



Shrinking oil

Does weak governance and corruption
reduce volumes of oil produced?

Farouk Al-Kasim, Tina Søreide, Aled Williams

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U4 Issue

June 2010 No 3



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This paper continues the discussion in Al-Kasim, Søreide and Williams (2008) on grand corruption in the regulation of oil. Farouk Al-Kasim is a geologist and played a central role in the development of a regulatory system for oil production in Norway. He now works at Petroteam, an oil consultancy based in Stavanger (farouk@petroteam.no). Tina Søreide is an economist at the World Bank, Washington D.C. (tsoreide@worldbank.org), on leave from the Chr. Michelsen Institute, Bergen. Aled Williams is a Programme Coordinator at the U4 Anti-Corruption Resource Centre, Bergen (aled.williams@cmi.no). The authors thank Anton Op de Beke, Philip Daniel, Vera Devine, Odd-Helge Fjeldstad, Alessandra Fontana, Elizabeth Hart, Jan Isaksen, Ivar Kolstad, Bryan Land, Robert Lesnick, Ottar Mæstad, David Santley, Jessica Leigh Schultz and Silvana Tordo for comments and suggestions.

Abstract

Prominent contributions to the resource curse literature suggest that weak governance and corruption are key factors behind continued poverty in resource-rich countries. How poor governance and corruption influence revenue management and the possible welfare benefits derived from oil are widely discussed. How they impact upon volumes of oil produced, however, attracts little attention. This U4 Issue addresses the basic forms suboptimal solutions in oil production may take. We make particular reference to environments where regulatory institutions or political accountability are weak, and focus primarily on producer government and oil firm relations. This U4 Issue explores how suboptimal production solutions may impact volumes of oil actually produced. It also delineates possible linkages between suboptimal production and forms of corruption. The paper aims to expand our understanding of how weak governance and corruption impact upon the oil sector and the possible welfare benefits derived from oil. Such explanations are of particular concern to donors and other actors engaged in policy reform and capacity building initiatives linked to oil governance in developing countries. The paper is part of the project *Corruption in Natural Resource Management* at the U4 Anti-Corruption Resource Centre: <http://www.u4.no/themes/natural-resources>.

Introduction

The amount of development that can potentially be funded by oil revenues is intuitively linked to the actual amounts of oil recovered, sold and taxed. But stark variations in development indicators across oil producing countries – from Angola and Nigeria to Canada and Norway – suggest that human practices and relations have a decisive impact on the welfare gains derived from oil production. Relations between oil companies and the state authorities that govern the sector appear particularly important for optimal oil production.¹ As regulator of the sector, the state will ideally take decisions aimed at attaining lasting benefits to society from its resources, based on the sum of its regulatory experiences. Oil firms will provide expertise and capacity to implement exploration and production activities for the commercial benefit of stakeholders, generating revenues for the state budget. The strategic nature of oil to national economies, however, implies that dialogue on the terms of production between state authorities and private firms will also be subject to the wider socio-political and economic environment in a particular country. Factors that contribute to the pursuit of particular production terms may range, for instance, from the level of technical competence present in the domestic economy to the relative political bargaining power of public regulatory authorities. Oil production may also be influenced by less than legitimate means, including the influence of private agendas at the regulatory level and grand corruption.²

Research on the resource curse – the phenomenon that countries dependent on revenues from exports of non-renewable resources tend to experience negative to very low growth, low levels of human development, and high levels of inequality and poverty – explains how revenues from resource extraction may lead governments to deviate from welfare-enhancing development strategies.³ While the resource curse is explained in the literature with reference to a range of challenges – including Dutch Disease, rent-seeking, patronage and deteriorations in institutional quality – prominent contributions to this literature see governance and corruption as key factors affecting how countries deal with these problems (Kolstad et al 2008). How suboptimal governance and corruption – both within and outside the oil sector – influence revenue management, government expenditure and levels of welfare within oil producing countries are broadly discussed. How they influence volumes of oil produced, however, attracts little attention, despite recognition of petroleum’s non-renewable character and the urgency of developing alternative energy sources.

This U4 Issue paper addresses the basic forms suboptimal solutions in oil production may take. We make particular reference to environments where regulatory institutions or political accountability are weak, and focus primarily on relations between producer governments and oil firms. The paper attempts to explore how suboptimal production solutions may impact the volumes of oil actually produced. It also delineates possible linkages between suboptimal production and forms of corruption. The aim of the paper is to contribute to the development of more compelling explanations for how governance and corruption challenges impact upon oil sector productivity, and therefore on the possible welfare or development benefits that may be derived from such resources. Such explanations are of particular concern to donors and other actors engaged in policy reform and capacity building initiatives linked to petroleum governance in developing countries.

¹ Defining optimal oil production is challenging because it largely depends on particular country characteristics. For the purposes of this paper, we present a cross-cutting definition (on page 8) where optimal production is described as “the solution that provides maximum recovery of the resources in the subsurface, using the best available technology and field practices, while fully adhering to the prevailing legislative and contractual conditions and at the same time securing reasonable returns on investment to the investors”.

² For examples and discussion of grand corruption in oil see McPherson and Searraigh (2007); Al-Kasim et al (2008); Gillies (2009).

³ Several studies explain the relationship between oil revenues, political incentive problems and consequences for development including Ross (1999); Sachs and Warner (1995); Bulte et al (2005); Gylafson (2001), Gelb (1988) and (1999); Auty (1993); Karl (1997); Asher (1999); Sala-i-Martin and Subramanian (2003). Some overviews are provided by Humphreys, Sachs and Stiglitz (2007); Collier and Goderis (2007); Rosser (2006); Dunning (2009); Kolstad and Søreide (2009).

The link between oil recovery rates and ultimate revenues

When conceiving of oil as a resource that may potentially fuel welfare improvements, it is important to note that the total amount of oil that can ultimately be extracted from a reservoir depends on the relationship between the amount of oil in the ground and how quickly it is taken out (Craft and Hawkins 1959). Where extraction occurs too quickly, this may disturb the natural drive of a reservoir, where oil is extracted without adding artificial pressure. As production continues and pressure in the reservoir drops, the remaining oil will require assistance to move to the borehole. This implies added investments and, since extraction of the remaining oil will become more costly, economic incentives to produce until the reservoir is considered adequately depleted may decrease.⁴ Given the large investments required in developing a reservoir to a productive stage, there are strong incentives to produce a large initial output at an early stage of production, both to ensure quicker returns to investors and to finance further development of the field. As Banks (2007) explains, however, the trade-off for rapid depletion may be a reduction in the total amount of oil that can be extracted from a particular reservoir, and a commensurate reduction in the ultimate revenues generated. This will, in turn, limit the potential welfare benefits that may ultimately be derived from a particular reservoir.

Method and approach

The paper is based on a literature review and qualitative interviews with specialists in the field of oil regulation. Empirical investigation into the relationships between oil production, poor governance and corruption is challenging since data on these factors is weak, non-existent, or non-available. Oil reserve and production efficiency data is often confidential, while cross-country information about political and regulatory corruption is often based on generalised perceptions-based surveys. Numerous cases of corruption in the oil sector – involving politicians, public officials, or representatives of the private sector – are matters of public record, however. Court cases often focus on bribery between oil firm executives and political or regulatory decision-makers in producer countries, and far more research is required to improve our understanding of private agendas in the sector's governance.⁵ By pointing to some of the incentive problems and mechanisms that appear to be at play, this paper seeks both to encourage debate about these relationships and to spur more thorough research endeavours. Aware of the weak empirical support for our arguments, we suggest policy considerations only very carefully. We note, however, that where a relationship between private agendas in governance and volumes of oil produced can be established in a particular context, this may provide important leverage for domestic and foreign constituencies to engage with a sector reform agenda.

