

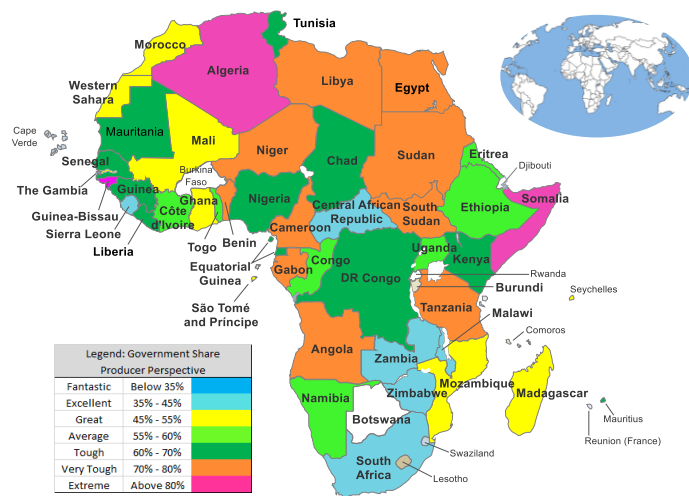
# Africa Upstream Fiscal Systems: Evaluation and Rating, and Analysis of State Company Participation

## - CHAPTER 5: FISCAL SYSTEMS EVALUATION METHODOLOGY

Prepared by:  
Rodgers Oil & Gas Consulting

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Africa Fiscal Map: Oil



Government Shares are the Average of Onshore, Shallow Water, and Deep Water. Results for individual projects may vary.

## CHAPTER 5: FISCAL SYSTEMS EVALUATION

### 5.1. General Context

**General principles.** The fiscal terms included in the study are generally the latest terms for which there is reliable information. Where significant production is taking place under older terms which have been grand-fathered or contractually maintained, such older terms are also provided. Where new terms are being considered or proposed, such new terms and conditions are also included in the study.

Where legislation describes a legal maximum for certain values, such as "the state can participate for up to 50%", the maximum values have been used in the analysis, unless there is ample evidence that typically lower values apply.

Fiscal system evaluation is performed separately for each logistical environment – onshore, shallow water, and deep water, and for each commodity – crude oil and natural gas.

#### Special Notes on Gas Liquids:

**Many gas discoveries are uneconomic in the absence of the strong price support that would come for associates field condensate and natural gas liquids.**

**For this report however it is important to match the gas fiscal terms to gas production and the oil terms to oil and liquids production.**

**The analysis base cases therefore are for dry gas, thus explaining the relatively poor economics for most of the gas fields.**

**The importance of liquids content to natural gas field economics is illustrated in Chapter 6.**

**International negotiated terms.** Outside North America, sometimes terms and conditions are negotiable and consequently the terms are different for each agreement or contract. Therefore, the terms of the latest contract or of a "typical" contract have been used. A "typical" contract could be an actual contract or a set of terms that reflect the type of arrangements concluded in the area.

**Signature bonuses.** Signature bonuses vary considerably area by area. It was not possible to obtain sufficient data to create typical averages as would apply to each of the various fiscal systems. However, the best possible effort was made to input bonus values that are representative for the various areas.

**International state participation.** State participation through a carried interest or a direct working interest is rather common. To facilitate analysis of the fiscal system by itself and separate from any required joint venture arrangement with a jurisdiction's state oil company, the net income from the state's participating interest is not included in the government share. Instead, state participation terms are assessed separately.

**Withholding taxes.** An important item that was omitted from the fiscal analysis is withholding taxes. The economic analysis for each fiscal system is carried out on the basis of the tax structure internal to the respective country involved. The economic results reflect the cash flow earned in the country ready for repatriation or reinvestment.

The economics do not reflect the share of the cash flow that can be "brought back" to headquarters or any other jurisdiction. The main reason for choosing this approach, is the fact that the manner in which profits can be brought back vary a great deal depending on:

- the legislation in the home country of the investing company;
- the tax position of the investing company in the home country; and,
- the double taxation agreements between the host country and the home country.

There are numerous avenues that a company can use to optimize this process. These avenues would be different for each company. Therefore, it is not appropriate to include this cycle of the tax considerations in a worldwide evaluation of this type. Each interested investor has to overlay the results of this study with the particular financial strategy employed by such investor in order to minimize tax liabilities.

**Import duties.** Import duties were not included for North America, Europe and a number of countries within preferential trading areas. In certain countries import duties were included where they constitute an important element.

