Drawing on the EITI Standard in the Republic of Congo to Understand and Anticipate Government Revenues and Oil Sales through Financial Modeling

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English Summary

EITI Congo and the International Secretariat have commissioned this study with the objective of analysing and better understanding past and future government revenues from the oil sector. The study aims to encourage greater transparency and to strengthen domestic resource mobilization by developing financial models to assess the Congolese fiscal regime, analyze past payments made to the government, and to forecast future revenues for the government.

The financial models on which this analysis is based have been submitted to EITI Congo as tools to be used in the national context. The models are designed to analyze the interactions between production volumes, the selling price of oil, and the fiscal terms contained in the Congolese production sharing contracts (PSCs).

The Republic of the Congo is among the leaders within the EITI in disclosing data on the oil sector. All oil contracts and associated amendments are published in their entirety in the official gazette. EITI Congo has published oil production data for each individual license since 2013. From 2016, data on project costs has been published for each license.

The study also seeks to analyze the extensive data on oil sales that has been published by EITI Congo. Since 2016, data on individual oil sales has been disclosed including information on the quality, seller, buyer, and realized sale price. The realized sale price for Congolese oil is used to establish the price on which the fiscal calculations are made (the *prix fixé*). As Congo receives its oil revenues in kind (in oil barrels), the realized sale price for the government's share also determines the oil revenues that the government receives.

In response to the Terms of Reference, the study comprises five sections.

I: Assessing the Congolese Fiscal Regime and Comparing the Government Take

Section I responds to the question: What is the general fiscal framework and how does it compare with other countries? It includes a review of the fiscal provisions contained in the contracts and a comparison of the government take from different Congolese contracts and with the terms applicable in other oil producing countries.

As with many developing countries, the fiscal regime employed in the upstream oil sector in Congo is the production sharing system. The core features of this system including an allocation of cost oil to allow the companies to recover their costs and a subsequent split of the remaining profit oil between the companies and the government are present in the Congolese regime. As is common, the regime also features a royalty assessed as a simple percentage of total production. The Congolese fiscal regime also includes some unusual features, most importantly an oil price (termed the *prix haut*) that triggers an allocation of super profit oil and determines the value of cost oil. While there is broad consistency in the fiscal terms of the original PSCs signed in the mid-1990s, there is unusual variation between contracts signed since the early

2000s with core fiscal terms negotiated on a license-by-license basis. The result is a high degree of complexity and substantial variation in the share of production received by the government.

An Excel-based benchmarking model was developed and has been shared with EITI Congo to compare the economic impact of fiscal terms contained in several Congolese PSCs (Haute Mer 1994, Moho Bilondo 2005, Moho Bilondo 2012/19, Marine XII 2010, and Kombi-Likalala-Libondo II 2020) and in recent oil contracts from several peer countries (Angola, Ghana, Nigeria, and Vietnam). Two hypothetical oil projects were developed, including production and cost profiles consistent with projects in Congo. Base case analyses were conducted at an oil price of $70 per barrel with sensitivities run at $50 and $110. Standard metrics were used to evaluate the results for the government (take, timing, and progressivity) and the companies (net present value, internal rate of return [IRR], and pay back).

While economic results in a production sharing system are normally driven by the terms for recovering costs and distributing profit oil, for the Congolese contracts the decisive feature is the high price. This price determines both the valuation of cost oil and the potential availability of super profit oil and varies in 2021 across Congolese contracts from $30 per barrel to $104. As a result of these stark differences, the government take over the lifecycle of the hypothetical project varies from a low of 50% for the terms that currently govern Moho Bilondo to a high of 93% for the original Haute Mer license. Fiscal provisions designed to prioritize company cost recovery at the expense of government super profit oil were introduced to facilitate investments in both Moho Bilondo and Marine XII, resulting in significant reductions in government revenues during the early years of production. The inclusion of super profit oil in the fiscal regime generates a degree of progressivity (an increased share for the government) but these effects are strong only as the oil price crosses the high price threshold. The economic results for the companies are broadly the inverse of those for the government. SNPC's interest varies in these projects between 10% and 20% and increases the government take by as much as 8% in the case of Moho Bilondo. For the recent licenses, the rate of return for the private companies on these hypothetical fields would appear strong for both Moho Bilondo (18%) and Marine XII (14%).

