50-50 split of upstream benefits from a potential Sunrise project based on a US\$50/bbl crude oil price scenario, then the cash payment from Australia over the life of the project would or should be more like A\$26 billion (US\$20 billion) which is a far cry from the A\$3 billion on offer.

Can the value of a gas field such as Sunrise to the people of Timor Leste be determined simply by calculating the government receipts over the life of the field in this way?

The answer is "no". The value of the field to Timor Leste must be seen as the sum total of the upstream plus downstream benefits. The US\$39 billion in government receipts is only half the story. Of comparable value are the downstream benefits arising from onshore infrastructure investment.

A pipeline to Timor from the Sunrise field with a LNG export industry built on the north side of the island would generate huge additional economic benefits as a result of fixed direct investment. The quantification of these downstream benefits has been studied in detail by the Northern Territory government. Timor Leste must strive to achieve these downstream benefits for her people, following the example set by the Northern Territory government. An NT Govt. spokesman has said that if all Timor Sea gas came ashore to Darwin it would create directly and indirectly 12,000 jobs for Australians. [1]

It is the people of Timor Leste who really need those jobs, and the national dignity and self-respect that goes with it - not the Australians who are now wallowing in wealth and excessive consumerism judging by recent media reports.

It is hoped this information will help to encourage the people of Timor Leste to keep fighting to maximize their petroleum benefits. In this struggle, the paper by *La'o Hamutuk* entitled "Saving Sunrise" [<http://www.laohamutuk.org/Oil/Sunrise/04sunrise.html>] appears timely and helpful, for it explains how Timor Leste has time on her side to achieve these goals, without the need to hastily capitulate to pressure from Australia.

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[1] Mr. Andrew Andrejewskis, for the Northern Territory Government, page TR72, Hansard for Joint Standing Committee on Treaties, public hearings, 3 October 2002 in Darwin.

[2] See for example the report "Gas Infrastructure Development: Opportunities for Timor Sea Gas in Northern Territory & Queensland", a Public Report prepared by M.J.Kimber Consultants Pty. Ltd. for the Northern Territory Government, 27th May 1999.

[3] See also for example "Development options for Timor Sea Gas: Analysis of Implications for Australia", a Report to the Northern Territory Government, February 2002, by ACIL Consulting.

"Governments and oil companies are reluctant to discuss their assumptions, since this is seen as "sensitive" commercial information. As a result, ordinary people and activists in a supposedly democratic society find it very hard to get the information they need in order to make reasonably informed judgments. The government of Timor Leste currently has a large amount of very good information delivered to it by Woodside, giving costs and benefits relating to the construction of a pipeline to Timor from Sunrise and an export facility in that country. Supporters of East Timor need to know what is in these reports, in order to

calibrate their efforts to help East Timor. But unfortunately it is difficult sometimes to find “transparency” in this business where oil revenue is involved. Governments often want to keep information to themselves (when it suits them) and prefer to have a band of less than well-informed supporters that they can more easily manipulate. The government of Timor Leste should put Woodside’s reports into the public domain, in the same way that the Northern Territory government allows the public to view its similar reports [2, 3], or in the same way that oil companies put their environmental impact statements into the public domain to satisfy the public’s “right to know.” Geoff McKee, Oil and Gas engineer

Footnote

Introduction

What follows now is a step by step justification for our abovementioned revenue estimates, for non technical readers. This keeps to the principle that people should not bandy about numbers without being clear about the basis on which they are calculated.

Those who take issue with the numbers can debate the correctness of the assumptions that led to the result, rather than argue about the results themselves. In this way a consensus can emerge about reasonable cost, price & fiscal assumptions to employ in any analysis. Given the same input data, most company, government and private economic evaluation spreadsheets will give the same results.

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What we have is an “LNG plant in Timor” impact statement that the government of Timor Leste chooses to keep under wraps. Thus their supporters in Melbourne and elsewhere do not know how to judge the issue on its merits.

My recommendation to activists to lobbying the Australian government for a better deal and at the same time lobby the government of Timor Leste to release the Woodside report.

For those who are not aware, this report, is believed to have been issued by Woodside to the Timor Leste government around mid-September 2004. It is understood to have three parts, plus an overall "executive summary":

Part 1. Pipeline from Sunrise to two possible locations in Timor Leste, done by Intec Engineering.

Part 2: Technical and costing analysis for an LNG facility in Timor Leste, done by Bechtel.

Part 3. Broader issues of environment, infrastructure, economic impacts, done by ConocoPhillips

Footnote proper

Barrel of oil equivalent (boe)

1 barrel of oil has the energy equivalent of about 6,000 standard cubic feet (scf) of natural gas. Therefore we can express quantities of gas as "barrel of oil equivalent" or 'boe'.

1 scf of natural gas has the energy content of about 1,000 British Thermal Units (BTU). 1 BTU is the amount of energy needed to raise the temperature of 1 pound of water by 1 degree Fahrenheit.

1 boe has the energy content therefore of 6 million BTU. This is useful to know, because as we will see below, the price of liquefied natural gas (LNG) is normally expressed in the world market as US\$ per million BTU. However to keep things simple we will express the price of LNG in terms of US\$ per boe.

