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BEST PRACTICES FOR PERFORMANCE-BASED MANAGEMENT CONTRACTS FOR THE POWER SECTOR



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ACRONYMS

CEO	Chief Executive Officer
CRI	Cash Recovery Index
ECG	Electricity Company of Ghana
EDH	<i>Electricité de Haiti</i>
EIB	European Investment Bank
ERP	Enterprise Resource Planning
ESBI	Electricity Supply Board (ESB) International
ESMAP	Energy Sector Management Assistance Program
EU	European Union
IDA	International Development Association
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IT	information technology
JICA	Japan International Cooperation Agency
KPLC	Kenya Power and Light Company
kW	kilowatts
kWh	kilowatt-hours
LEC	Liberia Electricity Corporation
LHDA	Lesotho Highlands Development Authority
MCC	Millennium Challenge Corporation
MHI	Manitoba Hydro International Ltd.
MLME	Ministry of Lands, Mines, and Energy
MOU	memorandum of understanding
MW	megawatts
PIU	Project Implementation Unit
PSRC	Parastatal Reform Commission
RTI	RTI International
SIDA	Swedish International Development Cooperation Agency

SOW	scope of work
TANESCO	Tanzania Electric Supply Company Ltd.
TOR	terms of reference
UEDC	United Energy Distribution Company (Georgia)
US	United States
USAID	U.S. Agency for International Development
USG	U.S. Government

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EXECUTIVE SUMMARY

In many countries, electric utilities perform poorly, delivering poor-quality electricity with frequent outages at a high price: This is a damper on the economy and on individual livelihoods. Private-sector involvement in struggling state utilities is often impossible for political or legal reasons or because their financial situation turns away investors, leaving donors and partner financial institutions to rely on tools such as management contracts to improve utility performance. There has been a preference for performance-based management contracts which should, in theory, allow a private operator to briefly take full control of a utility, replacing its former management team with its own while assuming part of the operational risks. Through the duration of the contract, the operator is able to improve systems and procedures, introduce new equipment or work flows, and train the management team that will take over operations at the end of the contract.

Actual performance of these management contracts, however, shows that they often fail to achieve their objectives and, in some cases, end disastrously with public anger and extended legal battles over whether success fees were earned or not. This study reviews several performance-based management contracts and some other management contracts that appear to be instructive. We also interviewed practitioners and individuals from companies that held management contracts either successfully or unsuccessfully. The following findings rise to the level of lessons learned and may be informative in structuring future management contracts for success:

1. This review finds that support offered to the operator by the partner government (and, secondly, by the donor) is an essential condition precedent to implementing a management contract: while fee structure matters, lack of government support for the operator makes every other factor moot. Where the government supported the objectives of the reforms and communicated them clearly, and unequivocally, management contracts tended to succeed; where they did not, management contracts failed to meet their objectives no matter what the fee structure.
2. Clear exit and transition planning for the post-management contract phase, and clear communication to the public and the utility's personnel about the parameters of the management contract, are essential. Utility labor unions are strong and can resist reforms unless it is made clear to them that the government supports the operator, and clarifies whether, why, and which jobs are at risk.
3. Management contracts struggle to achieve their aims when the operator is not given total authority over the utility divisions it is expected to improve. Multiple, lengthy appeals to the board of directors for final approval of budgetary or management decisions slows down and may eventually halt operational progress. All parties that contributed to this study agree that while the operator must be held accountable for its performance, subjecting much of its work to board approval is not effective and ultimately undermines the operator's ability to effectuate real change. Management contracts are intended to replace a utility's current management with private management for the express purpose

of giving them the authority to make significant operational improvements and frequently to help break the encumbrance of powerful, vested interests. If that authority is not provided, the task at hand degrades naturally into something more accurately considered traditional technical assistance and should be planned and communicated as such.

4. Operational and management issues are only one part of the problem, and proper financing is often required to address issues related to investment. Where financing is not provided through other mechanisms – or incorporated into the management contract itself – many issues will go unresolved.
5. Management contracts that involve too many metrics or too burdensome reporting requirements distract the operator from the work at hand and complicate supervision and evaluation of contractor performance. Ideally, the metrics and key performance indicators should remain few in number and simple to measure, with well-established baselines. The best metrics focus on revenue and customer service, ensuring immediate and sustained improvements from the consumer’s point of view: This helps build stakeholder support for the operator and for the changes it is effectuating in the utility’s operations.
6. Management contracts require a good baseline against which progress will be measured, and clearly defined objectives. Developing both requires thorough due diligence to be performed prior to tendering. The resulting performance improvement plan should identify a few key objectives without being too prescriptive and establish the parameters for utility operation in which the winning bidder will operate. Nonexistent or incorrect data is a risk to all involved. As the operator will report to the utility’s board of directors, properly characterizing the performance of the board is key to success, and should warrant the donor’s obliging changes to the board as a prerequisite to funding the management contract, if necessary to ensure the board is professional and performant.
7. This study finds resounding support for the concept of performance-based management contracts among all parties interviewed. Structuring them so they succeed has less to do with the financial or legal structure of the contract itself and more to do with ensuring that the political, communication, stakeholder, and donor support framework in which the operator works is properly established before the contract is tendered and is supported during its implementation. The latter can be challenging, given likely changes in government and donor priorities.