The paper is structured as follows: section one addresses how suboptimal production solutions (for whatever reason) may affect volumes of oil produced and ultimately recovered from a reservoir; section two looks at how specific forms of corruption influence incentives to optimise oil recovery; section three briefly reflects on what our analysis might imply for actors, including donors, with stated interests in improving oil sector governance and productivity to enhance welfare gains.

1. Suboptimal production solutions and volumes of oil

1.1. Interpreting optimality in oil production

Standards for optimality in oil production vary across countries, and actors will have different views on how best to govern production. Despite the mutual interest in efficient and safe oil extraction, the

⁴ As an example, Banks (2007) explains that if 10mb of oil is to be extracted over a five-year period, an extraction programme that produces 2mb/year for five years could have a different effect on the subsequently recoverable amount of this resource than a programme that produces 5mb during the first year and 1.25 mb in each of the remaining four years.

⁵ For instance, the convictions in 2003 of three executives of the former French-owned oil company, Elf, for their involvement in corruption aimed at guaranteeing access to oil reserves in Angola, Cameroon, Congo-Brazzaville and Gabon; the conviction in 2004 of the director of Norwegian company Statoil's international development section for his role in unduly influencing decision makers in the Iranian oil and gas industry. See Al-Kasim et al (2008).

points of departure for oil companies, on the one hand, and regulatory authorities in the producer country, on the other, can be quite different. In some circumstances, this difference may give rise to incentives for attempting to obtain particular outcomes via undue influence.

Explaining the divergence of interests between firms and producers

For oil companies, the element of risk is invariably more important and larger than it is for the producer government. Oil companies tend to compensate for this by employing higher discount rates (typically 12-16%) in their cash flow analysis when evaluating investment projects. Producers, on the other hand, face fewer risks since they are theoretically in a stronger position to deal with variables that lie within their jurisdiction. Unless they are desperate to source rapid revenues, they tend to use lower discount rates (typically 5-8%) when considering how best to regulate the sector. This different view towards risk means producer governments will normally favour longer-term benefits than would an oil company in relation to a given production scheme.⁶

Dialogue between oil companies and the producer government is also affected by their respective expectations of future oil prices. Oil companies will usually use conservative expectations with regard to future oil prices in order to manage investment risks. In periods of low oil prices, oil companies – given the limits to their total production capacity – will also prefer robust investment projects, leaving riskier projects in their portfolio for better days. This may lead to the abandonment of certain planned investments, for instance those involving improved oil recovery schemes in fields under production. Producer governments – particularly those without protective mechanisms against low oil prices - will also try to accelerate and maximise production levels from producing fields to compensate for lower revenue when oil prices are low. Since new projects take time to develop and since firms may, in such periods, be reluctant to invest, it is possible that low oil prices may place pressure on the parties to initiate suboptimal production schemes which will subsequently be hard to reverse. Under certain circumstances, both parties may have an interest in maximising current production at the expense of ultimate recovery of the resources in the ground.

A third factor in the dialogue between producer governments and oil firms is the cost of production, including the initial capital investment and operating costs. The more complicated, remote, or less accessible the resources in question are in technical and geographic terms, the more costly production will be. For this reason, relatively large fields are required to justify production costs associated with extreme environments. Similarly, when contemplating improved recovery schemes in a given field, the additional cost and technical risk associated with the incremental investment must be sufficiently low to allow reasonable rewards to the investor. Again, lower oil price expectations will tend to hinder investment in improved recovery schemes unless the producer government is willing to discuss mechanisms for reducing the risk to the investors, including tax relief measures in a prolonged low oil price environment.

An oil company's ability to raise funds for investment in projects that require high technology is a fourth factor that may affect the economics of field development. Well-established oil firms generally have easier access to financial markets than do newcomers. Innovative production schemes also tend to be penalised by financial institutions because they consider them of higher risk, particularly if they are associated with firms with a short track-record. In such cases, the terms of lending may be prohibitively high. Often, reassurances and a determination to conduct a project on the part of the producer government will help facilitate financing. But financial institutions are understandably sceptical to any production scheme if the operating company lacks experience in applying the proposed technology.

⁶ It should be noted that a government's discount rate generally reflects society's preferences for revenue allocation over time. A higher rate will attribute more benefits to the current generation than to future generations. Apart from the difficulty of objectively calculating the social discount rate, countries are likely to have very different discount rates. In particular, developing countries' discount rates are likely to be higher than those of more developed countries, due to the urgency of investment needs. Some developing countries could even have higher discount rates than private firms despite the risks for private operators.

Definition of optimality linked to maximum recovery and returns on investment

The above, and other considerations that affect the cash flow analysis of a given field development or incremental improved recovery scheme, will ultimately determine the Net Present Value of the project and the rate of return on investment. Since the oil companies' and the producer government's input parameters are likely to be different, there may be a divergence in the economic indicators arising from the two parties' respective analyses. These two positions form the starting point in the dialogue between the two parties, which then often involves the following steps:

- i. arriving at as common and optimal a data basis as possible
- ii. agreeing on the remaining uncertainties and risks in the project
- iii. understanding the legitimate interests of the two sides
- iv. attempting to devise a win-win production solution

The greater the agreement about the principles behind oil governance, and the more informed the government-company dialogue on these principles, the greater the likelihood of reaching a mutually satisfactory result. It is, however, difficult to generalise about what would constitute a reasonable reward on investment for an oil company. Similarly, it is difficult to state what a reasonable recovery factor in a given field would be. For the purposes of this paper, optimal production is defined by describing its boundary conditions as follows: *It is the solution that provides maximum recovery of the resources in the subsurface, using the best available technology and field practices, while fully adhering to the prevailing legislative and contractual conditions and, at the same time, securing reasonable returns on investment to the investors.*

External factors influencing optimality

What is considered to be optimal production will also depend on factors outside the oil sector. This is illustrated by the recent international financial crisis which, combined with low oil prices, has led to a debate about the alternative of leaving oil in the ground, postponing production until both demand and prices are higher. Most analysts would argue that this is not a practical alternative: the cost of switching oil production on and off is high, and there are many uncertainties about future alternative energy production and oil prices. For many producer governments, moreover, the oil price needed to balance their external accounts (state budget) is significantly higher than the current oil price, around USD 60/bbl at the time of writing. According to PFC Energy 2009 estimates, Iran, for example, needs a price of USD 83/bbl to balance state expenditures, Saudi-Arabia requires USD 75/bbl, while Venezuela requires USD 102/bbl. A low oil price makes it difficult for governments in producer countries to keep promises to their electorates.⁷ Where a government faces a decreasing likelihood of being re-elected, its propensity to accept inordinately rapid production may increase. The financial crisis is thus an example of how factors outside the sector and oil producing economies might influence actual volumes of oil produced.

1.2. Suboptimal solutions in the value creation chain for oil

The relationship between a producer government and oil companies extends over the whole value creation process in the upstream sector, from pre-licensing all the way to the cessation of operations and decommissioning. In the following section, a brief chronological review is made of the various stages of resource exploration, development, and extraction. Decisions made at all these stages have the potential of influencing the efficiency of extracting resources from the underground and recovering them at the surface so as to generate profit to the oil firm and revenue for the producer government. Deviation from what is described in the following may imply production practices that are less than optimal. It is important to note, however, that such deviations may be entirely removed from any corrupt act.

⁷ Figures estimated by PFC Energy Global LNG Service and presented by Lew Watts for the World Bank's MENA Energy Knowledge Forum, on 23 June 2009 in Washington DC.

The licensing phase

Competitive bidding rounds are used by most countries as a way of selecting the best licensees, as well as providing a measure of transparency in the licensing process. The process usually begins with pre-qualification to ensure that applicants have a certain minimum of qualifications. Pre-qualified applicants are then assessed against a list of criteria that are detailed in the invitation to bidding or legislation, or both. The selection of applicants for negotiation is often left to the discretion of the government. The trend in the past two decades, however, has been towards openness regarding the reasons for selection. The balance between discretion and openness in explaining the choice is delicate and is likely to require greater attention in future. In the worst case, the exercise of discretion may simply hide discriminatory or corrupt practices.