Comparisons are also provided with peer countries in the region (Angola, Ghana, and Nigeria) and outside (Vietnam). Three of the countries use the production sharing system with different approaches to the allocation of profit oil including traditional production-based tranches (Vietnam), an R-factor split (Nigeria), and a rate of return split (Angola). Ghana employs the royalty tax system but includes a fiscal feature that is somewhat analogous to profit oil. The current terms for Moho Bilondo, Congo's most important license, were used as the benchmark. Ghana's Cape 3 fiscal terms generate similar results, with a comparatively low government take of 50% and only modest government revenues in the early years. Vietnam is a country with a similar oil-sector profile to Congo in the South-East Asian region and their 2012 PSC terms generate better results for the government in terms of both take (60%) and the share of those revenues that arrive early in the project lifecycle. Not surprisingly, the largest producers in Africa negotiate better terms, with government takes of 67% (Angola before adding the NOC share) and 72% (Nigeria). In both cases, the government receives a higher proportion of their revenues in the early years. With profit-sensitive profit oil allocations, the fiscal regimes of

Angola and Nigeria, and to a lesser degree Ghana, are more progressive than Vietnam or Moho Bilondo. Company IRR is 15% in Angola and Nigeria, 16% in Vietnam, and 18% in Ghana.

No single set of fiscal terms can be considered best practice. However, there is consensus that, in combination, the terms should generate sufficient returns for the companies over a range of market and geological conditions thereby avoiding renegotiation, generate a predictable minimum share of revenues for the government, achieve a certain level of progressiveness where the government captures an increasing share as the economic rent increases, and be relatively easy to monitor and audit. The Congolese fiscal regime has become more complex over the years to address the outsized impact of the high price on the allocation of cost oil and super profit oil. When setting the high price, negotiators must agree on a price that will apply for decades as a threshold above which the government's share will increase substantially. Due to the evolution in the international oil market, Congolese contracts have not proven to be sustainable and substantial modifications have been necessary to encourage major new investments in Moho Bilondo and Marine XII. The conclusions of national and international comparative fiscal regime analyses are consistent and demonstrate that the complexity in the Congolese system does not improve the performance of the fiscal system. More traditional production sharing systems, with fewer fiscal instruments, perform better under a range of scenarios relating to production volumes, oil price, and project costs. Sharing profit oil based on a measure of profitability, whether an R-factor as in Nigeria or a rate of return as in Angola, can build progressivity into the fiscal system sustainably without reference to a specific oil price. Using profit oil as a mechanism to generate escalation simplifies the cost recovery process without the need for cost oil guarantees or a separate allocation of excess cost oil. In the other countries, a tax on company income, not included in the Congolese fiscal regime, is the largest single source of government revenue.

II: Analyzing Past and Future Revenue Payments for Selected Licenses

Section II is designed to answer the question: What are the revenues of the state, based on analysis generated from financial modelling? Using a financial cash flow model, the objective is to analyze the allocation of production between the state and the companies for past payments from 2013 and for potential future payments through 2025. Based on the Terms of Reference and the availability of data, the analysis focuses on the following licenses: Nkossa, Nsoko, Moho Bilondo and Kombi-Likalala-Libondo.

An annual cash flow model for 2013–2025 was developed and shared with EITI Congo based on the fiscal terms contained in the relevant PSCs and amendments. Where available, data was extracted from EITI Congo reports for the years 2016–2018, with additional historic data provided by the National Secretariat. There are important limitations to modelling only a subset of recent project years, as most of the metrics for analyzing the government share, and company economics need to account for the full historic investment. Furthermore, given the complexities of the projects and the fiscal terms, it is challenging to reconcile historic payments with modelling results. Nevertheless, the model results for government revenues are on average within a range 5% deviation from the actual payments.