1. INTRODUCTION

1.1 Purpose

The public utilities that generate and distribute electrical power in many developing countries struggle to perform adequately, leaving portions of the population without access to electricity and delivering non-cost reflective, unreliable, and poor-quality power to the rest. Ready access to reliable, reasonably priced electricity is a catalyst for economic growth, stimulating improved value-added manufacturing and industry and improving livelihoods in myriad other ways—from communication to irrigation to education to lighting to public security and beyond. None of these benefits are possible when electric utilities fail to perform adequately. Private sector utilities, in many of these regards, perform significantly better.

Among the various options for encouraging more private-sector participation is the use of management contracts, which provide an avenue for private sector-companies to participate in the management of public utilities for a limited duration and with clearly defined objectives. These management contracts often are structured using financial incentives, such as success fees, to encourage good performance; key performance indicators are used to build a framework that facilitates measurement performance improvements. Yet, management contracts have had a spotty record to date. While some have led to performance improvements and led to achievements in improved power quality, better reliability, and lower prices, others have not. Worse, several management contracts have failed outright, led to public outrage, antagonized the labor unions, and concluded in public acrimony and failed promises. In these cases, the contract concluded prematurely, and the private-sector company exited the country bearing much of the public blame for faults real or perceived.

This study reviews performance-based management contracts in the electrical distribution utility sector and attempts to discern best practices in their utilization by identifying trends in their use and their relative successes and failures, as well as by recording the latest thinking by practitioners of management contracts in the field. This is an evolving sector, and management contracts themselves are evolving with time. But given public opposition or the outright impossibility of concession, privatization—or other more outright forms of involving private-sector expertise in the management of public utilities—performance-based management contracts remain an attractive tool that will continue to be featured in the utility performance-improvement plan toolkit of international technical and financial partners. Identifying when and how to use them, and structure interventions for success, is essential.

1.2 Methodology

This study began with a methodical review of all management contracts made available by the contracting parties and reviewing all available related contract literature and deliverables (periodic and final reports). The authors then interviewed key representatives from the international financial and technical institutions that have employed management contracts and from academic institutions with published studies of public-private partnerships in infrastructure and in the electric utility sector, such as Stellenbosch University of Cape Town, South Africa.

We reviewed all performance-based management contracts available to us, and conducted interviews with practitioners from development partners with documented experience using management contracts—such as the World Bank, International Finance Corporation (IFC), and Millennium Challenge Corporation (MCC)—and with companies that have implemented utility performance improvement work under a signed management contract such as Electricity Supply Board International of Ireland (ESBI), Manitoba Hydro International Ltd. (MHI) of Canada, and Tetra Tech.

1.3 Limitations of This Study

This study focuses on a narrow subset of all available management contracts: performance-based management contracts for the electricity sector and primarily for electrical distribution utilities. Although contracts of this type are also frequently employed in other sectors (such as water) or in other areas of the electricity sector (transmission), those types of management contracts were not considered in this study except where experience in another sector provided important feedback or lessons learned for the electrical distribution sector.

Our ability to study and compare management contracts was limited to the contracts that were made available to us and is therefore incomplete. As management contracts are commercial documents whose execution was frequently subject to intense political and popular debate in countries where operators' commercial interests remain active, they are by nature sensitive and not public. We have cross-referenced facts, where possible, and taken a holistic approach to the design and implementation of performance-based management contracts to avoid being drawn into debates that rely on differing interpretations of the political or economic context.

We are deeply grateful to MHI, which released several management contracts to us in their entirety and provided useful feedback and support through this study. We are also grateful to the various individuals across all institutions who agreed to speak with us on this subject.

2. REVIEW OF PERFORMANCE-BASED MANAGEMENT CONTRACTS

Management contracts are but one arrow in the quiver of contract mechanisms whose purpose is to engage private-sector firms in the energy sector. We can arrange private-sector participation tools along a scale from service contracts, management contracts, and *affermages* (leases) to concession or privatization (sale). Each arrangement in the list gradually increases transfer of operational control from the government to the private-sector operator [1].

Unlike service contracts, which simply define a limited technical engagement to be undertaken by the private sector operator, management contracts should, in theory, grant the private-sector operator total and unhindered ability to manage the utility (this, however, is not always the case, as will be shown below). Management contracts are employed where outright concession isn't possible, most frequently for legal or political reasons, cultural preferences, or because the utility's desperate financial condition turns away investors. In some cases, the legal framework establishes public utilities as an inalienable part of the State's rights and responsibilities, which precludes their concession to private interests. The World Bank has also found that management contracts are easier to put in place—for both technical and political reasons—than concessions or privatizations [2].

On the other end of the scale, some instruments, more properly called operating contracts or service contracts, provide for less authority and autonomy in operation of a utility. Because these service contracts are also performance based and provide a mechanism for private-sector participation, their success and failure are also instructive in how management contracts should be structured and how risks are allocated across the various actors. Risk allocation should be done on the basis of assigning risk to the party best able to manage or bear it [3]. The contract should stipulate a limited-time engagement during which the private-sector operator is granted (delegated) complete operational authority to manage and operate the utility. During this time, the operator should either be granted all concomitant rights over human resource decisions (e.g., hiring, firing, reorganizing). If the operator is denied the right to hire and fire, a simple, effective process must be established so the operator can make its recommendations to the authorized body – probably the board – for execution. Utilities and governments are frequently tempted to prohibit firing employees at all during the management contract: in general, this should be strongly discouraged as this may greatly weaken the effectiveness of the management contract. However, in deciding this, specific country conditions should be taken into account and any benefits of bolstering the support of unions and other stakeholders for the

management contract should be weighed against the likely comprising of the management contract. Throughout the length of the contract, the operator should be granted the ability to establish procedures and policies, manage budget and investments, request tariff increases from the independent regulator or ministry, and more. Unlike concession agreements, in which a private company is granted the exclusive right to operate and invest in a utility over an extended period of time (frequently one or more decades), management contracts establish a period of performance after which the contract ends, and the utility is returned to government management. That utilities remain the property of the state, who will eventually resume management of them, has dramatic implications for expectations of what can be accomplished through a management contract, and the factors that determine whether management contracts will achieve their objectives.

