



OpenOil responds to comments on the report How much revenue will Guyana lose out on in Stabroek?

9 February 2020: On 3 March, OpenOil published a report and fiscal model examining how much revenue would be generated by Guyana's Stabroek oil license. This analysis, which was commissioned by the NGO Global Witness, has generated debate in Guyana and elsewhere. We would like to take the opportunity to respond to this debate. We would also, however, like to offer our personal thanks to anyone, from any institution, seeking to engage in informed debate about the numbers, and what the numbers mean. A copy of our report and fiscal model [can be found at openoil.net](https://openoil.net).

About OpenOil.

OpenOil is a consultancy based in Berlin, Germany, which conducts financial analysis for those concerned about the public policy dimensions of managing natural resources. Our client list includes governments, law firms, multinational development banks, the UN, the Extractives Industry Transparency Initiative, think tanks and civil society organisations. About two thirds of our work is with clients on a confidential basis. One third of our work is with NGOs similar to our project with Global Witness in Guyana, where the goal includes publishing financial analysis, and the full working model that underlies it.

OpenOil is both a privately incorporated profit-seeking company and a social enterprise with the goal of making investment grade financial analysis of natural resource projects available for public policy. Almost everywhere in the world, oil and minerals belong to the state, and are therefore a public good to be managed. We believe that because the Guyanese public own their oil, they are an investor as important as ExxonMobil. And, like any investor, the Guyanese people have the right to financial analysis on which to base decisions. This is our only institutional goal. We are currently engaged in several multi-country initiatives to help develop the practise of public interest financial modelling, which [serves a wide variety of use cases](#).

At the same time, we recognise that decision making is a sovereign Guyanese process, and we confine our work to financial analysis. Our fiscal model follows the FAST modelling standard, on whose advisory board I sit. It was also sent to ExxonMobil twice before publication: once in December and once in January. We invited critique, amendments, updated data or specific criticisms of substance in the model but received none of substance.

It should however be noted that, even at the technical level, a strict divide between quantitative and qualitative financial analysis is often not possible. Precisely because numbers often only provide part of the answer, many technical issues require an approach which combine sound quantitative analysis with qualitative review – in this case, for example, what are Guyana's real peer countries. In such cases we use best efforts and consult with a wide network of peer analysts and modellers.

The last general point to make is that, although transparency has become something of a buzzword in the past decade, what has yet to be widely recognised is the difference between data and analysis. Neither our own, or anyone else's, estimate of Guyanese government take, and revenues accruing under a fiscal regime, are data. They are all projections and estimates, based on numerous choices made around inputs and calculation methods. It follows therefore that the proposal of any such

estimate in the public space is only credible when the full underlying workings and calculations which underpin the headline conclusion are also published, in an interactive format such as Excel, for scrutiny by colleagues. This is what we have done. We invite others to do the same. To conduct public debate about the meaning of headline numbers from models, without access to the workings of those models, is to “drive blind”.

Four main arguments have been made about our analysis. Each of them is dealt with in turn.

Argument 1: Estimating future oil revenues is speculative.

First, our model projected the revenues Exxon’s Stabroek license would produce until 2056, and some have stated that projections like this are speculative, or arbitrary. Of course, our model’s estimates are speculative in the sense of not being empirical fact – all forward-looking estimates are. But they are not somehow more speculative than anyone else’s. ExxonMobil and its partners certainly have estimates and projections based on the entire life of the Stabroek project – they would not have invested billions of dollars without them, and they often refer in public statements to conclusions derived from their models.

It is also uncontested international best practise that governments should have such models. In terms of the length of time, because the model is a model, a figure for a difference between the two fiscal regimes examined can be retrieved over any time period. If 40 years is considered too long-term, for example, the model also estimates that the difference in revenues to government will be: \$2.8 billion by the end of 2025, \$16.3 billion in the entire decade of the 2020s, and so on. The charge of arbitrariness would more logically relate to inputs and calculation methodologies than an end conclusion. The methodology is explained at length in the report, and indeed the model itself is annotated at the level of each granular input, outlining the source and analytical approach to setting each individual parameter. Any modelling decision we have made which arrived at this end estimate can be interrogated by looking at the underlying model. We invite such scrutiny. Part of the concept of public financial modelling is that because all the workings are public, a “many eyes” principle can apply to them. The paradigm therefore is designed to encourage a situation in which assumptions are examined, data are updated, and an improved version of the model is published. The latest Stabroek model published is version 2 (version 1 was published in April 2018, relating only to the Liza 1 and Liza 2 discoveries).