The chances for selecting licensees without the requisite financial, technical and human capacities to produce the resource in an optimal manner are likely to increase if interest in the acreage is low, or if the round is conducted in a manner and speed that make it difficult for more experienced oil companies to engage. Since it implies an absence of competition, licensing through an open-door policy may increase the chances for suboptimal production – although this may be necessary in countries where interest to acquire licenses is low.

Many governments are aware of the advantages in issuing licenses to more than one company. Norway has commonly adhered to this practice and regulatory officials speak highly of its advantages in terms of enriching the technical resources available for meeting the challenges in a given license. The premise here is that constructive discussions within license groups lead to consideration of innovative approaches to exploration and production. These discussions help guide the regulatory authority in their evaluation of the plans when later submitted by the licensees for approval. In countries where regulatory competence is low, however, it appears advisable to rely on transparent allocation mechanisms based on market forces to reduce inefficiencies in allocation and promote firms' incentives for efficient field production.⁸ It should be noted that in countries where corruption is already perceived to challenge sector governance, it has so far proved difficult to introduce a fair auction system and market forces have not secured results as expected.⁹

The exploration phase

In the exploration phase, the aim of the government will ideally be to investigate all potential commercial resources. Licensees without the requisite capacities to produce the resource in an optimal manner may try to minimise investment in drilling exploration wells. Where no tenable commercial discoveries are made, these companies are likely to retain the acreage in the hope of trading it off profitably to another licensee. Under favourable circumstances, this farming-out process could lead to the recruitment of an experienced oil company that will contribute positively to development of the acreage concerned. On the other hand, this process could delay or hinder further exploration activity.

If hydrocarbons are encountered during exploratory drilling, it is essential that the licensee collects an adequate set of data from the well to properly assess the discovery's commercial potential. Licensees without the requisite capacities may not adequately fulfil these documentation requirements, potentially leading to improper assessment of reservoir characteristics. Following a promising discovery, the licensee will embark on a delineation programme in order to assess the size of the discovery and the lateral and vertical variations in the reservoir. The data obtained in this phase form the basis for further evaluation of the commercial aspects of the discovery, not least for designing the field development plan (FDP). Companies with low capacity may tend to minimise capital expenditure in this phase, for example by drilling fewer wells, reducing well testing, cutting down on seismic work, or performing fewer laboratory investigations.

Preparation of the field development plan

Oil reservoirs can be developed in a number of ways, and the level and duration of peak oil production will vary depending on reservoir characteristics and the emphasis placed on optimal

⁸ For discussion of allocation mechanisms see Tordo (2009).

⁹ For a summary of corruption challenges in petroleum sector management in Nigeria see Gillies (2009).

production. In designing the FDP, effort should ideally be made to identify the best possible mode of production that would maximise the resource value to the producer country, while ensuring profitability to the licensee in accordance with legislation and the negotiated terms of the contract. For the reasons discussed above, in many cases the producer government will favour as high a recovery of the resources that are in the subsurface as possible. On the other hand, the interests of the oil company may be best served by maximising the plateau or peak production rate upfront, even if this may reduce ultimate recovery. This will not only accelerate the recovery of investment by the oil companies, it will also maximise Net Present Value giving a higher internal rate of return on the investment.

Where there is a higher level of negotiating competence on the part of licensees than on the part of the producer government, the plan for extraction laid out in the FDP is likely to reflect the operator's preferences to a greater extent than if the producer's negotiating competence were equal to, or greater than, that of the licensees. In certain circumstances, therefore, the FDP may reflect a preference for high levels of production as soon as possible. Ideally, however, in preparing the FDP, the licensee should be encouraged by the producer government to consider all alternatives for supplementing reservoir energy by means of injecting fluids (e.g. water, natural gas, CO₂, flew gas) with the aim to prevent a premature drop in production levels. In reservoirs that contain heavy and viscous oil, this would mean investigating means of introducing heat into the reservoir to improve both production levels and ultimate recovery. Before the most optimal production regime is selected, it is common to conduct reservoir simulation models of the best alternatives and their cash flow economics. At this stage, the experience and track record of the licensee in improved oil recovery is highly significant, and thus a factor that should be considered in the award of licenses.

Regulatory functions are facilitated if the licensees inform the authorities of the alternatives that are being investigated and the choices that need to be made. This provides the authorities with valuable knowledge of the efforts behind the FDP and will assist their timely approval of the plan. At the same time, such ongoing reporting will allow the authorities to express their ideas and opinions so that the licensee may take government perspectives into account in its planning. Once the production strategy has been satisfactorily identified, the licensee will embark on designing field installations. In an offshore environment, the choice and dimensioning of installations will have a great impact on the possible choices that can be made during production, including on how to improve recovery measures. Although the same applies onshore, the degree of freedom to alter installations or place new ones is much larger onshore than offshore.

The production phase

Once production begins, the licensee will ideally monitor reservoir performance in order to detect any deviation from the assumptions made in the FDP. The sooner such deviations are detected, the earlier remedial actions can be devised to maintain the targeted production and recovery levels. Depending on the provisions in legislation, a dialogue between the authorities and the licensee will, in most cases, be needed to pave the way for alterations in the approved FDP.

The basis for calculating government revenue and establishing the fiscal burden on the licensee is an accurate measurement of the produced and sold oil and gas. Apart from ensuring the accuracy of metering, government institutions will ideally be involved in the monitoring of measurements and the recalibration of meters. Depending on the terms of operation, an oil company may wish to stop developing a particular field or tract. There may be more oil in the ground, yet the operator may compare the remaining resources with other projects throughout the world and optimise efforts for the company as a group, and not for each single operation.¹⁰

1.3. Environments for suboptimal production

Suboptimal oil production is likely to represent a greater problem in some environments than in others, depending on the characteristics of the country, of the sector and of the institutional and individual actors involved. Though governance failure is, in general, connected to weak political accountability

¹⁰ See Radon (2007)

and institutional quality, there are nuances in governance challenges that are important in understanding why implementation of good practice (or even simply “good-enough” practices) in some oil producing countries may be particularly difficult. Variations across countries are likely to be explained by factors including political accountability and stability, institutional quality, the propensity of private companies to benefit from imbalanced bargaining power, robustness of the legal and regulatory framework, and capacities to enforce this framework.

The political level

Some challenging characteristics of political environments and their potential consequences for oil regulation are listed in Table 1. Horizontally, the table lists political scenarios, moving from (on the left) the benchmark of a balanced, welfare-focused governance environment to (on the right) a governance environment under stress, characterised by poverty, civil unrest, political instability and a high degree of foreign influence in the energy sector. Vertically, the table lists important decisions in oil regulation and politics, from the overall ambition behind oil production to tail-end decisions for ensuring as much oil as possible will be recovered from the reservoir. The cells in the table hypothesise how these various political scenarios are likely to influence sector governance. Though empirical evidence for most of these hypotheses is scarce, a systematic presentation of the logical consequences of private agendas at the political level may facilitate comparison of the different governance challenges faced in oil production.

Consider, for example, the political ambition behind oil production. A benchmark ambition might be the creation of lasting values to society from the resource. But a government facing civil unrest may focus primarily on how to maintain political control and spend strategically on building alliances and upgrading its armed and security forces. As suggested in the table, this may in turn weaken political decisions behind oil governance, since the focus will be on political control, rather than on optimisation of production. Corrupt political elites might focus on how to maximise production for quick cash to maintain patronage networks. Although such agendas can be interlinked, for example if political corruption is the reason for civil unrest, they are not necessarily related. Indeed, the presence of corruption is noted in Table 1 as only one among many potential characteristics of political environments that present challenges for optimal oil production.