The following section reviews a few recent performance-based management contracts, their objectives, and the conditions under which they were executed, and how successful they were at achieving their goals, typically loss reduction, performance improvement of the management team, and increased revenue for the utility.

2.1 Georgia

Operator:	PA Consulting
Contract Date:	February 2003–October 2007
Objectives:	Enhance the commercial and technical operations; improve financial management and accounting systems, billing, and collection; increase revenue and reduce cash shortfalls; assist the company to observe market rules; and attract investment.

2.1.1 Background

In 2003, the U.S. Agency for International Development (USAID) signed a contract with PA Consulting to manage the United Energy Distribution Company of the Republic of Georgia (UEDC), as part of the Georgia Energy Security Initiative, which ran from February 2003 to October 2007 [4]. While not a performance-based management contract, it is instructive and widely cited by all individuals interviewed in this study for the simple reason that high-level government support facilitated its success [5] [6] [7].

UEDC was the country’s largest electricity utility, serving 70% of its territory, but it struggled due to a staffing structure that largely surpassed its needs, a poorly trained workforce with low productivity, serious mismanagement concerns, and dated equipment and processes. Contributing to PA Consulting’s success, Georgian Minister for Power Nika Gilauri was adamant about the need for reforms and gave the operator his total support. PA Consulting personnel reported that they were authorized to pursue corruption and inefficiency at every level. They successfully pursued multiple individuals in court for fraud and pursued more than 600 cases of electricity theft. Lastly, but most importantly, they cut off customers—even high profile government customers including the military and hospitals and schools—in arrears, all with the explicit and vocal support of the minister [4]. This project is well-known as one that best

demonstrates the improved results possible when private management is accompanied by high-level government support for reforms. Note, however, that this initiative was not a performance-based management contract, and therefore had no performance targets explicit in the contract. Rather, targets were agreed upon periodically during sessions at which both USAID and the Government of Georgia reviewed progress and established goals [8].

2.1.2 Objectives

The interim management contract, originally slated for 18 months, was eventually extended by an additional two years with continued donor financing. The goals were to improve power supply, improve collections to improve utility revenue and overall financial health, restore creditworthiness (UEDC had, for example, lost access to the banking system, as its accounts had been seized by creditors), root out corrupt practices undermining financial and technical efficiency, right-size the human resource profile by ensuring the right number of individuals were employed by the company, and facilitate investment in infrastructure.

The work entailed several surprises. For example, instead of 3,200 employees, PA Consulting found 6,200; instead of limited cash reserves to fund daily operations, PA Consulting found the accounts empty and no equipment or supplies on hand. The initial cash collection rate was listed at 20% at contract start but may have been lower even than that. Fewer than 10% of customers were metered accurately and fraud was rampant [8].

2.1.3 Results

By the end of the contract, power supply was restored to 24-hour availability, collections exceeded 90%, and higher tariffs facilitated investment and capital improvements. With government support, PA Consulting (PA Consulting was acquired by Tetra Tech midway through the work) not only managed to sack the incumbent administration, it established new procedures; reconciled job titles, job descriptions, and compensation levels to buttress human resources (HR); effectuated an organization-wide reorganization; reworked cash controls; improved power supply planning and operations; introduced wholesale meters and communal metering technology; and made dramatic improvements to UEDC's financial health and creditworthiness [9].

Additionally, staffing levels were reduced by 50%, an all-new management team was in place, and financial operations of the utility were 100% self-financed through revenue collection. Average staff salaries tripled, and employees were paid in full and on time. New payment and disconnection parameters were established, and UEDC painfully but methodically instituted a new disconnection policy that changed expectations about electricity usage and payment protocols. These improvements were supported by a new customer and billing system. Customer service was improved, with relocation of new offices, establishment of a new call center, and improved customer communication protocols. UEDC was transformed by all measures during the management contract's duration, which permitted it to eventually be privatized completely. The Government of Georgia eventually announced its decision to privatize the company in 2005; after a two year tender and award process, it was sold to a private company, Energo, that has since managed it [9].

2.1.4 Conclusions

Despite the absence of success fees and complicated metrics, this contract is widely known to have been successful because of the Government of Georgia’s direct implication in, and support for, the project. The Government of Georgia had first suggested the interim management contract, and the operator had total support from the Ministry of Energy throughout the life of the project. This support was essential given the three aspects of the program that led to its success but otherwise would have doomed the project from the start. First, the operator reset cultural and popular expectations over how electricity should be consumed and bought by instituting a no-excuse disconnection policy. Second, the operator was forced to nearly completely revamp the organizational structure, rooting out corrupt practices and pursuing individuals accused of wrong-doing in court. Third, the operator was forced to downsize the utility’s personnel profile dramatically. Without their unequivocal and vocal support for the reshaping of the utility, the combination of workers and labor unions would have doomed the operator to failure [8].

2.2 Kenya

Operator:	MHI
Contract Date:	July 1, 2006–July 31, 2008
Objectives:	Loss reduction, capital improvements, and increased access and improved power quality and customer service.