Argument 2: The 52% government take estimate is wrong.

Some criticism has been raised because the OpenOil estimate of government take is 52% under the current fiscal regime, at a base oil price of \$65 in today’s money, compared to a published estimate of 60% by Rystad.

Part of the difference between the two numbers lies in the fact that the OpenOil estimate is “undiscounted”, whereas Rystad’s uses a discount rate of 10%. OpenOil’s own estimate of the government take using a discount rate of 10% is available in the published model, and is 57%. Rystad’s estimate of undiscounted take for the government “comes out to be close to 55%”, as confirmed in correspondence between Rystad and OpenOil. With both “flavours” of calculation therefore, discounted and undiscounted, the gap between the OpenOil and Rystad estimates are not 8% but in the range of 2-3%. First, differences of this scale in values in this metric are common, and often not material, since modelling is not an empirical science. Second, a number of hypotheses could explain the remaining difference but they cannot be tested without access to the underlying Rystad model.

Argument 3: OpenOil is not comparing Guyana to the right countries.

Another objection lies not in disputing the percentage of profits estimated, but that we did not pick the right countries when we compared Guyana's government take to others. It has been argued that, when the particular characteristics of the Stabroek contract are compared with genuinely similar deals, Guyana is not getting a bad deal, but is actually reasonable and "in the middle of the pack". One naturally expects a lower percentage in an untried environment like Guyana, and percentages of future deals will increase over time. Not everyone is Saudi Arabia or Norway, able to command the vast majority of available economic rents. This is of course a valid *potential* objection. The question is if it actually applies in these circumstances.

Once again we come to the critical fact that no data exist in public domain to validate, to a reasonable level of professional integrity, any of the headline government take figures published in tables and comparisons by anyone – including Rystad, Wood Mackenzie, ExxonMobil, and others. We are not – yet – in a situation where like can be compared with like.

This criticism needs to be addressed at two levels. First, is Guyana at the low end of the pack – does it get a smaller revenue take than other countries? Our study collected all government share estimates it could from well regarded sources that were in public domain and these are included in the annex of our report. Clearly more data points would be better, but this was what we were able to find in public domain. It is notable that the most data we could gather for other countries used government takes that were not discounted. Thus, so that we could best determine how Guyana compared to other countries, we also used the estimate of Guyana's government take undiscounted as our main conclusion in the report. As discussed above, a discounted version is also available in the model.

These government share estimates show that Guyana's current government take – 52% – is a particularly low compared to other countries. Out of 61 countries, Guyana is has the 52nd lowest government take. If we switch our methodology to that used by Rystad – so we are now discounting our dollars ("NPV10") then Guyana still comes only 22nd out of 25 estimates available.

Second, did we compare Guyana to the right countries – ones that were like Guyana in 2016? As discussed in our report, there are at least six different variables which could sensibly be applied to identify potential peer jurisdictions – frontier or well-developed, deepwater or not, high-cost production or not, gas or oil, same geographical region, or not, profit maximising policy, or not. In the data points referred to above, there are cases in each of these parameters which fall on either side of the Guyana outcomes across each criterion. No rigorously defined definition of peer fiscal regimes exists in public domain which is capable of independent valuation, let alone the estimated values for the output metric derived from models which are also hidden from public view.

Argument 4: Guyana was a frontier oil country on June 27, 2016.

One parameter that could be applied to identify peer groups is hotly debated: in June 2016 was Guyana a reliable oil country – was it a frontier oil country? In fact, closer consideration suggests there are two separate questions which have collapsed into one. The first is whether Stabroek was a frontier province. The second is whether, even if it was not, it should have been regarded as such for negotiation purposes.

The discovery of both Liza 1 and Liza 2 by the end of June 2016 clearly confirmed the Stabroek concession not just as a fertile discovery but as a wide-area development. A section of the model explores the economics of exploration in the field and shows that these two discoveries alone substantially de-risked all further development in the concession – a finding supported by the actual reported exploration expenditure by the partners since 2016, and by Rystad's estimates of continued exploration into the mid-2020s.

