

GHANA'S OIL - AVOIDING THE RESOURCE CURSE: TECHNICAL NOTE

1. The problem: Resource-rich countries are prone to conflict and corruption¹

Natural resources can be both a blessing and a curse for developing countries. As a result, the discovery of substantial petroleum reserves off of Ghana's coast in 2007 presented "an opportunity for the country to lift itself out of poverty and achieve the goal of becoming a middle income country," but also "tremendous challenges for policymakers...to avoid the 'resource curse' that has prevented most other resource-rich countries in Africa and elsewhere from improving living conditions."² Indeed, the fact that "most other resource-rich countries" have struggled to manage their resource revenues well – including Ghana, in the case of gold – testifies to the major risks inherent in the petroleum discovery.

Beyond the challenge of ensuring transparent collection and use of the revenues, Ghana also faced the question of how to allocate the revenues to maximize their development benefits. The stakes for decision-making were high: over half of Ghana's population lives on less than two dollars per day.³

As a result, the Government of Ghana faced a set of difficult and very consequential decisions in determining how to handle the country's newfound oil resources to avoid the resource curse and achieve as much good for its people as possible.

2. IEA's contribution: Mandate oversight of oil money with *clear disbursement rules*

The Institute of Economic Affairs (IEA) has led or been involved in many of Ghana's major policy efforts since the 1992 return to democracy. Recognizing both the potential benefits and dangers to Ghana from its newfound reserves, IEA and its many NGO partners quickly moved to help policymakers draft legislation to guide management of the resource revenues. In 2008, IEA conducted research on various options for this legislation. In 2009, it then sponsored an initiative to turn this research into policy. This culminated in a workshop for over thirty policymakers at which it presented analyses of policy options – from other countries, the academic literature, and its own thinking – based on Think Tank Initiative-funded research. That workshop resulted in a communique agreed to by all the participants that adopted most of IEA's central recommendations (many of which, it should be said, were consistent with the views of other participants). The communique, in turn, led to the 2011 Petroleum Revenue Management Act, which enshrines most of the NGO community's policy ideas in law. In particular, the act provides for the following:

- Revenues pass through the government's central budget, which helps ensure transparency and accountability.
- 70 percent of the revenues go toward short-term spending and investment, with 13 priority areas delineated in the act to ensure that Ghana's oil wealth contributes to,

rather than undermines, economic diversification. These areas include agriculture, infrastructure, education, water and sanitation, and housing.⁴

- The remaining 30 percent is divided between a Stabilization Fund to cushion the public budget during unexpected revenue shortfalls, and a Heritage Fund to provide for future generations once the oil fields are emptied.
- Several oversight mechanisms further the transparency and accountability efforts. Most notably, the Public Interest and Accountability Committee (PIAC), which includes several nongovernmental representatives, monitors the management and use of the revenues and provides a forum for public discussion of how to match spending with Ghana’s development priorities.

IEA is the first representative to PIAC for the rotating think tank seat, demonstrating the institute’s important role in this policy effort. At the same time, it is important to note that other civil society organizations continue to play important roles. For example, the Revenue Watch Institute hosts PIAC because the government has not provided the committee with sufficient operating resources, while the International Growth Centre continues to provide research for policy discussions.

More generally, though, this case provides a clear example of IEA’s importance in Ghanaian policymaking – not just in developing specific policy ideas, but as a source of broader capacity building for policymakers, such as in designing and evaluating policy alternatives. Indeed, IEA sees this capacity building as one of its largest institutional contributions, especially because policymakers often lack the resources to obtain the assistance they would like. As a result, the benefits from this policy effort may resonate far beyond the Act itself.

3. The projected result: More money to benefit the Ghanaian people

To understand the Petroleum Revenue Management Act’s potential impact, rough estimates were developed using existing data and assumptions about how the policy might affect Ghanaian society. The appendix details how these estimates were created. To summarize, recent data on oil production by the government, oil prices, and the distribution of revenues to the government budget vs. the national petroleum company were combined with projections of future production to estimate potential government revenue over the first 15 full years of production (2011-2025) – using conservative assumptions. Then, two related benefits were estimated. First, an estimate of lost revenue from oil mismanagement in Nigeria was used as a proxy baseline to estimate how much additional revenue will be managed transparently from the Act. Second, the fact that little or no Ghanaian gold revenue was used for long-term investments like infrastructure spending or the Heritage Fund was used to estimate how much more long-term investment (vs. short-term consumption) results from the guidelines in the Act. In both cases, several scenarios were created, given the estimates’ speculative nature (hence the wide ranges below). This approach led to the following estimates of the Act’s projected results:

- **\$0.3-0.7 billion** in oil revenues through 2025 that will be managed more transparently as a result of the Act (net present value)

- **\$0.4-0.9 billion** in additional long-term investment as a result of the Act (also net present value)

4. The return on investment (ROI)

IEA’s contributions were influential throughout the policy change process and required an investment of only 2.5 person-years and roughly \$125,000. To estimate its return on investment (ROI), the \$500 million in additional transparently managed revenues (using the midpoint of the range above) was divided by the \$125,000 IEA investment. The result is an ROI of about **\$4,000 in additional transparently managed revenues per dollar spent by IEA.**

Of course, IEA is not solely responsible for these benefits. Understanding the portion IEA contributed toward the projected results helps illustrate its true ROI. Experts suggest a relatively constant set of conditions for policy change that an organization like IEA might influence. Tracking these conditions before and after IEA became involved provides a rough picture of the think tank’s contribution.

IEA staff and outside experts were asked to rate these conditions on a 1-5, “very low” to “very high” scale for each condition’s status before IEA got involved in policy discussions related to oil revenue management and afterwards, now that the law has passed and begun implementation. The averages of their responses are shown in Table 1.

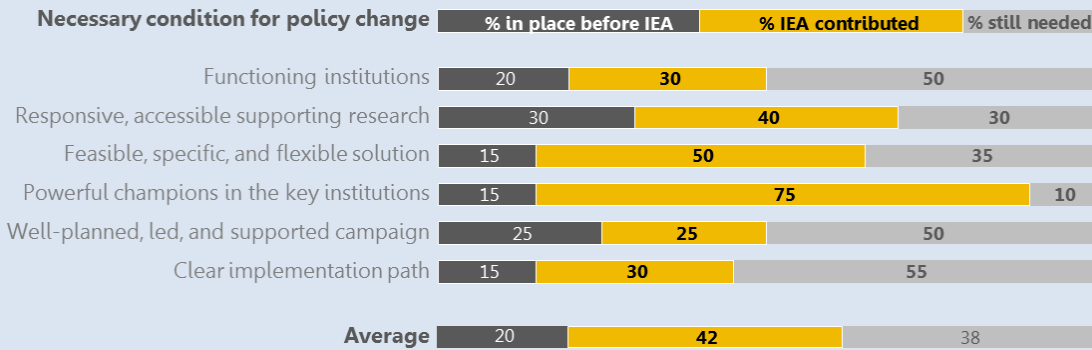
Table 1: IEA’s contribution to the Petroleum Revenue Management Act

Condition	Before (1=very low, 5=very high)	After
Functioning institutions: The relevant legislative, legal, and regulatory institutions are functioning sufficiently for research and advocacy to be effective	1.7	3.1
Responsive, accessible supporting research: The solution is supported by compelling, data-driven evidence that can counter opposing arguments and sway decision-makers	2.3	3.8
Feasible, specific, and flexible solution: A feasible solution has been developed and shown to produce the intended benefits, with acceptable alternatives if the exact proposal is untenable	1.5	3.6
Powerful champions in the key institutions: Decision-makers who can overcome the opposition support the solution and its underlying principles	1.5	4.5
Well-planned, led, and supported campaign: Advocates assemble resources, a pragmatic and flexible strategy, and a supportive public or other allies	2.0	3.0
Clear implementation path: The implementing institutions have the commitment and the capacity to execute the solution	1.5	2.8
Average	1.7	3.4

Translating these results into percentages (1 = 0%, 5 = 100%) generates the estimates shown in Figure 1. Averaging all the conditions together suggests that IEA’s contribution would be roughly 40 percent (42 percent in Figure 1). That produces **an ROI of roughly \$1700 in additional transparently managed revenues per dollar that IEA spent,** assuming success is achieved.

Figure 1

IEA’s contribution to the Petroleum Revenue Management Act



Note that this includes adjustments that reduce the ROI to account for the remaining uncertainty. For example, uncertainty still exists in the sense that the government’s commitment to implementing some provisions of the Act (e.g., funding PIAC) remains unclear. Indeed, IEA and its partners currently are working on supplementary legislation. This uncertainty is illustrated by the bars in Figure 1 labeled “% still needed”. The crude average of those bars is 38 percent, reducing the current likelihood of success (LOS) to 62 percent. To be precise, then, IEA’s estimated contribution to “success so far” is 42 percent divided by 62 percent. As a result, the ROI cited above is actually the cost-benefit multiplied by IEA’s contribution to success thus far, then multiplied by the LOS, as illustrated in Figure 2 (discrepancies are due to rounding). This methodology is conservative if full success is achieved, as it assumes IEA makes no contribution to any of the work that is still needed.