2.2.1 Background

The Government of Kenya began its Energy Sector Recovery Project in 2004 to address high consumer costs and poor reliability of energy throughout Kenya and particularly in the capital, Nairobi. The World Bank financed a loan expected to finance a comprehensive corporate recovery program for Kenya Power and Light Company (KPLC) to provide “sound and cost effective operational efficiency, reduce system losses to acceptable levels, reduce power outages, increase electricity access and improve the financial performance of KPLC.” At the time the management contract was tendered, KPLC losses were increasing, and service was becoming less reliable, with more frequent outages and poor customer service in terms of response times and outage duration and frequency. There were also issues of poor leadership and accountability, along with some procurement challenges [10] [11].

KPLC tendered a management contract that MHI won in 2006. The contract formally lasted for 25 months, from July 1, 2006 to July 31, 2008. MHI continued to provide, at cost with additional funding from the World Bank, an executive responsible for distribution and customer service until July 2010.

2.2.2 Objectives

The contract objectives covered specific managerial, administrative, technical, operational, customer service, and financial goals, and the execution of a half dozen special studies and projects related to information technology (IT) systems, capital project planning, technical

losses, and succession planning expected to improve operational efficiency, reduce system losses, reduce the frequency and duration of power outages, improve access to electricity (260,000 new connections), and improve financial performance [10] [11].

Governance and Oversight

The management contract stipulated creation of a “Take Over Committee” to oversee execution of the contract and the “Take Over Program.” Composed of 10 members, the Committee was composed of six KPLC members, including one appointed to represent the Board of Directors, and four from MHI. The committee had authorization to request reports and to delegate specific tasks to any KPLC personnel or any employee or officer of MHI engaged in any of KPLC’s transmission and distribution business. The contract established a quorum for decision making and protocols for calling and holding meetings. Establishment of such a committee is unusual, as it represents a parallel authoritative structure that duplicates some functions typically reserved for the Board, but in the case of Kenya, it functioned.

The management contract granted unequivocal autonomy to MHI, providing only that MHI must report to the KPLC Board: *“As the managing agent of KPLC, subject to the direction of the KPLC Board, MHI will have the exclusive right and obligation to operate and manage KPLC’s T&D Business and to operate, maintain and repair KPLC’s Assets for the term and in accordance with the provisions of this MC.”* MHI was further granted explicit authorization to initiate and defend civil legal proceedings on behalf of KPLC, and, as an agent of KPLC, to disconnect customers for nonpayment of bills. Furthermore, a non-interference clause stipulated that KPLC *“shall not interfere in the management and exercise of the agency functions relating to KPLC’s T&D Business assumed by MHI on behalf of KPLC during the term of this MC nor impede the performance by MHI of any of its obligations under this MC”* [10].

The KPLC management contract required the operator to continue submitting monthly, quarterly, and semi-annual reports that showed financial performance, provided financial statements on the interim trading results, and established that KPLC accounts would continue to be audited and certified by an independent firm of auditors to be selected by the KPLC board. In fact, the internal division of Corporate Performance Monitoring and Strategic Planning performed the audits.

Budget and Fees

MHI was not permitted to fix tariffs but was responsible for the preparation of rate applications for the approval of the Board of Directors, which were then submitted to the Electricity Regulatory Board which became the Energy Regulatory Commission on July 7, 2007. KPLC was obliged to sell electricity according to tariffs established by the normal regulatory process.

The management contract laid the framework for a budgeting process in which MHI’s role was to amend existing operation and management budgets for consideration by KPLC’s board. The same process was laid out for expenditures on capital works: MHI was to make recommendations to KPLC’s Board for approval. A Joint Capital Works Planning Committee was established, consisting of equal part members drawn from MHI and KPLC but with a chairperson to be appointed by MHI who would have the deciding vote [10]. The World Bank concurrently provided US\$157 million in funding for transmission and distribution rehabilitation, metering, and rural electrification under its Energy Sector Recovery Project. The management

contract required the operator to place a performance bond equal to 10% of the first year's potential success fee.

Staffing

The operator was given responsibility for managing staff “in a manner that will improve their managerial, operational and technical skills,” but required it “to maintain good industrial relations with KPLC Staff and KETAWU, the union of the KPLC Staff.” As such, the operator was not given authority to hire and fire existing staff. This management contract is the only one reviewed for this study in which the operator was not provided this right but was nonetheless able to improve utility performance; the contract is generally recognized as having been a success.

As an example of how the contract limited MHI's authority, disciplinary measures impacting senior executive staff were subject to approval by the KPLC board. Likewise, the Board maintained the sole right to changing the terms of conditions of KPLC staff personnel contracts. Management staff were explicitly protected, and it was expressly forbidden for them to be “removed, reallocated, transferred to other positions or removed or replaced without the prior written consent of the KPLC Board.” However, that same contract clause agreed, “... which consent shall not be unreasonably withheld if the person who is to replace any such individual is of equivalent experience and qualification.” A subsequent clause reiterated that “MHI shall not be entitled in the name of KPLC to terminate the employment of any of the KPLC Staff above the grade of Chief Engineer without the written consent of the KPLC Board” and insisted that MHI liaise with the KPLC Board in relation to any contemplated early retirements, retrenchment, and/or redeployments of KPLC staff. Specific requirements for reassignment of lower-level KPLC staff were stipulated, which did not permit firing but permitted reassignment provided confidential reports were filed by higher-level staff. However, even these transfers required approval by the KPLC Board.