Oil politics and regulatory decisions	<i>Welfare-focused and honest government, no risk of corruption.</i>	<i>Welfare-focused gov. but risk of corruption in regulatory structures.</i>	<i>Corrupt political elite with short-term horizon. High prospectivity and production levels.</i>	<i>Gov. displays lack of capacity and competence.</i>	<i>Gov. under stress – poverty, civil unrest, instability at political levels, influence from energy-hungry foreign governments.</i>
<i>Main ambition behind oil production (the actual, unofficial ambition)</i>	Sustainable development: revenues maximised in long-term perspective, re-invested in lasting values. Effective institutions. Clear petroleum policy and legislation.	Sustainable development is the ambition, while the actual regulation deviates from good practice.	Incentives to maximise production in the short term. Support built by referring to populist arguments. Unclear legislation Limited attention to the issue of gas flaring.	The goal is sustainable development, but decisions are made that are not in accordance with this ambition.	Avoid loss of political control on production, avoid coups. Make use of petroleum resources for narrow strategic benefits. Finance military upgrading. Limited attention to the issue of gas flaring.
<i>Ownership and regulatory structures</i>	Foreign entry welcome. Authority of national company restricted, with regulatory and commercial functions separate.	National oil company is ambitious without matching efficiency. Bureaucracy slows down int'l oil company participation.	Powerful national oil company with commercial role and regulatory supervision or regulatory functions directly under president or minister.	National oil company dominance as regulator, or bureaucratic regulatory supervision. Divergence between intended regulatory functions and actual performance.	Superficial control on production. Greater exposure to corruption in regulatory structures.
<i>Award of access to oil resources</i>	Clarity about procedures and criteria. Pre-qualification. Competitive bidding. Discretion combined with openness about evaluation.	Firms may derive access through undue influence on tender criteria and procedures. Operators without requisite capacities accepted. Less demand for documentation on track record.	Based on signature bonuses. Design of rounds/auction – to incentivise quick start-up. Poor incentives to invest in drilling exploration wells. Less emphasis on improved recovery track record.	Operators suggest how to run the tender even if they are themselves competitors.	Formally through rounds but award process used strategically.
<i>Field development plan (FDP)</i>	Constructive dialogue between authorities and licensees. Maximised total resource recovery at optimal NPV.	FDPs approved even if biased towards interests of the operator. Emphasis on speedy production and less on optimal recovery. Unrealistic demands for local content.	FDP accepted only if production is maximised in short term, regardless of impact on total resource recovery.	Firms have greater bargaining power vis-à-vis government and greater information about the reservoir. FDP decisions may hold greater benefits for operators.	FDP may become less important in a political challenging situation and is potentially left to the regulatory levels to decide, but without backing from higher officials.
<i>Production monitoring and control</i>	Control from several angles (oil authority, companies, Ministry of Finance, Central Bank). Control of revenues and transparency.	Weak regulatory control. Production figures can be manipulated. Difficult to get metering system installed or audited.	Firms can minimise investment and maximise peak production. Official control weak. Superficial evaluation in the approval process.	Limited government capacity to control documentation on field and production figures. Operators' production practices and figures accepted as official.	Minimum attention on monitoring of production.
<i>The tail-end game</i>	Firms specialised in “tail-end production” invited.	Operators less likely to engage in tail-end production. Contractual complexity in handover prevails.	Tail-end production is not a priority, but encouraged if cash flow is weakening.	Limited understanding of how to promote solutions for tail-end production.	Authorities perhaps totally unaware of the possibility, or without interest in volume maximisation.

Table 1: Political environments and potential consequences for oil governance

Operator-specific determinants

The environment for suboptimal production must also be understood in light of the manner in which oil companies engage with an incumbent producer government. Whether firms will exploit the political environment to their benefit, by profiting from weak or incompetent government decision-making, or work to strengthen governance in a society at risk from political corruption, civil unrest, or weak regulatory competence, is likely to have a decisive impact on the sector. Operators indeed have a responsibility with regard to the quality of performance of the sector, even if it is the government that will ultimately be held accountable for weak regulation.

The propensity of operators to attempt to benefit from a poor governance environment, to stay away from it, to leave it should governance deteriorate, or to remain within it and attempt to improve it, depends on a complex set of factors. First, there are company-specific factors such as private, national, foreign or domestic ownership, headquarter location, size, ownership structure, attitudes towards lobbying and internal anti-corruption schemes.¹¹ Second, there are sector-specific determinants, such as the level of competition in the sector, ownership criteria, and award procedures. Third, there are country-specific determinants, including economic growth, the functioning of government institutions, and the political challenges discussed above.

Data on these various factors, combined with business surveys and governance indicators, provide the basis for an informed estimate of how a particular firm is likely to react in a given governance environment.¹² This is an important estimate since firms will be influenced by their perceptions of how other firms will adjust to the same environment. This multiplier effect may, however, be affected by firm-specific tolerance towards risk. As noted by Skaperdas and Gan (1995), “the more risk averse are more fearful of ruin, bankruptcy and disaster and thus they put more efforts into avoiding it.” This logic may explain the involvement of some operators in corruption.¹³

¹¹ For an overview of private sector perspectives on involvement in corruption, see Transparency International (2009).

¹² Martin et al. (2007) analyse determinants of bribery at the national and sector level. Their analysis addresses not only sector and firm data, but also cultural factors such as individualistic or collectivistic ideas and the degree of orientation towards achievement in a given country.

¹³ See Søreide (2009) for an analysis of how attitudes towards risk may affect firms' propensity to be involved in corruption.

ERHC Energy in São Tomé and Príncipe

In 1997, Environmental Remediation Holding Corporation (ERHC) - a small firm created in the US state of Louisiana but subsequently relocated to Houston, Texas - signed a USD 5 million contract for oil exploration rights in **São Tomé and Príncipe**. From what may be gathered from reports on the complex deal, it appears to have granted the firm **exclusive rights to market and exploit São Tomé's oil reserves** for the next twenty five years. These rights were the firm's only assets at the time and the company lacked any significant expertise in oil exploration and production. In 2001, with ERHC reportedly close to bankruptcy, a Nigerian businessman, Emeka Offor, bought the firm just prior to a bilateral agreement between São Tomé and its maritime neighbour Nigeria on the sharing of revenues from oil found in waters between the two countries. At the request of the International Monetary Fund (IMF), which considered the ERHC agreement prejudicial to the country's national interests, São Tomé hired a team of American lawyers to look into its dealings with the firm. This team characterised the agreements with ERHC as one-sided, since the government received little in return for what it gave the company. Coming to power that same year, São Tomé's new president, Fradique Melo de Menezes, sought to renegotiate the country's terms with the firm, now renamed ERHC Energy. Enlisting external assistance, São Tomé succeeded in **renegotiating** some of its terms and began **drafting new regulations and laws reflecting international oil sector practices**. ERHC, however, retained highly favourable conditions, including the right to choose the best Santomean oil blocks without paying the one-time royalty fee often demanded by oil producers. When, in 2003-2004, São Tomé and Nigeria auctioned off the first drilling licences for the offshore oil zone, most major international oil companies opted to stay away from all but the most promising acreage.

In 2005, the Santomean Attorney General's Office issued a report noting it had found serious flaws in the manner in which oil contracts had previously been awarded. First, the **criteria for awarding licenses were found to be vague** and to have allowed authorities **unusually wide discretion in selecting licensees**. Second, licenses were found to have been awarded to **firms that were technically and financially unsuitable**, with bids from companies with no prior deepwater drilling experience and/or without the requisite financing favoured over more credible bids by renowned international oil companies. Investigations were subsequently launched by US federal authorities to determine whether ERHC Energy had bribed officials in São Tomé in contravention of the Foreign Corrupt Practices Act (FCPA). In Nigeria, national authorities also began investigations into alleged insider oil dealing on the part of the firm's chairman, Emeka Offor.