**Sales taxes.** Sales taxes as are applicable in many North American jurisdictions and other countries around the world, were not included in the analysis. They are considered a cost element of the capital and operating expenditures used in the calculations. Exceptions are made where it constitutes a significant part of the government take, such as in Brazil.

**Value Added Tax.** GST in Canada and VAT in Europe and most countries in the world were VAT refunds are properly provided were not included. VAT provisions were included for countries where refund system problems occur.

## 5.2 Investor Tax Position

Each of these six (6) commodity-logistical environment groups is assessed under two (2) potential investor tax positions. As explained in Chapter 1, a third tax position – Contract Incremental – is not assessed in this report. The three tax positions are defined as follows:

- **Stand Alone (SA).** The “stand alone” scenario contemplates that the investor is making its first investment in the country. The investor does not yet have production or other sources of income. Therefore, investments in exploration and development of oil and gas wells or fields cannot be deducted for corporate income tax purposes in the year that these investments are being made. Tax losses have to be carried forward until revenues from production permit the deduction of these costs.
- **Country Incremental (CtI).** The “country incremental” scenario contemplates that the investor is already producing oil and gas in the host country and that there is positive taxable income. This means that costs can be deducted for tax purposes based on the various depreciation provisions. Where expenditures are 100% deductible as incurred, such as certain exploration costs, the investor benefits from the immediate reduction of tax payments in the year such investments are being made.
- **Contract Area Incremental (AI).** Typically, petroleum royalties and other sector-specific fiscal levies are assessed (ring-fenced) at the individual well or field level, particularly under concession systems. By contrast, many production sharing contracts apply to the entire contract area. This means that field economics may be different than contract area economics. This applies most specifically to incremental investments within the contract area and where the fiscal terms are based on the entire contract area, not just on a given field within a contract area. See Annex I: Acronyms & Definitions.

Whether the investor is in a stand-alone (SA), country incremental (CtI), or contract incremental (AI) situation can have a significant impact on project economics. Fiscal systems that permit full consolidation for all fiscal features in the country are otherwise more favorable to investors than systems that require ring fencing. Similarly, economic attractiveness can look significantly different for investors that are new to a given jurisdiction compared to already established investors.

### 5.3. Fiscal System Evaluation Criteria

Table 5.3.1 identifies the variety of metrics that are produced for each field and fiscal system under each of the twelve (12) commodity-logistical environment – tax position alternatives.

**Table 5.3.1:**

<b>Fiscal System Evaluation Metrics</b>			
<b>Project/Investor Economics</b>	<b>Policy Incentive Indicator</b>	<b>Fiscal System Performance Indicator</b>	
EMV10	MNPV10/bbl,Mcf	GT%*	
VRI	PMI	ERR	
MPF	CSI	UFC	
Payout		FPI-EUR	
ROR		FPI-Volume	
PIR10		FPI-Price	
NPV10/bbl,Mcf		FPI-Cost	
NPV10		FeLR	
NCF/bbl,Mcf		FeLRR	
GT%*		FeLI	
ERR		GRSI	
UFC			
GT% or GS% is discussed in a number of variations - risked and unrisked, with and without NOC participation, and by field as well as weighted across all fields.			
Source: Rodgers Oil & Gas Consulting			

While produced, and thus available for reference, all metrics are not discussed in all instances. Rather, emphasis on a particular metric depends on the issue being discussed. For example, illustrating the impacts of investor tax position will identify differences in metrics such as GT%

and NPV10/unit, while ignoring differences in the FPI metrics. Similarly, explanations of particular fiscal system performance would rely on measures such as the FPI and policy incentive indicators but largely ignore the EMV10 and VRI metrics. All metrics are defined and described in Annex I – Acronyms and Definitions.

To provide context, in ranking the various fiscal systems a reference fiscal case (Reference CIT 60%) is added to the systems being assessed. This case represents a completely neutral fiscal system modeled as a corporate income tax system with full and immediate amortization/depreciation from the date incurred, and with the tax rate set to approximate the average of the fiscal systems being assessed.

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## Special Notes on Government Take:

### Note 1: Government Take Variations

This report uses three variations on the GT0%:

1. Unrisked, without NOC participation (GT0% w/o NOC);
2. Risked, without NOC participation (GT0%(wR) w/o NOC); and,
3. Unrisked, with NOC participation (GT0% w NOC)

Variants 1 and 2 are most useful in assessing fiscal system design and performance without the complications introduced by NOC participation. However, these variants fail to capture the full share of revenues going to governments when the fiscal system includes state company/NOC participation.

Fiscal system ranking is based on GT0% with participation (GT0% w NOC), with the no participation alternative also shown for comparison.