Only four key MHI personnel were expected to reside in Nairobi: one general manager and three deputy general managers—one overseeing finance and corporate services; one overseeing distribution and customer services; and one, working part time, overseeing transmission. Other technical managers, none of whom were expected to reside full-time in Kenya, were identified as specialists in corporate planning, IT, supply chain, billing/collections, distribution engineering, project management, and succession planning. KPLC staff were expected to fulfill all other obligations.

Performance Indicators

Seven performance indicators were established, concerning reduced system losses, reduced customer outages, new customer connections, improved collections, improved operating efficiency, reduced voltage fluctuations, and reduced average time to repair. A success fee was established based on those indicators, including provisions for events beyond the operator's control. Each performance indicator was concisely defined in a paragraph or two in the contract. The Reduced Voltage Fluctuations indicator was further broken down into three simple categories defined by duration.

2.2.3 Results

The management contract is widely perceived as having been a success. MHI achieved 74% of the targets in the first year and 173% in the second year. Successful implementation of the management contract also earned MHI two variable success fees, 7/8 of the possible total sum.

Technical and commercial losses were reduced by 3%, resulting in savings to KPLC of US\$25 million/year, and 260,000 new households were connected to the grid, providing access to electricity to over 2 million more Kenyans [12]. Most importantly, the work proceeded with little contention, trouble, or ill will [12] [13]. In fact, MHI and KPLC later entered into a memorandum of understanding (MOU) to provide other services jointly and pursue other projects together in Afghanistan, East Africa, and Liberia [11] [13].

2.2.4 Conclusions

The success of this management contract is attributed to four factors: First, this contract had the strong support of the Principle Secretary of Energy, as well as the private-sector shareholders of KPLC, who at the time owned just fewer than 50% of KPLC stock. KPLC’s existing organizational strengths, however were a second contributing factor: MHI reports that the work proceeded apace because the senior and middle management of the company, including technical and support staff, were very competent. Third, the work facilitated targeted interventions because KPLC’s performance challenges were addressed by making relatively targeted changes that impacted a small number of individuals at the executive and governance levels [13]. The fourth factor rises to the level of best practice: The targeted scope and nature of the management contract was the result of detailed analysis and stakeholder consensus building that preceded the management contract itself. Prior to establishing the management contract, a due diligence contract was awarded to Nexant, who carried out the necessary research and planning to facilitate the design of the management contract and performance measures. Nexant also assisted KPLC during the management contractor procurement. Finally, there was no shortage of capital or operating funds to support the turn-around management aspects and the access expansion [13].

2.3 Tanzania

Operator:	NETGroup Solutions (Netgroup)
Contract Date:	2002–2006
Objectives:	Improve revenue, add new connections, reduce losses, and improve the financial viability of the utility.

2.3.1 Background

The Tanzanian Electricity Supply Company (TANESCO) entered into a management contract with Netgroup in 2002, initially as a step widely perceived to be a precursor for privatization, to prepare the utility for sale. The management contract was part of a wider electricity sector reform program begun in the early 1990s and executed, with fits and starts, over decades. Tanzania’s 1992 National Energy Policy Framework envisioned eventual private ownership of the utility, and the World Bank backed the strategy with conditional lending that increasingly required electricity sector reform as a pre-condition for financing. Commercialization of TANESCO began in the early 1990s, supported by the World Bank’s Power VI project, which introduced new equipment like improved meters, and IT infrastructure. New institutions such as the Rural Energy Agency and Rural Energy Fund were created around the time of this

management contract as well; yet, little of the intended work in unbundling or privatization had occurred—and still has not as of this report. The management contract was the result of increasing interest in improving TANESCO's financial and technical performance beyond the early efforts of the 1990s. An MOU with South Africa's Eskom never materialized; with some additional donor support, a competitive tender was launched, which Netgroup won in January 2002 [14].

2.3.2 Objectives

Revenue improvement was the primary goal of the contract during its initial phase. Although, other performance incentives also targeted reductions to technical and nontechnical losses, these were inconsequential relative to the importance of improving revenue as an objective. At the end of the contract's two-year period (phase one), it was extended by 29 months (phase two). Under phase two, the objectives shifted as a consequence of a shifting policy environment: It became clear that privatization of TANESCO was unlikely. Indeed, political priorities shifted away from privatization, and in 2005 TANESCO was taken off a list of public institutions slated for private-sector ownership. Under phase one, Netgroup was expected to focus primarily on improving the utility's revenue. Under phase two, additional goals related to technical, financial, and commercial performance were added, as were goals of investment in the increase of the number of customers and connections, improving customer relations, and ensuring the active participation of Netgroup in pre-privatization restructuring activities.

Governance and Oversight

The contract involved many institutions, including the Board of Directors, a third-party monitoring consultant (essentially, an owner's engineer); the Parastatal Reform Commission (PSRC), run out of the President's office; and the Swedish International Development Cooperation Agency (SIDA). The PSRC eventually ceded oversight back to the Ministry of Energy and Minerals when TANESCO was taken off the list of parastatals slated for privatization. It does not appear that Netgroup had total authorization to effectuate the changes it needed. Specifically, given the contentious start of the management contract, Netgroup had very little ability to curtail employment. They circumvented this injunction by negotiating voluntary retrenchments with compensation, a formula acceptable to the labor union that allowed Netgroup to reduce the total number of employees by 1,280 workers (21% of the work force) in the first year. This reduction led to significant financial improvement [14].