As a struggling agricultural economy with virtually no manufacturing or industrial base, the São Tomé of the mid- to-late-1990's demonstrably **lacked expertise and experience** for governing its estimated oil reserves and to plan for the implementation of further exploratory work and eventual oil production. It has been alleged that weak regulatory and governance capacities in the country may have been compounded by corruption involving senior Santomean officials and foreign firms, including ERHC Energy. Whether these allegations prove correct or not, **perceptions of political corruption, regulatory incompetence and bid-rigging** surrounding the allocation of oil licenses did nothing to ease the start-up of the further exploratory work required.

Reports typically focus on the reduced level of signature bonuses entering Santomean state coffers as a result of the ERHC agreements – estimated at around USD 55-60 million in lost revenues, or roughly equivalent to a decade of foreign exchange earnings from the country's main cocoa crop. A more challenging, but perhaps more insightful, analysis could focus on the **impact of governance weaknesses surrounding the initial licensing round on subsequent exploration and production activities** in the waters surrounding the country. Such analysis might appropriately focus on whether and how decisions arrived at during the early licensing rounds may be linked to subsequent delays or inefficiencies in oil exploration and production, or in sector technology and knowledge transfers to the country.

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The legal framework

The risk that decisions are made that allow deviation from optimal depletion of a resource is likely to be higher if there are no consequences for these decisions. The propensity for politicians to allow private agendas to influence governance decisions will depend on democratic functions and the visibility of their decision-making. Similarly, at regulatory levels, the propensities to be involved in illegal practices for personal gain will depend on the ability of legal institutions to disclose and prevent such practices.

Despite increasing international collaboration on the design and development of good practice in oil regulation, we observe that similar procedures and rules function differently in different frameworks.¹⁴ It is not only the characteristics of the political environment that are relevant in understanding how particular practices will function. There are also important differences across countries in terms of the presence of institutions able to consume imported rules, in terms of the independence of the judiciary from the executive, and in terms of the general predictability of written rules. The reactions of whistleblowers or firms that have been treated unfairly in the awarding of oil concessions may, for example, differ depending on these characteristics. This may, in turn, influence whether suboptimal decisions (or corruption) in the sector will be revealed.¹⁵

2. Forms of corruption linked to suboptimal oil production

Suboptimal solutions for production may be present at different stages along the value creation chain. Poor or inappropriate choices can be made – by both regulators in host countries and oil companies - in designing and implementing licensing rounds, in exploring potential oil reservoirs, in assessing the characteristics of promising reservoirs, in designing and framing the FDP, and in monitoring what actually takes place once production begins. Suboptimal solutions at one stage in the value chain may increase the likelihood of suboptimality in subsequent stages, for example where a poor-quality assessment of the characteristics of a particular reservoir leads to insufficient information for the design of an FDP which is appropriate for its geology. We have noted, too, that suboptimality in production is likely to vary across country governance environments, with factors relating to political context, sector and firm characteristics and legal frameworks playing an important role in determining the extent and nature of suboptimality. While we have sought to illustrate how suboptimal oil production can occur without the presence of corruption, we also note that strategic decisions in oil production can be vulnerable to corrupt practices. In a sector where corruption is often referred to as pervasive,¹⁶ there are reasons to believe that suboptimal production solutions may, in some instances, be reinforced by corruption on the part of particular actors.

¹⁴ For instance, the Extractive Industries Transparency Initiative (EITI) or general anti-corruption initiatives with implications in many sectors, such as the United Nations Convention against Corruption (UNCAC).

¹⁵ See Lee (2005); Berkowitz et al (2003); Hadfield (2008). For factors determining the propensity among firms to speak out about corruption, see Soreide (2008). For whistleblowing and corruption more generally, see Drew (2003) and Dyck et al (2007).

¹⁶ See, for example Yates (1996); Shaxon (2007).

2.1. Why address the effect of corruption on suboptimal production?

Though actors in oil production generally have incentives to maximise production and revenues, legitimate commercial interests may sometimes seek to pursue a path of resource depletion that may be considered less than optimal from an overall social welfare perspective. Less legitimate private agendas may also influence political or regulatory decisions, again allowing deviation from what might be considered welfare enhancing. As discussed, the pursuit of narrow or private agendas in oil production may be linked to a variety of factors, including civil unrest or short-sighted populist politics. The resource curse literature asserts that weak governance and corruption are key factors behind the variation across countries in how well they manage to generate welfare gains from petroleum resources. These insights suggest more attention should be placed on how corruption may influence suboptimal production.

Corruption in relation to suboptimal production does not necessarily concern international oil companies bribing politicians or officials of producer governments. Indeed, corruption in the form of rent-grabbing at political or regulatory levels in producer countries may occur entirely without the knowledge of commercial operators. Taxes or signature bonuses to which producers are legally entitled may still be misappropriated once they leave an oil company's bank account. Similarly, private-to-private corruption among commercial operators vying for lucrative licenses may occur without the knowledge of officials in producer countries. Nevertheless, under certain circumstances, incentives may exist for commercial operators to attempt to unduly influence political or regulatory decisions linked to oil production. It is also possible, under certain conditions, for politicians and public officials to attempt to extract personal benefits from commercial operators in return, for instance, for decisions that unduly favour the operator in question.

While there is a gliding difference between bribery and other forms of influence, corruption is categorically different from lobbying, marketing or bargaining during negotiations. Consider how a public official, at any level, is supposed to protect the interests of citizens. A bribe, in this setting, compensates the public official for the inconvenience of deviating from the official aim of the institution that he or she represents and from what it considers the best option for society. While other attempts at influencing decisions may be seen as an annoyance, a bribe means mutual gain. For the public official in question, it means a benefit in his or her personal sphere. Compared to the values at stake in the oil sector, a bribe may be relatively small but still have an effect on the public official's decision. Given the potential for substantial variations in the interests of stakeholders in oil production, much can potentially be gained by seeking to unduly influence decisions linked to production.¹⁷

2.2. Forms of corruption and their possible influence on suboptimal production

Corruption may influence sector governance decisions in a variety of ways. Table 2 provides an overview of how areas of risk for suboptimal production may potentially be linked to corruption. A further column notes the potential consequences of this corruption for each area of suboptimal oil production. The corruption mechanism identified for each area of risk is not required for the noted suboptimality to exist, or for the consequences of

¹⁷ The debate about firms' role in petroleum-related corruption has lasted for more than a decade resulting in professional standards and anti-corruption as part of oil-companies' ethical guidelines. See, for example, Tippee, 1998, for discussion on firms' responsibility in petroleum-related corruption.

this suboptimal production to play out. However, corruption may be the reason for suboptimal production and the point is to illustrate what connections may be possible. Following the overview in Table 2, this section describes in more detail forms of corruption and their possible influence on suboptimal production.

Area of risk for suboptimal production	Possible undue influence	Potential consequences for production
Open-door licensing	Firms may influence regulatory body to bypass competitive bidding in order to obtain a license on favourable terms, including low work commitments; alternatively, collusion among firms and/or among firms and regulatory body to bypass competitive rounds.	Possibly inefficient or suboptimal exploration resulting in delaying or hindering discoveries. In the event of a discovery, there is a high risk of suboptimal data collection to assess commerciality and/or further potential of area.
Low investment in drilling exploration wells	Firms may persuade regulatory body to ignore drilling targets without relinquishing the block. Alternatively, postponement of drilling commitments by firms is proactively overlooked by the regulatory body.	First wells may miss the correct target. Low willingness to invest may delay or hinder enlightened exploration. It may also negatively impact data acquisition and hence the quality of reservoir assessment.
Improper assessment of reservoir characteristics	Firm persuades the regulatory body to overlook proper data acquisition and reservoir assessment; Investigations required for improved recovery are proactively overlooked by the regulatory body.	Probable low quality of information and investigations will negatively affect the adequacy of the field development plan for achieving optimal recovery.
Field development plan focused on primary depletion methods only, rather than primary and improved recovery methods combined	Firms may influence regulatory body to accept that rapid depletion of oil is a common goal, thus justifying a lack of focus on improved recovery mechanisms in the field development plan. Alternatively, improved recovery measures may be incorrectly postponed or not seriously pursued.	Mode of production is most likely to be inappropriate for optimising depletion of the resource.
Poor monitoring of reservoir performance and lack of timely remedial actions	Firm is permitted by the regulatory authority to conduct below-standard practices in monitoring reservoir performance and in remedying anomalies. Regulatory authority is negligent or not sufficiently vigilant in monitoring reservoir simulation by firms and corrective actions.	Deviations from assumptions made in the field development plan are likely to pass undetected or are not detected early enough to allow suitable correction.