Converting the Sunrise resource into boe.

1 trillion cubic feet (1 tcf) of natural gas = 1 million million scf of natural gas i.e. (10 raised to the power 12) cu ft of natural gas.

You can show that 1 tcf of gas = 167 million boe and therefore 8 tcf = 1.34 billion boe (to be sold as liquefied natural gas (LNG) in the case of the Greater Sunrise field)

1 barrel of condensate can be taken as 1 boe, therefore 300 million barrels of condensate = 300 million boe = 0.3 billion boe.

The Greater Sunrise field contains therefore $1.34 + 0.3 = 1.64$ billion boe.

A barrel of crude oil is currently worth over US\$50.

Therefore over the life of the Sunrise field, if all this energy were produced, and sold at the prevailing energy value of crude oil, then, by inspection, the total paid by the customer would be expected to be in the order of (1.64 billion boe) x (US\$50/boe) = US\$82 billion dollars, present day value.

That is the gross expected sales revenue at the end of the transportation line (e.g. as paid by customers in Japan or the USA in the case of Sunrise gas). All the initial costs of investment in exploration, production facilities, wharfs, ocean tankers, together with ongoing operating and maintenance costs of production and transportation need to be deducted to find out what is left over for the companies and governments to share as their final "booty". It is the split between the companies and the governments share that is often the cause of a lot of fuss by the companies who need to get a reasonable return for their shareholders in order for the project to go ahead.

What the companies end up with is then further taxed by the government.

Price of Sunrise condensate and LNG

The price of condensate (from gas fields, sometimes called natural gasoline) can be taken as the same as that of crude oil.

But is the gas (LNG in this case) worth as much as crude oil, on an equivalent energy basis?

It can be shown from published data that the "CIF" (all costs including freight) price of LNG in Japan is very close to the price of crude oil in energy terms. We subtract about US\$9 per boe (US\$1.50 per million BTU) for the cost of transportation from Sunrise to Japan or the US, including the cost of re-gasification in those countries, to get the price of LNG at the export loading facilities of the future Sunrise project.

We then use this FOB ("free on board") price at the point of ship loading to work out the export sales revenue.

Revenue calculations for a potential Sunrise LNG project

Below are results derived from one particular set of assumptions for a potential Sunrise LNG project. You can vary these assumptions depending of what scenario you are investigating. Therefore results are not "carved in stone", only "indicative". They will give a rough indication of the costs and revenue breakdown involved in such a project. The scenario that follows is for a fixed offshore platform at the Sunrise field with condensate offloading facilities, and feeding gas into a deepwater pipeline to Timor, with onshore pipeline to a liquefaction plant on the north side of the island. Other scenarios are floating LNG facilities or a gas pipeline to distant Darwin instead of nearby Timor.

But it is the first scenario that is important for Timor Leste.

Assumptions:

1. Fiscal regime: Australian PRRT (this is less "onerous" from the companies perspective than the Timor Leste PSC regime i.e. a somewhat lower "government take")
2. Gas reserves: 7.68 tcf
3. Condensate reserves: 299 million barrels
4. Exploration and appraisal cost: US\$250 million
5. Total capital cost (drilling, processing facilities and pipelines) : US\$3.7 billion
6. Operating costs: US\$45 million/yr
7. Start production: 2010
8. Abandonment cost: US\$150 million
9. Abandonment year: 2035
10. Base crude oil price: US\$50 per barrel
11. LNG price (FOB ex liquefaction plant): US\$41 per boe
12. Condensate price: same as base crude oil price

Project evaluation results (figures are real, unescalated):

1. Cumulative gross sales revenue, received by combined upstream and downstream project: US\$68 billion (US\$43/boe)
2. Government take: US\$25 billion (US\$16/boe)
3. Capital expense: US\$3.7 billion (US\$2.34/boe)
4. Operating costs: US\$1.2 billion (US\$0.74/boe)
5. Abandonment and salvage: US\$150 million (US\$0.09/boe)
6. Net cash flow to companies before tax: US\$39 billion (US\$24.50/boe)
7. Income tax paid : US\$14 billion (US\$8.80/boe)

8. Net cash to companies after tax: US\$25 billion
9. From above, total government receipts = US\$25 billion + US\$14 billion = US\$39 billion.

Project economics (from companies perspective):

1. Net cash flow to companies after tax, discounted at 10%: US\$6 billion (US\$3.80/boe)
2. Project rate of return: 29% (i.e., "windfall" profits for the joint venture partners at the forward-looking US\$50/bbl scenario)

Sensitivity to price of crude oil

What if the base price of crude oil were assumed to be only US\$25 [or US\$20] per barrel?

In this unlikely future scenario, if we re-ran the numbers the US\$68 billion in export revenues now becomes US\$28 billion [or US\$20 billion], and the US\$39 billion government receipts reduces to US\$14 billion [or US\$9 billion]. The figures in [parentheses] are for the US\$20/barrel crude oil case.

The US\$20/bbl crude oil price assumption gives us revenue estimates similar to those reported by Fr. Frank Brennan.