As noted above, President Benjamin Mkapa himself vocalized support for the reform at TANESCO and elucidated the case for improvement based on the rates consumers were paying and the poor service to which they were accustomed. Government support extended to high-profile electricity disconnections for nonpayment, including authorization for TANESCO to cut electricity to the national police, post office, and even the entire island of Zanzibar. Cutoffs were controversial, but support from the highest levels, including the office of the President himself, established new expectations for payment of utilities. Furthermore, they set the stage for payment of arrears via scheduled lump-sum payments. TANESCO and Netgroup were similarly authorized and empowered to cut service for individuals: It is estimated anywhere from 15,000 to 20,000 customers per month (2%–3% of the utility customer base) were cut at any one time during the first phase of the intervention. This support was instrumental in helping the operator achieve its goals of revenue improvement and in setting expectations about payment that strengthened sustainability [14] [15].

Budget and Fees

The contract provided for fixed retainer fees and variable fees related to performance. The contract was financed partially through utility revenues and partially by donors, notably SIDA, whose funding passed through a World Bank Trust Fund and serviced all fixed retainer fees. TANESCO revenues were earmarked for payment of any success fees. In total, Netgroup earned an estimated US\$18–US\$19 million over 56 months, mostly during the first phase of the contract. Of that total, about half was in fixed retainer fees and half in success fees paid at the end of phase one.

Staffing

The Netgroup proposal provided for a small resident staff of four managers to reside in Dar es Salaam, who would be supported by separate technical consultancies to be sourced from Netgroup's home office in South Africa. The four Netgroup-supplied managers assumed the top four executive positions: (1) managing director, (2) finance and administration, (3) distribution and customer service, and (4) transmission/generation. Five additional positions were added later [14].

Performance Indicators

Performance indicators and success fees were limited to five key areas: (1) revenue-related financial performance, (2) power losses, (3) customer care, (4) reliability, and (5) extension of electrification. Phase one of the project focused primarily on financial turn-around. Success fees were calculated on a percentage basis, based on financial operating efficiency, power losses, and quality of supply and service [14].

2.3.3 Results

The results achieved by Netgroup were mixed. The most positive outcome was the increase in TANESCO's revenues, which, in phase one of the contract (May 2002 to July 2004) "increased from US\$10–US\$12 million per month in 2001, to US\$16 million per month by mid-2004." The World Bank hailed this achievement as an "immediate improvement in the utility's financial and operational performance," and by mid-2004 revenue collection had reached US\$22–\$24 million per month. Improvements in technical performance were elusive, however. System losses, quality and reliability of supply, and the rate of new electricity connections did not improve [14].

Phase 1 was considered successful, and led to revenue improvements that encouraged the continuation of operations through a second phase. At the end of phase one, the World Bank reported, "TANESCO's operational and financial performance have improved significantly over the past two years. Since May 2002: " (i) TANESCO's billing collection rate... improved from 76% to 92%; (ii) staff numbers were reduced by 1,428 to 4,991 employees; (iii) TANESCO paid down TSh33 billion of outstanding commercial debt; (iv) system losses declined from 27% to 24%; (v) administration and overhead costs were reduced by about 20% and TANESCO has obtained more competitive prices from suppliers; and (vi) TANESCO has an improved credit rating in the market, which enabled TANESCO to access the domestic capital market. NetGroup's efforts to train and empower TANESCO staff have dramatically improved morale and productivity. When the Management Contractor first entered TANESCO, it was under police protection. Now, two years later with the contract up for renewal, TANESCO staff have publicly supported an extension" [15].

However, Netgroup was not paid the success fees due at the end of the contract. Furthermore, the historical record—and the TANESCO web site—are not kind to them: *“In 2002 Net Group Solutions of South African, a private consultancy, was given a management services contract to run Tanesco, and in September 2004, under pressure from the World Bank, the contract was extended for a further two years, despite criticism of the high salaries paid to Net Group managers. In 2006 the Tanzanian government decided not to renew the contract because of poor performance: Tanzania was dissatisfied with the quality of management provided by Net Group Solutions and added that the government was obliged to listen to the views of the public following complaints about the quality of service being offered by Tanesco”* [13] [16] [14].

In fact, the Netgroup management contract suffered some exogenous factors related to energy markets and a general downturn in the Tanzanian economy that were not directly related to the contract or the utility. Generation costs increased during the contract period, due to rising petroleum prices and increased payment to independent power producers (an increase from 65% to 95% of total utility revenue from 2005 to 2006), a growth rate that surprised many due to inaccurate projections made earlier. Hydrological conditions worsened over the period, reducing TANESCO’s ability to produce power via hydropower generation. The government forbid tariff increases to compensate for increases in generation cost. Lastly, TANESCO proved unable to restructure some of its debt as anticipated, which worsened its ability to finance needed infrastructure investments [14]. As TANESCO’s financial situation worsened, Netgroup found itself unable to comply with investment obligations, and its success fees were therefore withheld, which led to a lengthy court dispute.

2.3.4 Conclusions

Assessment of this management contract is mixed, as some goals were achieved while others were not. While some initial challenges that seemed insurmountable were in fact overcome, overall results did not correspond with expectations. Netgroup was selected after a competitive tender, but the contract was contentious from the beginning; the way in which the tender was handled, including a relatively fast award to Netgroup, plagued the operator from the start. The labor unions demanded a labor contract before work could commence, and Netgroup key personnel were only able to enter the premises of TANESCO under police escort. To their credit, Netgroup made labor relations a priority, and, in phase one, managed to work peacefully with the labor union and make considerable progress. In fact, the union actually supported the extension of Netgroup’s contract for the second phase. An important factor leading to the union’s support, however, was President Mkapa giving several successive speeches during the height of the tensions, appealing for calm, and explaining in detail the rationale and expected benefits of using the management contract to improve performance and reduce tariffs for electricity. Many suggest that the gains in revenue achieved under the management contract, and the fact that Netgroup was able to overcome initial hostility to their presence, resulted from high-level support from the government that vocalized high-level support for performance improvement [13].