Table 2: Suboptimal production and undue influence

Corruption at the political level

Corruption involving the political elite in a producer country is likely to skew the framework conditions and incentives for oil production. Patronage, defined as the use of public resources to obtain and wield political power, allows us to understand how increased oil revenues offer both opportunities and incentives to pay off political supporters and weaken democratic mechanisms.¹⁸ This, in turn, helps us conceive of situations in which the prospect of increased oil revenues may lead politicians to engage in short-term and inefficient planning (Robinson et al 2006).

In environments where corruption is perceived to be widespread, firms may not need to pay bribes to influence framework conditions as long as they agree with the terms of the regime (and its corruption). Even if firms manage to avoid involvement in bribery themselves, corruption at political levels may 'clear the market', with companies unwilling to accept the government's terms staying away. Under such circumstances, collusion between firms may be easier since fewer companies would be involved. Such collusion may also be tolerated at the political level provided resource rents continue to flow.

Corruption in regulatory decisions

Though a government's ambition for regulation of the sector may well be the creation of maximum values for society, corruption at the regulatory level may cause actual policy decisions to deviate from this focus. Many regulatory decisions are made without political interference or control, and regulatory officials may have discretionary authority to become engaged in corruption that could influence production. Officials may, for example, accept bribes from actors keen to see environmental assessments accepted. Bribes may also change hands in the award process to accept poor documentation about the operator or about the geological prospects of the reservoir in question.

Corruption at regulatory levels can take place in the form of (i) a company offering a *bribe to obtain deviation* from the decision that would otherwise be made (the bribe lowers the cost for the operator and may ensure access to a specific field); (ii) the regulatory institution *accepts the company* (via pre-qualification, for example) *only in exchange for a bribe* (the bribe acts as an incentive bonus for the officials); (iii) *collusion*, the company and the regulatory agency share the profits of weak regulation; and (iv) corruption at the regulatory level may be used as a *tool for corruption at the political level*.

Conflicts of interest

Though institutions representing a producer country should ideally protect the public interest in their negotiations with oil companies, these institutions (or sections of them) may be tempted to primarily optimise their own narrow interests.¹⁹ Potential conflicts of interest are likely to be particularly emphasised where responsibilities for oil operation and regulation have not been well-separated. For the many interests it is supposed to serve, oil governance is restricted only by the laws and regulations established by the government itself, and which the government is supposed to enforce. If the general system of checks and balances is already weak in a producing country, conflicts of interest may become unmanageable, and a number of wider societal interests may not be served at all. Conflicts of interest may also cause a government to accept production terms that deviate from what may be considered optimal.

¹⁸ For an introduction to this topic, see Kolstad et al (2008).

¹⁹ See Radon (2007) for a discussion.

Corruption, the auction form and incentives to produce

Extraction rights to proven fields are usually awarded through some form of auction. Fair competition with clear procedures should enable producer governments to obtain a higher value for their oil assets, with reservoirs more likely to be assigned to those best able to use them. The bidding company able to extract the most from a field will usually offer the highest bid. But auctions can be designed in different ways with varying effects on the incentives of bidding firms. Via its role in auction design, producer governments can promote varying levels of disclosure relating to a firm's costs, or influence its incentives with regard to modes of production. There are trade-offs, however, and producer governments must decide which outcomes they consider most important. In environments where there is a high risk of collusion among bidding firms, such risks may potentially be addressed by reducing a bidder's opportunities to collaborate with potential competitors (sealed bidding), even if this means losing the potential benefits associated with a more open form of auction.

As discussed by Cramton (2007), how to auction depends both on context and on the item to be auctioned. The characteristics of an oil permit may vary substantially depending on geology, the block size, the terms of the license, tax obligations, risk allocation between the producer government and the operating firm, and more. The form of the auction itself may be subject to undue influence since this form matters for the eventual composition of bonus bids, royalties and production sharing. At the same time, the form of auction determines the operator's incentives. Compared to a company that has won on the terms of a bonus bid, a company that wins on production sharing terms may have stronger incentives to continue production for as long as possible – for example, if the operator's share of the profits increases with successful field development. Development incentives can be further maintained by government shares in development capital and operating costs.

Similarly important are auction *procedures*. Unless a producer government strictly adheres to these procedures, information can be leaked and firms may attempt to unduly influence the outcome of the process. Corruption can thus undermine the intentions behind an auction, even if it may superficially look as if all procedures have been respected.²⁰

Corruption and award criteria

An auction's objectives are reflected in the award criteria. Decisions about these criteria are decisive not only for eventual production, but also for the prequalification of bidders. Procedures for determining and providing information about award criteria vary across countries, however. In some countries, there are numerous criteria – including criteria that may have nothing to do with oil production. Vaguely-designed award criteria are likely to allow greater room for negotiation and, possibly, for influencing the award process through corruption.²¹ In some countries, revenue maximisation may be a clear criterion, and firms may win access to oil fields on the basis of signature bonuses alone.

Negotiations despite auctions and award criteria

Decisions about how to auction, negotiate, and award oil rights are challenging for producer governments.²² Their skills in this regard may be weak in comparison to those of oil companies. In an introduction to how oil contracts are negotiated, Radon (2007) lists items

²⁰ For discussion on corruption in procurement see Rose-Ackerman (1999); Della Porta and Vannucci (1999); Søreide (2005); Celentani and Ganuzab (2002); Comte et al (2005); Lengwiler and Wolfstetter (2006).

²¹ See Al Kasim et al (2008) for further discussion.

²² See Tordo (2009).

for negotiation and parties' perspectives in relation to them. Among the key issues to be negotiated are royalties and taxes, profit sharing agreements, bonuses, cost recovery (importantly, the depreciation period for capital investments), the FDP, stability clauses (where companies are compensated if their contractual terms change for the worse), environmental protection, and social projects. Since firms and producer governments often have different interests, firms may trade what they consider less important against diluted obligations on what they believe is commercially significant. Producer governments may also wish to prioritise policies and actions on certain issues aligned with their motivations, for instance where a benevolent government prioritises action in the environmental arena despite the reductions in upfront production volumes and revenues this might imply.

A producer government's negotiating position is likely to be weaker if it wishes to source revenue quickly, and there are reasons to believe this attitude will be more likely in the presence of corruption. It may also follow that the more eager for quick cash a particular producer government is, the fewer the reasons to believe that resource depletion will be optimal.²³ At the same time, it may be true that "oil companies often tailor their negotiation style to their interpretations of the political environments in which they operate" (Radon 2007). The greater the uncertainty about the terms of production, the more there is to negotiate about. These uncertainties may be linked to field size and envisaged difficulties of recovery, but political instability, civil unrest or corruption may be just as important.

3. Implications for donors in supporting improved oil governance

A number of donor-supported initiatives and programmes have been established in recent years, ostensibly to improve governance of the petroleum sector in developing countries. Some donors have declared oil-related support an area of particular priority. NORAD's Oil for Development, for instance, is directed towards enhancing technical capacities among public sector actors in producer countries. The Petroleum Governance Initiative – a bilateral collaboration between the Government of Norway and the World Bank – aims to help developing countries implement appropriate frameworks for oil resource and revenue management. The donor-supported Extractive Industries Transparency Initiative (EITI) is a programme for countries to reach a global standard for publication of company payments and government revenues from the extractive industries. Through a validation process, countries are encouraged to make important improvements in sector regulation. Given the potential for linkage between suboptimal oil production, volumes of oil and the presence of corruption, what might such linkages imply for future donor support for improved oil governance in producer countries where overall governance is deemed weak?