### Note 2: Government Take and the Inclusion of NOC Net Revenues

There are differing views on whether NOC net earnings should be included in the host jurisdiction's government share.

One view is that the NOC revenue should not be included as this revenue is a return on investment and compensation for risk, and therefore should not be recorded as a share to the resource owner in the form of economic rent. A variation on this view is that only the portion of revenue above that required to provide a minimum risk-adjusted return should be included.

The alternative view is that where the NOC interest is carried and not repaid with interest, it certainly imposes an unavoidable and disproportionate cost on the other parties. Even when repaid from project revenues, the carried NOC does not face the risk of exploration loss when there is no commercial discovery.

### Note 3: Government Take Acronyms

Throughout the report government take may alternatively be referred to as government share, government take, GT0% and GS0%, GT%, and GS%; they all have the same meaning, and they all refer to a before-risk or un-risked calculation. In cases where the GT is compared on a risked and un-risked basis the un-risked GT is identified as GT%(w) and risked as GT%(wR), with "R" designation Risk and "w" signaling that the share is a weighted average of the seven reference case field sizes.

Similarly, GT or GS without state or national oil company participation, is identified as GT%w/oNOC and GT%wNOC participation.

Finally, if the GT is discounted, the discount rate is always indicated; e.g., GT10%.

## 5.5. Approach to Fiscal System Evaluation

The same five-step approach is followed to evaluate all fiscal systems for the various commodity-tax position-logistical environment combination, focusing in each case on the base case oil and base case gas fields. While focus, for context and ease of illustration, is on the base cases; the full suite of economic and fiscal results is provided for all seven (7) oil fields and seven (7) gas fields. Strategic price and cost sensitivities are also highlighted – see Step 5 below.

### Important Notes

**Note 1:**

Not all of the investment decision-making indicator results are discussed. They are however all presented for the reader's convenience. Also, the full suite of model results for all field sizes, tax positions, and logistical environments is provided in a "hot-link-searchable" separate Excel spreadsheet.

**Note 2:**

As the fiscal systems are ranked and evaluated separately for each logistical environment, it is useful to also compare across the operating environments. This discussion is included in Chapter 11: Comparative Analysis and General Observations.

### ***Step 1 - Government Share Comparison:***

Begin with the fiscal ranking comparison of the government share for each fiscal system. Discussion in this section draws highlights from three specific charts ranking the various systems on the basis of unit fiscal cost (UFC), effective royalty rate (ERR), and government share (GS%). Included in this section is a tabular comparison of the GS% with (GS%wNOC) and without (GS%w/oNOC) state company participation, and the risked equivalents GS%(wR)-wNOC and GS%(wR)-w/oNOC.

### ***Step 2 - Achieving Policy Goals:***

Discuss the policy performance measures - to assess each system's incentive to: (1) add new reserves, (2) seek higher prices, and (3) seek lower costs. This section includes the table of policy performance measures.



***Step 3 - Fiscal System Performance:***

Next discuss the fiscal system performance indicators. This discussion identifies the system structures that contribute to the policy performance results. Key indicators are the four measures of fiscal progressivity and the three front end loading measures.

***Step 4 - Selected Investment Decision-Making Criteria:***

This section ranks the systems based on three (3) investment decision-making criteria – (i) internal rate of return (ROR), (ii) net present value per unit produced (bbls or Mcf), and (iii) value to risk index.

Absolute value measures such as NPV and EMV are not included in this discussion. The reason is that these measures very much depend on the specific situation; for example, higher reserves, particularly with the same costs, will produce a higher NCF and NPV. NPV/bbl however adjusts for reserves size, thereby better identifying the impacts of the fiscal differences.

While the EMV does incorporate the full range of field sizes, it has essentially the same drawbacks as NPV for fiscal system ranking that is based on a common set of assumptions – costs, prices, and probabilities. Notwithstanding the limitations of EMV for the current ranking exercise, the VRI is included as a means of providing a relative ranking of differences attributed directly to the fiscal system. Here the absolute value is not important; with the same parameter assumptions, the VRI provides a sense of the value per unit of risk resulting from variations in the EMV caused by the different fiscal terms.

***Step 5 - Strategic Price and Cost Sensitivities:***

Ranking criteria for this section are ROR, NPV10/unit, and GS%wNOC. This discussion includes assessment and ranking based on three areas of particular interests for investors:

1. The impacts of low prices;
2. The impacts of high costs; and,
3. The potential returns under “upside” or high profitability conditions (bonanza economics).