2.4 Haiti

Operator:	Tetra Tech
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Contract Date:	2011–2013 (curtailed)
Objectives:	Reduce commercial losses, train staff, identify required capital investments, and support staff performance improvements.

2.4.1 Background

Haiti consistently ranks among the least electrified nations on earth, and its nascent power sector has struggled even during the best of times to render even the most basic of services. More than 7 million Haitians have no access to electricity; in rural areas the average rate of electrification is 5%. Haiti generates nearly 70% of its energy from expensive petroleum imports, with the rest provided by hydropower. Amazingly for a small, island nation, Haiti does not have a singular national grid but rather nine, small, isolated grids and only 150 MW of available capacity (half of the 300 MW installed) [17]. The Haitian power sector consists of a monolithic, vertically integrated public monopoly with “considerable technical, commercial, and managerial challenges,” extensive need for repair to infrastructure, and combined technical and non-technical losses greater than 50%. The Government of Haiti (GOH) is required to subsidize *Electricité de Haiti* (EDH) operations in excess of US\$200 million per year to keep it operating, representing 12% of the national budget; much of that financing funds relatively expensive diesel generation. Nonetheless, power is available at best 10 hours per day even in Port au Prince [17].

In 2011, the GOH, USAID, and the Inter-American Development Bank (IDB) signed an MOU to define the Haiti Energy Access and Reform Initiative. This initiative was an ambitious plan intended to help restore the Haitian energy sector to profitability and good performance despite decades of challenges. The plan targeted competitive and transparent energy markets, the ability to attract private capital to finance badly needed investment, and the ability to satisfy current and estimated future energy demand. It was agreed that as part of that plan, a management contract would be required to support the EDH. USAID awarded a two-year nonperformance-based Transition Management Contract (TMC) to Tetra Tech on April 26, 2011, to prepare EDH for a longer-term modernization solution, i.e., a performance-based management contract. Tendering a performance-based management contract as the longer-term modernization solution conformed with the recommendations of an IFC study that considered it the most viable option for improving the performance of EDH [18] [19] [20].

2.4.2 Objectives

The TMC SOW was clearly defined and was intended, when written, to take the form of a management contract, although not performance based. The SOW envisaged a two-year engagement during which the operator would improve EDH performance based on improved staff performance, implement a new customer service management system and technical service management system funded by the World Bank, train and build capacity, improve financial and accounting systems, reduce commercial losses, and develop a five-year investment plan that identified key investments and costs for areas such as major distribution network repair or rehabilitation, metering, and anti-fraud tools and equipment. The SOW also included the development, *and contingent on available donor financing*, the implementation of a

metering plan [18]. Implementation of the TMC SOW would enable sufficient information and data to be collected on EDH operations to design and later tender a longer-term performance-based management contract.

To work with the GOH to formulate a long-term modernization path for EDH, a three-phase implementation was envisaged: Under phase one, an MOU would be signed with the Government of Haiti, supporting the TMC and subsequent longer-term modernization solution. Under phase two, Tetra Tech would seek concurrence with the successor government (post national elections) for the MOU signed previously under phase one and would develop more detailed agreements with various stakeholders including EDH, the Government of Haiti, the World Bank, and IDB. Each agreement was to be “logical, internally consistent, conform to local law, and fit together as a ‘suite’ of agreements that provide a sound legal and commercial basis for the management support of EDH.” These agreements would answer specific questions related to autonomy and control: “The agreements under this TMC will address key issues such as roles and responsibilities in the management and control of EDH, staff, resources, and others.” Under phase three, the work was to begin in earnest. The MOU, signed between the governments of Haiti, the United States, and the IDB called for “the development and implementation of a management contract with a qualified private company that will during an approximate term of two years ‘assume full operational responsibility of EDH with the goal of strengthening EDH’s capacity in the immediate-term’.” [17].

Tetra Tech began an ambitious, four-stage process intended to improve the utility’s operational and financial performance: Under stage I, Tetra Tech initiated observations, early meetings, and negotiations to better understand the challenges EDH faced and to design an appropriate intervention plan to address them. Under stage II, Tetra Tech conducted a due diligence diagnostic of EDH in order to assemble enough information to complete its plan and negotiate with the Government of Haiti. Presaging the general operating relationship, EDH and its labor unions refused Tetra Tech access to its facilities until July 2011 when the Prime Minister intervened on Tetra Tech’s behalf; prior to that, a thorough diagnostic was unable to take place. Tetra Tech produced a due diligence report [20] that provided USAID and other development partners with a more thorough assessment of the challenges across generation, transmission, distribution, engineering, commercial, finance, IT, procurement and general services, communications, and HR aspects of operations [18]. This due diligence report was intended to lay the groundwork for an actual, performance-based management contract USAID would procure separately in support of Haiti’s *Conseil de Modernization d’Entreprises Publiques* or *Council for Modernization of State-Owned Entities* [21].