Government revenues from these four licenses fell dramatically from a high in 2013 of $2.1 billion to a low in 2016 of $350 million, with a partial recovery in 2019 to $1 billion. Oil prices fell during this period from a high of around $100 per barrel to a low of around $40. However, during these same years, production doubled from a low in 2015/16 of less than 100,000 barrels a day to a high in 2018/19 of closer to 200,000 barrels. The net result was that the total combined annual gross revenues reported in these licenses for 2018 and 2019 increased by $1 billion per year over 2013 and 2014 levels. Despite this large increase in total project revenue, overall annual government revenue decreased in 2018 and 2019 by more than $1 billion per year compared with 2013 and 2014. As the increase in production volumes more than compensated for the decline in the price of oil, the decline in government revenues was mainly due to the decline in the government's percentage share of total project revenues which went from around 60% in 2013 to less than 30% in 2019. The main driver of this decline was negotiated increases to the high price, particularly for Moho Bilondo and Nkossa. As these licenses were cost saturated during this period (cost oil was being taken to the limit of the cost stop), increases in the high price resulted in much larger allocations of cost oil. Furthermore, the increase in the high price removed super profit oil as a source of revenue for the government because super profit oil is based on the amount by which the market price exceeds the high price. For example, the Moho Bilondo license generated nearly $1.5 billion in super profit oil when adding the years 2013 and 2014 but generated no super profit oil during the price rally of 2018 and 2019 as the high price had been increased to $90 per barrel.

The government revenue forecast is limited to the same four licenses which accounted for 62% of Congolese production in 2020. Revenue forecasts have been generated based on the available data including production volumes from 2020 with an assumption of a 7% annual decline. While operating costs are assumed to be consistent with historical patterns, these do not impact government revenue forecasts under all but the most extreme scenarios as the licenses are projected to remain cost saturated through at least 2025. The base case analysis uses an oil price of $70 per barrel, with sensitivities run at $50 and $90. Under the base case, forecasted revenues are less than $1 billion per year until 2024 when the crossing of a production threshold for Moho Bilondo could increase revenues by several hundred million dollars. Under a low oil price scenario, government revenue could fall to just over $500 million, while under a high price scenario they could climb to more than $1.5 billion. Due to changes in the fiscal terms, particularly for Moho Bilondo, even under a high price scenario, government revenues from these four licenses are not expected to return to 2013 and 2014 levels.

III: Analysis of Petroleum Costs and Cost Auditing

As higher costs result in a greater share of production being allocated to cost oil over the life of the project, cost control is in the government's interest. High oil costs can be the result of unavoidable factors including geology, location of oil fields, and increases in input costs for the entire industry, but they can also be the result of overstated costs. Since 2016, EITI reports in Congo have included a statement of annual costs broken down by license. Part III of this study benchmarks Congolese petroleum costs and assesses government efforts to audit those costs.

Benchmarking of petroleum costs is a complex undertaking that depends on high quality data. There are important shortcomings in the data published in EITI reports and provided by the National Secretariat for both development and operating costs which limit the reliability of the findings.

The analysis of development costs for four Congolese projects – Moho Bilondo, Moho Phase 1 bis and Nord, Lianzi, and Néné Marine – are based on limited, public-domain data. These four projects are compared with 44 offshore oil projects that came onstream between 2000 and 2020 in Angola, Equatorial Guinea, Gabon, Ghana, and Nigeria. While the findings of the analysis are not conclusive, the available data suggests that the development costs for some Congolese projects, particularly Moho Phase 1 bis and Moho Nord, are among the most expensive in the region. A more detailed analysis of development costs may be warranted and should be based on detailed annual cost claims as submitted by the companies.

Operating costs for the Nkossa, Nsoko, Moho Bilondo, Marine XII and Kombi-Likalala-Libondo (2013–2018) licenses and for all licenses with cost data published in EITI reports (2016–2018) were compared with average offshore operating costs in Angola and Nigeria as published by Rystad. Benchmarking of Congolese operating costs was hindered by a lack of clarity on the distinction between costs in EITI reports classified as operating costs versus those classified as other costs. The benchmarking suggests that Congolese operating costs were similar to the regional average in 2013–2015, higher than the regional average in 2016–2017 (perhaps due to new production capacity coming on stream), and lower in 2018. According to EITI data, among the main international oil companies operating in Congo, Eni Congo had the highest operating costs, Perenco had the lowest, and TEPC was in between.

The terms governing the recovery of petroleum costs by the companies are set out in the PSCs and particularly in the annex on accounting procedures that establish which costs that can be recovered, how petroleum costs should be reported, and the government's audit rights. As with fiscal terms, there is an unusual degree of variation in accounting procedure provisions in Congolese PSCs. Even in more recent PSCs, issues widely recognized as sources of controversy and potential government revenue loss such as limits on financing costs, excluding the direct charge of parent company overhead and the treatment of marketing expenses are not effectively addressed. As insufficient information was provided to assess the government's efforts to audit costs, the report identifies best practices to help strengthen efforts in this area.