3.1. The limits to donor influence

Promoting improved petroleum governance in a producer country that displays characteristics of weak governance is notoriously challenging. Kolstad et al (2008) find that petroleum-related bilateral aid provided by CIDA, NORAD and USAID focuses primarily on the development of sector-specific competence, including training officials in regulatory institutions and supporting access to competent advice, information and standards. These are

²³ Angola may be an exception. The regime is generally perceived as corrupt, but while the population suffers from welfare negligence, the oil sector is perceived to be professionally managed with better control systems than oil sectors in neighboring countries. For an account of the "business success" of the Angolan oil sector see Soares de Oliveira (2007).

important activities. Nevertheless, while these knowledge transfers occur at the regulatory and technical level, there is a tendency for important decisions with regard to the oil sector to be made at a political level.

The resource curse literature notes competition for political power may sharpen as oil revenues come online, while the government's role in revenue allocation may provide opportunities for securing political power through patronage.²⁴ From this perspective, the chances for a politician to be held accountable for oil governance decisions may actually decrease as oil revenues add up. This, in turn, might have a negative impact on his or her propensity to seek advice and information about the consequences of these decisions.

Where political accountability is weak, therefore, demand for support and advice from donors may be limited or non-existent. This tendency may also be reinforced by a view that oil revenues will diminish the importance of development aid, or that petroleum resources are exposed to neo-imperialist ambitions.²⁵ Correctly or not, aid can be pointed to as a cover for commercial interests, and a negative attitude towards support from donors can develop among incumbent governments as well as opposition groups.

3.2. Improving the quality of government-to-firm relations

The centrality of the relationship between a producer government and firms engaged in its petroleum sector - both to the optimality of oil production and to the benefits derived from oil - underlie efforts to improve the quality of government-to-firm relations in weak governance environments. Though ostensibly focused on verification and publication of company payments and government revenues in the oil sector, the EITI also operates as a *de facto* dialogue framework between producer government actors, oil firms, donors and others, on issues of transparency and governance. Individual donors have, for some time, also prioritised enhancing the collaborative nature of producer government and oil firm relations through technical assistance.²⁶ The following section considers where donor efforts with regard to government-to-firm relations might be further focused.

Assessing the principles and objectives behind petroleum-related legislation

A number of prerequisites must be secured to ensure a positive relationship between a regulator and licensees. One fundamental prerequisite is the presence of legislation governing the petroleum sector in a manner that is consistent with a country's overall policies. Petroleum legislation must be clear and provide rules on the fundamental principles that are to govern the relationship between the state and the licensees. The legislation will thus form the basis for contracts or agreements that deal with the operational and commercial aspects of sharing the responsibility and profits between the two parties. The law has to include clear objectives and implementation principles for resource exploration, field development planning, field development, production, tail-end production and decommissioning of production installations. Similar objectives and principles should be set out in the law governing the design, construction, implementation and use of infrastructure for the optimal benefit of licensees, as well as the overall interest of the producer country in minimising expenditure and impact on the environment on the one hand, and minimising

²⁴ For further discussion see for instance Robinson et al (2006); Mehlum et al (2006); Robbins (2000) – in addition to the references listed on the first page of this paper.

²⁵ See Fouskas and Gokay (2005); Clark (2005); Brautigam (2003); Mansourov (2005).

²⁶ The World Bank, for instance, has provided technical assistance to Angola for strengthening the corporate social responsibility (CSR) agenda in the country's oil sector. A key objective of this work has been to identify shared strategic objectives between the government of Angola and oil companies as they relate to CSR activities. See World Bank (2003).

unit cost on processing and transportation on the other. The donor community can offer support for third party assessment of the legal framework and thus contribute importantly to clarifying regulatory responsibilities.

Assessing the suitability of regulatory set-ups for petroleum governance

The legal basis for oil regulation and governance will have value only in so far as the state manages to provide institutions able to implement the principles and procedures in day-to-day interactions between government and licensees. Procedures can be manipulated in the government regulatory administration dealing with petroleum, as well as elsewhere, and the motivation for fair and objective interpretation of the legislation and contracts is as important as the details in the rules. In a number of countries, the task of regulatory supervision as well as commercial participation is entrusted to a national oil company (NOC). This mixing of two distinctly different and potentially conflicting state interests makes it difficult to drive a strong development agenda in such contexts. NOCs tend to water down their regulatory functions in favour of commercial gains that are less aligned with long-term societal interests. This administrative set-up is open to corrupt practices in the sense that important transactions can be termed commercial dealings and can be kept largely aside from the governmental system of checks and balances.

Some countries organise regulatory functions separately from their NOC but directly within or under the ministry responsible for the petroleum sector. This set-up leaves the regulatory function particularly exposed to the individual views of the incumbent minister. Political or personal motivations may then weaken the technical and legal integrity behind regulatory performance. Depending on the extent of political space in a producer country, donors may be able to support detailed assessments of the regulatory set-up for petroleum governance. Such assessments could also consider whether written procedures for reaching important decisions at major milestones along the value chain for oil are sufficiently robust.

Closing gaps in competence on contract negotiations and production control

Another important prerequisite for effective regulatory administration is advanced technical, economic and legal competence on the part of the producer government that matches the competence among licensees. This degree of competence is difficult to achieve in the short term. In countries where there is political as well as commercial pressure to accelerate licensing, much of the most prospective acreage may be licensed quickly, even if the level of competence needed for an equitable relationship during negotiations of contracts has not been developed. A gap in competence can extend into the monitoring phase and influence the regulatory authorities' ability to uphold legislation and contracts during the conduct of operations by the licensees. There is significant risk that weak control on production from the side of the regulatory authorities is exasperated by poor quality in reporting by the operator to the authority.

Pacing development of Ghana's Jubilee field

June 2007 saw the announcement by former President Kufuor of **Ghana's first large-scale and commercially viable oil field**. The Jubilee field – so-called since its discovery coincided with the country's 50th year of independence – was one of the largest recent hydrocarbon discoveries in Africa. Conservative estimates by the German technical cooperation agency (GTZ) stated that, depending on oil prices and future production levels, Ghana could soon expect government revenues of more than USD 1 billion from the field each year. Widely viewed by donors as a model country in terms of macro-economic and political stability, former President Kufuor noted the discovery provided a “bright light at the end of the tunnel” for the country. Some analysts predicted Ghana would soon enter the ranks of middle-income economies provided appropriate governance of the find.

The Jubilee discovery was led by **two relatively small firms** who had been willing to take on significant investment risks. Kosmos Energy, an American company based in Texas, had signed a contract for the West Cape Three Points block in 2004. The neighbouring portion of the field, the Deepwater Tano block, was acquired by the Anglo-Irish company Tullow Oil. Exploratory drilling conducted by these firms during 2007, plus further appraisal wells, confirmed the significant size of the discovery, estimated at between 600 million and 1.8 billion barrels of oil. Relative to their size at the time of the discovery, the Jubilee find was **extremely significant for the life of these firms**. Coupled with another find in Uganda, the Jubilee discovery made Tullow in particular a medium-sized firm on the Financial Times Stock Exchange (FTSE). Other firms joined Kosmos and Tullow in the Jubilee ownership structure, the most significant of which were the Anadarko Petroleum Corporation, an experienced American firm, and the E.O. Group, a Ghanaian company. These four main firms worked together during 2008 to present a field development plan (FDP) to the Ghanaian government for approval. Though the FDP has not been made public, some details have been reported, indicating that the consortium is pursuing a **fast-track plan**, with production scheduled for just over three years after the date of discovery.