Figure 2

IEA’s return on investment

$$ROI = \frac{\$500M \text{ benefit}}{\$125K \text{ cost}} \times \frac{42\% \text{ contribution}}{62\% \text{ LOS}} \times 62\% \text{ LOS} \approx \$1700$$

Appendix: Details on the results estimates

The estimate was calculated using the following baseline assumptions and data:

- Oil production began in December 2010, so this document’s results estimates begin in 2011. Also, the estimate is limited to 15 years. Thus, the timeframe is 2011-2025.
- Production has lagged behind forecasts of 250,000 barrels per day in 2012: it was 67,000 in 2011 (or 24 million for the year)⁵, around 86,000 in 2012 (31 million for the year)⁶, and 110,000 as of early 2013 (or 40 million for the year).⁷ These estimates assume 40 million barrels per year going forward.

- Of the 24 million barrels extracted in 2011, 16 percent, or 4 million barrels, was extracted by the Government of Ghana (technically, the Ghana National Petroleum Corporation, or GNPC).⁸ The government should receive substantial revenues from taxes on the private extractions, but few if any taxes had been collected in 2011.⁹ As a result, this estimate makes the very conservative assumption that the government will continue to extract 16 percent of all barrels and receive nothing from the other barrels.
- In 2011, the Brent crude price per barrel (a measure of oil prices commonly used as a baseline for comparison with African oil) was \$116.25 (2013 USD), while that for Ghana's Jubilee oil field was 118.14. The ratio of the latter to the former is 102 percent. The Brent price declined to \$113.16 in early 2013.¹⁰ These estimates assume that the Brent crude price stays constant (in real terms), as does the ratio of the Jubilee to Brent prices. This, in turn, implies that from 2013 forward, the Jubilee price is \$115 per barrel.
- In 2011, the government marketing cost per barrel was \$0.08 (in 2011 and 2013 USD).¹¹
- In 2011, 47 percent of the government's revenue was transferred back to GNPC, leaving 53 percent for the government's use.¹²
- According to IEA, almost all of Ghana's revenues from gold mining either went missing or towards short-term, politically expedient uses, rather than longer-term investments like infrastructure or the Heritage Fund. IEA sees one of the key achievements of the Act as providing for these longer-term uses, though it recognizes implementation may not go completely by the letter of the law. As a result, it suggested three scenarios for the effect of the law: that 20, 30, or 40 percent of government revenues are used for long-term investment.
- Nigeria is used as a baseline to determine how much reported revenue might go missing without the Act (note that this estimate assumes, perhaps conservatively, that nothing goes missing before revenues are reported). One source suggests as much as 50 percent of Nigeria's oil revenues go missing.¹³ As a result, these estimates assume that without the Act, 50 percent of government revenues would go missing.

The same percentages suggested by IEA are used to create scenarios here: that is, that the law reduces missing revenues by 20, 30, and 40 percent. For simplicity, the middle scenario of 30 percent is used as a baseline against which to estimate the absolute number of dollars invested in long-term uses for each scenario above.

- Finally, a discount rate of ten percent is applied to account for the law's uncertain future impact (e.g., if political will changes or unforeseen implementation obstacles arise).

These numbers were combined as follows (discrepancies are due to rounding):

- Use the data and assumptions on production, the percent produced by GNPC (16%), the Jubilee price per barrel (\$115), the marketing cost per barrel (\$0.08), and the percent of government revenues *not* transferred back to GNPC (53%) to estimate oil revenue for the government's use from 2011-2025 (2013 USD, undiscounted):

Departure year	2011	2012	2013	2014	2015	...	2025	Total
Barrels per year, total (M)	24	31	40	40	40	...	40	578
Barrels per year, GNPC (M)	4	5	6.5	6.5	6.5	...	6.5	93
Marketing cost, GNPC (\$k)	329	422	539	539	539	...	539	7,800
Sale price per barrel (\$)	115	115	115	115	115	...	115	115
Revenue, GNPC (\$M)	464	585	742	742	742	...	742	10,700
Funds to Gov't of Ghana (\$M)	246	310	393	393	393	...	393	5,700

≈ \$5.7 billion dollars in oil revenue for the government's use from 2011-2025

- Use the assumption based on Nigeria's experience and the three scenarios to estimate what percentage of those funds will be additional revenue that is managed more transparently as a result of the law (i.e., that will not go missing):

Scenario	Base % of revenue that goes missing	% reduction from the law	% of revenue that is additional, from the law
1	50%	20%	10%
2	50%	30%	15%
3	50%	40%	20%