Overall, the impact of cost control in protecting government revenues can be expected to be lower in Congo than in most other oil producing countries for three reasons. First, the fiscal benchmarking has shown that the Congolese fiscal regime is less sensitive to project costs than in most other countries due to the importance of the before-cost allocation of super profit oil. Second, the licenses under review are all expected to remain cost saturated through at least 2025 meaning that cost reductions will have no impact on government revenue during the coming years. Third, the greatest opportunities for cost control exist during the careful review of development plans and budgets before the work is initiated, yet public information suggests that large-scale investments (except perhaps expansion in Marine XII) are unlikely in the coming years. While the revenue benefits of cost control for the government will be deferred, cost reductions would be of immediately benefit in reducing SNPC's share of costs.

IV: Analysis of Oil Sales and Realized Oil Sale Prices

Section IV of the study provides an analysis of oil sales data, including the realized sale prices and the method used to establish the oil price for fiscal calculations. Specifically, the Terms of Reference call for a multidimensional analysis including a comparison of oil sales by seller, buyer and type of crude oil; an analysis of sales practices of the oil companies as well as the sales mandate of the national oil company SNPC; an assessment of the mechanism for establishing the fiscal price (the *prix fixé*); and a review of options for the government to manage oil price volatility through hedging.

The oil sales analysis covers 2016–2018 and is extended to 2020 where relevant data was provided. Congolese crude oil sales are dominated by two blends – Djeno and Nkossa – which together account for around 90% of total sales. TEPC is the largest seller of Djeno, while Eni Congo is the largest seller of Nkossa. From 2016 through 2020 there were 514 shipments including 400 from private oil companies and 114 from SNPC. Some of the liftings from the larger companies including Eni Congo, TEPC, and Perenco involve combined sales with other companies though on similar terms. All Chevron liftings are solo. Four companies – TEPC, Eni Congo, Chevron, and Hemla – sell their entitlements to affiliated companies and these sales constitute more than 66% of Djeno sales and more than 80% of Nkossa sales.

The benchmark crude for Congolese oil sales is dated Brent as reported by Platts. Prices are based on an average Brent price over a given period less a differential. Even with detailed data on realized sale prices, direct comparison is impossible, as trades take place on different dates, under different market conditions, and with different pricing periods (though nearly 70% are sold on 5-day average Brent). Nkossa is a lighter, sweeter crude and therefore sells at a price closer to parity with Brent, while Djeno is more heavy and sour and therefore normally sells at a discount, though that discount has narrowed in recent years. Comparisons with regional crudes of similar quality (Bonny Light from Nigeria for Nkossa and Girassol from Angola for Djeno) suggest that the Congolese crudes both sell at prices below regional comparators even where quality and shipping costs are similar. Comparisons among companies selling Congolese crude suggest that TEPC, the largest seller of Djeno (47%) and a major seller of Nkossa (20%), sell at a higher discount or a smaller premium. Given the scale of revenues at stake, follow-on analysis of price differentials with regional crudes and among Congolese sellers is warranted.

A fiscal price is used in production sharing systems to determine the allocation of cost oil to the companies. In Congo, the fiscal price also determines the value of the 1% payment for diversified investments (PID) and the amount of super profit oil when the fiscal price exceeds the high price. Company and government interests diverge in the setting of the fiscal price with companies benefiting from a lower fiscal price and the government from a higher fiscal price. There are three broad approaches to valuation: using the sale price for translations between non-affiliated parties, using a regional benchmark with adjustments where most sales are between affiliated parties, and using a reference price irrespective of the nature of the transactions. According to the 2016 Hydrocarbon Code, the fiscal price must reflect market prices based on transactions between independent buyers and sellers. While most Congolese PSCs base valuation on realized sale prices of all sales, some PSCs currently in force call for the establishment of an independent price if less than 30% of sales are between independent buyers and sellers. In practice, although only 13% of Djeno sales and less than 1% of Nkossa sales are between independent buyers and sellers (SNPC sales are not considered), the monthly fiscal price for the years under review is based purely on the reported realized sale price for all private sales with no further adjustments. When comparing realized sale prices with the monthly fiscal price, Eni Congo's reported sales exert an upward influence on the fiscal price while TEPC's reported sales exert a downward influence. Given the importance of the fiscal price in the generation of government revenues, and the predominance of transactions between affiliated parties, Congo is advised to strengthen procedures to ensure that transactions reflect arms-length market prices.