Ghana was, in many ways, well prepared to make **good use of the Jubilee discovery** for enhancing public welfare. Since its first democratic elections in 1992, the country had made good progress in terms of political and economic stability, investor-friendliness, good governance and poverty reduction. It ranked 67 out of 180 countries in Transparency International's Corruption Perceptions Index in 2008, out-performed in Africa only by Botswana, South Africa and Namibia. As Africa's second-largest producer of gold and a producer of bauxite, manganese and diamonds, Ghana was familiar with extractive industry policies and development strategies. Moreover, it had made some progress on attempts to diversify its economy by investing in information technology infrastructure and service industries. It also had both a vibrant civil society sector and a thriving independent media.

With Ghana sure to experience a **surge in government revenues** as a result of the Jubilee find, and in light of the prominence of oil policy issues in political campaigning for the 2008 presidential and parliamentary elections, questions began to be asked about whether the country's preparations were sufficient for the challenges that lay ahead. A public consultation process on a new draft oil and gas policy provided little opportunity for formal public input, with consultations largely focused on regional and local government officials to the exclusion of local civil society and citizen groups. Though a partial legal framework for oil exploration and production was in place, significant gaps remained, with no specific regulations in place for governing the upstream and midstream sectors. The role of the Ghana National Petroleum Corporation (GNPC), established during the military regime of Ft. Lt. Rawlings, also required clarification, since it was de facto both regulator of the sector and an interested commercial party. A new petroleum authority regulatory bill, though containing many positive features, raised concerns due to its extensive secrecy provisions, its lack of clarification on jurisdictions and functions, and its lack of a stated role for parliament. Ghana also faced significant institutional capacity challenges in ministries, departments and agencies relevant to the petroleum sector, including the GNPC, the Ministry of Energy, the Ministry of Finance and Economic Planning, and the Environmental Protection Agency.

The Jubilee field case is illustrative of some of the **pressures placed on systems of governance** when a significant oil discovery is made. Given the immense organisational and resource-related challenges presented by the find, it has been argued that Ghana should be careful to **set its own timetable** for further development of its petroleum sector, in synchronisation with its fiscal, regulatory and institutional capacities to manage and benefit from the resource. It may be envisaged that the presence of corruption in such a setting could negatively influence a welfare-oriented development of the sector and its governance. Concerns have been expressed that the Ghanaian authorities placed pressure on the Jubilee consortium during 2008 to prepare a plan to exploit the field as quickly as possible, though this does not imply that corrupt methods were employed in doing so. Investigations by the current Ghanaian authorities have, however, begun into allegations that the E.O. Group used its access to government officials in the previous administration to gain an undue foothold in the Jubilee field, and to win more favourable terms both for itself and Kosmos Energy.

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Donors can play an important role by supporting initiatives to strengthen competence in regulatory institutions. Where a number of discoveries are made, however, pressure on the capacity of newly-established institutions may be overwhelming. It is therefore important for donors to identify the most critical phases of transactions between producer governments and oil companies. These will most likely fall within the following areas:

- Design of petroleum policy and subsequent legislative framework
- Organisation and implementation of license rounds
- Negotiation of contracts
- Evaluation of discoveries and the assessment of development feasibility
- Review and follow-up of the process leading to the approval of the FDP

A key aim is that producer government expertise should be at the highest possible level and on a par with that of the oil companies with whom the regulatory authority is dealing. Perhaps the most critical assistance in terms of potential loss/gain of value to the producer country is that related to the approval of the FDP. Reservoir engineering studies may have to be performed in order to strengthen the position of the regulatory authority in its dealings with the licensees. The timing of donor assistance is therefore critical, and interventions are likely to be most effective before submission of an FDP for a particular reservoir.

Building understanding of corruption in the sector into all interventions

Many of the factors related to suboptimal oil production may exist or arise independently of corruption, as noted earlier. Once corruption takes root, however, it is likely to seriously hinder the removal of these negative factors from governance of the sector. It may also increase the scope and degree of damage to the country from suboptimal production. The opportunities provided by the prevalence of corruption in the sector will likewise encourage the entry of new players (or strengthen existing ones) who may positively encourage corrupt activity as a means to build new power-relations or to nurture existing ones.

Donor support of the types mentioned previously in this section needs to begin with recognition that interventions may impact either positively or negatively on oil production in any particular context. Transferring technical knowledge and improving access to information about good sector practices appear, on the surface, to be non-political and innocuous actions. But some level of political messaging accompanies all forms of donor support, and the ‘who’ and ‘how’ of interventions in the oil sector will be closely watched by oil companies and producer governments. An advanced understanding of the corruption context in which an intervention will play out is therefore crucial for donors seeking to intervene on any level of engagement. Recent pilot studies by the World Bank have developed a methodology to assess the political economy of natural resource governance along the extractive industries value chain. Such an approach can be developed further by donor agencies in collaboration with producer governments.²⁷

Returning to the political nature of the oil governance challenge, donors could also build on their role as surveyors of cross-country development and provide important signals to producer governments by assessing the dynamics of production performance in resource-rich countries. One means of doing so would be to develop an index of oil sector performance by country. The resource curse debate is based on empirical results using the

²⁷ The project referred to is the World Bank GPF-BNPP Activity for Strengthening Political-Economy Analysis for Addressing the Resource Curse, a study where incentive problems are identified along the extractive industries value chain in several countries. The results will be published in 2010.

GDP estimate of growth as a development indicator. As Neumayer (2004) points out, however, governance performance of net exporters of oil should rather be considered in light of net domestic product (NDP), and not only GDP. When considering only the latter, as the donor community is often inclined to do, the depreciation of natural capital is not taken into account. Governance of the oil industry could be assessed against GDP *minus* the production and depreciation of natural capital, thereby throwing light on what Neumayer calls ‘genuine income’ and the resource-intensity of national economies. By comparing GDP and NDP, the donor community could help make more visible natural resource depreciation and the value of remaining oil reserves, which, in turn, may focus greater attention on the relationship between weak governance and suboptimal production. Knowing more about the value of resources in a particular context would also allow donors to make better informed decisions when designing and prioritising oil sector interventions.

4. Conclusion

The literature and data surveyed provide some grounds to substantiate a link between poor governance and volumes of oil produced. Though, logically, there are good reasons to believe that corruption may exacerbate governance challenges and may, in turn, limit oil produced, the public domain evidence base presently falls short of supporting clear linkage between specific examples of corruption and a reduction in volumes of oil produced in a given field. Given the nuanced contextual challenges faced by producer governments, operating firms, and other actors in optimising oil production – including the wide range of political and regulatory environments in which oil production takes place – further research focusing on government-to-firm relations throughout the oil value creation chain in particular country contexts is likely to shed greater light on these possible connections. Even in the absence of a connection between corruption and volumes of oil produced, it should, however, be recalled that there are many reasons why addressing corruption in regulatory decisions or at a political level in producer countries is required for welfare benefits to be derived from oil. These reasons are amply described in the existing literature and include mitigating the effects of patronage and rent-seeking in skewing, for instance, oil revenue management or expenditure decisions towards minority agendas.

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www.u4.no/publications

Indexing terms:
Natural resource management
Oil
Corruption

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Abstract

Prominent contributions to the resource curse literature suggest that weak governance and corruption are key factors behind continued poverty in resource-rich countries. How poor governance and corruption influence revenue management and the possible welfare benefits derived from oil are widely discussed. How they impact upon volumes of oil produced, however, attracts little attention. This U4 Issue addresses the basic forms suboptimal solutions in oil production may take. We make particular reference to environments where regulatory institutions or political accountability are weak, and focus primarily on producer government and oil firm relations. The paper explores how suboptimal production solutions may impact volumes of oil actually produced. It also delineates possible linkages between suboptimal production and forms of corruption. The paper aims to expand our understanding of how weak governance and corruption impact upon the oil sector and the possible welfare benefits derived from oil. Such explanations are of particular concern to donors and other actors engaged in policy reform and capacity building initiatives linked to oil governance in developing countries. The paper is part of the project Corruption in Natural Resource Management at the U4 Anti-Corruption Resource Centre.