- Apply the percentages in the fourth column to the line in the first table above labeled "Funds to Gov't of Ghana (\$M)" to estimate the additional revenue that is managed more transparently as a result of the law:

Additional revenue - no discount (\$M)	2011	2012	2013	2014	2015	...	2025	Total
Scenario 1	25	31	39	39	39	...	39	567
Scenario 2	39	46	59	59	59	...	59	850
Scenario 3	49	62	79	79	79	...	79	1,133

- Then, apply the discount rate, starting in 2013:

Additional revenue - discounted (\$M)	2011	2012	2013	2014	2015	...	2025	Total
Scenario 1	25	31	36	32	30	...	11	335
Scenario 2	39	46	54	49	44	...	17	502
Scenario 3	49	62	71	65	59	...	23	670

≈ \$0.3-0.7 billion dollars in oil revenues through 2025 that will be managed more transparently as a result of the Act, with a midpoint of \$0.5 billion.

- To create the second estimate, first determine how much revenue is managed transparently in Scenario 2 above. In other words, add the 15% additional transparent revenue from the law to the 50% baseline, then multiply the resulting 65% by the total funds to the government of Ghana:

Revenue for Gov't of Ghana	2011	2012	2013	2014	2015	...	2025	Total
Total funds to gov't (\$M)	246	310	393	393	393	...	393	5,700
% managed transparently	65	65	65	65	65	...	65	NA
Total transparent revenue (\$M)	160	201	255	255	255	...	255	3,700

- Next, apply the percentage that goes to long-term investment under each of the three scenarios suggested by IEA:

Revenue for long-term uses (\$M)	2011	2012	2013	2014	2015	...	2025	Total
Total transparent revenue	160	201	255	255	255	...	255	3,700
Scenario A (20% to long-term)	32	40	51	51	51	...	51	737
Scenario B (30%)	48	60	77	77	77	...	77	1,105
Scenario C (40%)	64	81	102	102	102	...	102	1,473

- Finally, apply the discount rate, starting in 2013:

Revenue for long-term uses (\$M)	2011	2012	2013	2014	2015	...	2025	Total
Scenario A (20% to long-term)	32	40	46	42	38	...	15	435
Scenario B (30%)	48	60	70	63	58	...	22	653
Scenario C (40%)	64	81	93	84	77	...	30	870

≈ \$0.4-0.9 billion dollars in additional long-term investment as a result of the Act.

Any estimate of this nature leaves out opportunity costs for which it is difficult to account. For example, the second estimate leaves out benefits that could be obtained from short-term uses of the revenue. Conversely, the estimates include several conservative assumptions. For instance, they are bounded at 15 years, well before the likely end of oil production. Overall, then, these estimates should be considered attempts to paint a rough picture of the magnitude of IEA’s impact on important Ghanaian policy – and on the resulting social outcomes.

¹ Moss, T. and Young, L. (2009). *Saving Ghana from its oil: the case for direct cash distribution*. Center for Global Development Working Paper 186.

² Asafu-Adjaye, J. (2009). *Harnessing Ghana’s oil and gas revenues for sustainable development*. IEA monograph no. 20.

³ The World Bank Group (2012). World Development Indicators.

⁴ Government of Ghana (2011). *Petroleum Revenue Management Act*, Act 815.

⁵ Ghana Extractive Industries Transparency Initiative (GHEITI, 2013). *Final report on the aggregation/reconciliation of mining sector payments and receipts: 2010-2011*. Prepared by Boas and Associates, Accra.

⁶ The Daily Graphic (8 Oct 2012). *Ghana’s oil production increases*.

<http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=252487>.

⁷ Bowman, A. (21 Jan 2013). “Ghana oil finds: small beans for Eni, big deal for Ghana.” *Financial times*.

<http://blogs.ft.com/beyond-brics/2013/01/21/ghana-oil-finds-small-beans-for-eni-big-deal-for-ghana/#axzz2OgQOcUDt>.

⁸ GHEITI 2013.

⁹ Peace FM (19 May 2012). *Ghana loses GH¢583 million oil revenue*.

<http://news.peacefonline.com/news/201205/114649.php>.

¹⁰ US Energy Information Administration (2013). *Petroleum and other liquids: spot prices*.

http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm; GHEITI 2013.

¹¹ GHEITI 2013.

¹² Peace FM 2012.

¹³ The Economist (2 May 2013). *Bye-bye big men*. <http://www.economist.com/news/special-report/21572384-governance-much-africa-visibly-improving-though-progress-uneven-bye-bye-big>.

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