SNPC is mandated to sell the government's oil entitlement under the terms of a contract agreed in 2003. Payments to the Treasury are to be based on the realized sale price less a commission of 1.6%. The data published by EITI Congo for 2016–2018, and supplementary data provided by the National Secretariat, show the realized price for SNPC sales on behalf of the government. The monthly fiscal price provides an independent benchmark to assess the performance of SNPC sales. The data indicates that for all years except 2018, the average price of SNPC sales of government oil fell below the monthly fiscal price. Over the five-year period, SNPC sales of around 85 million barrels were sold on average for $0.56 per barrel less than the fiscal price derived from the sales by private companies.

As the price of oil is inherently volatile and results in damaging boom and bust cycles for economies dependent on oil revenues, consideration can be given to a mechanism to smooth revenues transfers to the state budget. One option is to hedge the price of the government's oil entitlements through fiscal instruments to ensure a predictable price over a predetermined timeframe. While price hedging is a common practice among private companies, there are relatively few examples of price hedging by producing countries – with Mexico and, for a short time, Ghana being prominent examples. Hedging appears to be relatively uncommon due to the political risk associated with potential large-scale losses. Hedging also represents a challenge for supporters of transparency, as successful hedging requires confidentiality. Revenues can also be smoothed through the adoption of a fiscal rule on savings and spending along with the creation of a stabilization fund, as has been done in countries such as Ghana, Nigeria, Azerbaijan, Guyana, Russia, and Timor-Leste. The track record for natural resource funds to support stable allocations to the state budget is mixed. Success depends on rigorous adherence to fiscal rules, the quality of overall national governance, and effective governance of the fund.

V: Evaluation of the Data Published by EITI Congo

Section V provides a consolidated evaluation of EITI data used for this study. Most of the analysis in the report is based on materials in the public domain through EITI reports and government websites. Contracts and amendments are essential for revenue analysis. While Congo publishes all contracts and amendments, these documents are not easily found and, consistent with EITI best practice, should be made available on an easily searchable single website. The disclosure of production and cost data at the level of the license is essential for detailed revenue analysis and should be continued. Care should be taken to ensure that reporting categories are consistent whether at the level of the license or the development area. In a small number of instances, data subsequently provided by the National Secretariat differed from that originally published in EITI reports. Provision should be made for updating historic disclosures where appropriate. The cost analysis in this report was hindered by the categories of costs disclosed, including a category termed "other costs" which is not applied consistently across licenses. Project costs should be disclosed according to the categories for cost reporting as set out in the PSCs, including exploration, development, operating, and decommissioning. All quantitative EITI data should be made available in a machine-readable format.

Valuable lessons can be drawn from this project for improving the scope of Congolese disclosures to facilitate routine revenue analysis and to allow for the expansion of economic modelling. First, each individual source of government revenue should be disclosed at the level of the individual licenses (defined by the project ring fence). The past practice of consolidating three sets of payments – profit oil, super profit oil, and excess cost oil – under a single payment termed profit oil should be replaced with breakdowns that enable important revenue analysis even without full economic modelling. Clarification should be provided in any case where costs are allowed to be consolidated across different licenses. Second, EITI Congo should consider routinely publishing data on the allocation of production to the contractor (the group of companies) at the level of the license and the individual fiscal instruments. This data, provided by the National Secretariat for the four licennces under review improved the reliability of the analysis of the historic payments. Publication of this data would allow for detailed revenue analysis for licenses that have not been modelled. Third, reliable revenue analysis depends on accurate time series data. Extracting this data from different EITI reports, generated by different independent administrators, creates a risk of inconsistencies. Ideally, data should be disclosed over a set historic period of five or more years with adjustments made to historic data if anomalies are identified.

The project has also uncovered some important lessons related to the oil sales data. The basic data used in the analysis of oil sales has been published in the EITI Congo reports covering the years 2016–2018. Additional contextual information should be included to clarify that the data is intended to be the actual selling price realized free-on-board (FOB) at the Djeno loading terminal as declared by the sellers. Clarification should be provided on whether these prices include or exclude a range of associated costs and fees. Care should be taken to ensure that companies report the realized sale price for the shipment, and not an average price or the fiscal price, and that accurate data is reported for each individual seller in cases of joint liftings.