ExxonMobil have argued that the terms of the original 1999 agreement should have been maintained in the 2016 agreement, regardless of any actual de-risking, because anything else would be to diminish the sanctity of contracts. Leaving aside the ideological debate over whether the sanctity of contracts is always an absolute principle, or merely one desirable feature that needs to be in balance with others, this argument is based on the principle of balance between risk and reward. ExxonMobil’s argument is that it was the fact that it had already taken all the risks necessary to make the discoveries that justified the preservation of the original terms, since those terms reflected an agreement made on the balance between risk and reward in 1999. This is a question where the numerical analysis shades into other non-quantitative issues.

OpenOil’s position on that question is that there is clearly enough evidence already in public domain to suggest that by June 2016 the government of Guyana had made more than one concession on meeting the workplan obligations of the original agreement. This is of course entirely their right, and no judgement is possible from the outside of whether those were sensible decisions given the policy priorities of the government at that time. But it is clear that such decisions should have implications in terms of evaluation of the project economics. The government of Guyana was effectively sharing the risk by agreeing to make those concessions. In this view, then, the risk-reward balance has indeed changed by June 2016, and the government should benefit as well as ExxonMobil from the de-risking that has occurred as a result of the work done in the concession so far.

How much the government should benefit is not a question with a scientific answer. The alternative regime we formulated in the model is only one possible answer. It has some merits: each of the components, the higher royalty rate and corporate income tax, are within international norms. It is aligned with existing Guyanese legislation (a corporate income tax rate of 25%), and our understanding of the focus of public debate in the country, and its overall outcome in terms of government take is, as outlined above, in the middle of the pack for a province that is now substantially de-risked, partly through measures taken by the government. But there are other possible approaches. The alternative fiscal regime outlined here is simply one reasonable approach to what is a thought experiment.

Show your work.

Finally, we come back to the question of what top-level government take figures signify. Those interested in the technical details of this discussion are encouraged to read the annex to the report, which lays out the different parameters which can affect a final value. I have dealt with only one here, that of discounted versus undiscounted cash flows. There are many others.

Country	IMF 2012 (NPV0)	Johnston 2008 (NPV0)	Rystad 2018 (NPV10)	Rystad 2020 (NPV10)
Angola	91%		75%	
Argentina	47%	53%		
Australia	57%	54%	59%	
Brazil	52%		77%	63%
Equatorial Guinea	74%		84%	
Malaysia	66%	72%	78%	
Mauritania		60%	67%	57%
Mozambique		69%	64%	57%
Nigeria	62%	82%	85%	
Norway	75%	78%	82%	
Trinidad and Tobago		83%	88%	
UK		52%	31%	

Wide consultation with colleagues suggests this is an area where our collective game should be raised. Suffice to say here that the difference in the government take figure in *the same* model, between one plausible set of circumstances and another, can easily reach 10% or 15%.

The Stabroek fiscal regime is unusual in that it varies less under ranged of oil price, costs, speed of development, and so on than most other contractual regimes. Most others vary considerably. This is not because the models are flawed, but because the metric itself responds dynamically to changes in market conditions. One can see this from the Rystad estimates themselves. In April 2018 Rystad issued a series of estimates which put government take estimates at 77% for Brazil, 67% for Mauritania, and 64% for Mozambique. But their latest estimates, as released last week in response to this discussion, are 63% for Brazil, and 57% each for Mauritania and Mozambique. So a 10% reduction for two countries between 2018 and 2020, and a 14% reduction in the case of Brazil. This is before we get to the question of which specific regimes in each country are being modelled, since many countries, including certainly Brazil, have more than one fiscal regime, and even which project. The annex to the report includes a table showing the differentials in estimates of government take between one source and another for the same country – presumed here to mean fiscal regime.

We return to the point that the only real way to ensure that different estimates are apples to apples comparisons is to publish the entire models which generated them, just as one would for science, and in a form which can be interrogated, such as an Excel spreadsheet. In the absence of that, comparisons of different values from different sources is too methodologically weak to be significant.

To conclude, I would urge anyone who wishes to know more about the terms of the Stabroek deal to read the report in full, and take a look at the financial model. OpenOil is committed to ensuring that published analysis is on the basis of best efforts, and if specific new information, or improved inputs, emerge, they will be folded into a subsequent version of the analysis, together with a log of the difference in estimated outcomes compared to the current version. This is an intrinsic part of an open source approach to financial modelling, which we believe is appropriate for the public policy space.

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