Under stage III, Tetra Tech finally began working to help EDH reduce its losses, improve the utility’s financial health, and create “pillar of excellence” geographic regions where electricity is expected to be provided continuously throughout the day. The contract was extended at the request of the GOH in April 2013, and the SOW was revised to provide support to EDH in additional technical service areas not originally contemplated, via three additional resident technical advisors for the commercial, planning, and technical departments of EDH and to procure loss-reduction equipment and tools not already available or in use by EDH. The subsequent stage was never begun, due to the deteriorating support framework and lack of engagement from the Government of Haiti [18]. This would have entailed the design and competitive procurement of a performance-based management contract, with supporting investments to rehabilitate and modernize the distribution system.

Performance Indicators

Tetra Tech was to focus its efforts on four specific performance benchmarks: (1) improving the cash recovery index (CRI) at EDH from the 2011 level of 22% to a target of 48%, (2) making sufficient improvements in the CRI and other cost-saving recommendations to achieve cumulative target savings of US\$52 million during the agreement, (3) adding 60,000 active customers, and (4) working with the Government of Haiti to identify visible “pillars of excellence” that demonstrate tangible benefits of improvements effectuated in EDH to the Haitian people [18].

2.4.3 Results

The operator was crippled from the start by a lack of full authority to make changes. Although the Prime Minister of Haiti signed an MOU granting that authority, vested interests within EDH made it impossible, and subsequent elections swept away the Prime Minister, whose replacement was unwilling to tackle the dysfunction at EDH [21]. As mentioned, Tetra Tech was refused access to EDH facilities for several months. The management contract was also revised and renamed during stage I, to “Operations Improvement Contract,” and in stage II it was diluted again, to “Operations Improvement Agreement,” a formulation that appeased government stakeholders but did away with any notion that the operator would have the authority to manage anything or that any of its work was binding in any way. Likewise, beginning early on in the process, the Government of Haiti made every effort to reduce the operator’s work to simple technical assistance and occasional procurement support for the purpose of equipment not in use by EDH. The work in Haiti was not, by any standard, an actual management contract [18].

Tetra Tech’s Lessons Learned report [18] and Final Report [22] highlight some noteworthy accomplishments. The management contract resulted in improving the design of substations to be procured, overseeing improvements in maintenance, collecting and digitizing information, implementing some standardized procedures, establishing a formal process for reviewing financial results, producing a dashboard showing key performance indicators, establishing some early asset management procedures, and improving commercial operations. A new commercial operations plan was implemented that included improved procedures on the billing, meter reading, and collections cycle. Most performance indicators improved from their baseline; however, a key performance metric—support for issues of nonpayment of consumed energy—faltered. Upon arrival of a new Director General, Tetra Tech was instructed to disengage from this important activity, a critical deviation from the goals and metrics established in the original plan [22]. Other metrics did not correspond perfectly to the engagement itself or were negatively affected by exogenous factors: For example, while the CRI was used as a performance indicator for tracking collections, it failed to capture performance, because despite real efforts by EDH staff to improve collections, the government failed to enforce payment for consumed electricity (despite promises to the contrary) by government institutions. As arrears multiplied quickly, this new debt greatly overwhelmed the performance gains elsewhere [18].

Nonetheless, Tetra Tech successfully improved the CRI from 18% to 33.2%, and improved collections by more than the target (US\$55.1 million versus US\$52 million). The number of active customers increased by 23,039, a figure less than the target value but impressive nonetheless.

2.4.4 Conclusions

Implementation of the utility modernization path charted in the MOU with the GOH, including its first stage of a TMC, was derailed by the change of Government in Haiti, resistance by EDH, and the challenges of working with an opaque, deeply troubled utility in an insecure environment. If viewed as a traditional technical services and support contract, the improvements in EDH performance can be characterized more charitably. Unfortunately, some gains made under the TMC were later lost and EDH continues to operate in a state of dysfunction.

2.5 Liberia

Operator:	MHI
Contract Date:	July 2010–December 31, 2016
Objectives:	Substantially improve operating, commercial, customer service, and financial performance, plan and expand grid connections, introduce and sustain modern methods of corporate management and IT support, build the capacity of staff, and ensure good operation, maintenance, replacement and other asset custodianship to ensure sustained performance at end of contract. In 2012 the contract was modified to add responsibility for the fast track reconstruction of Mount Coffee hydropower project to increase supply and decrease cost of energy.

2.5.1 Background

As a result of an international competitive bidding process, the Government of Liberia entered into a contract with MHI on April 16, 2010, in which MHI would benefit of full delegation of power to manage LEC operations with exception of generation and was supposed to provide senior management and other support services to manage the Liberia Electricity Corporation (LEC). Between 1989 and 2003 Liberia suffered successive armed conflicts; by the end of the civil conflict in 2003, the power sector had been completely destroyed due to a combination of looting and the sale of assets as scrap by government officials. The overall result was that by 2006, the hydropower plant at Mount Coffee, the thermal power plants at Bushrod Island, and the entire transmission and distribution network had been completely destroyed or removed, forcing the LEC to cease operations [13] [23].

An emergency, post-conflict program financed by the EU, USAID, World Bank, and the Norwegian Ministry of Foreign Affairs (NORAD) supported the construction of a small grid from 2006 that reached 9.6 MW of high-speed standby diesel generators in 2009, four small substations and a 66 KV transmission line in Monrovia. This enabled LEC operations to resume with electricity being restored to government buildings, a few commercial operations, hospitals, schools, street lights, and affluent residential consumers in Monrovia. As of July 2010, LEC had 2,400 customers, with the remainder of the population reliant on small gasoline and diesel generators, firewood, charcoal, candles, kerosene, and palm oil or small generators selling at 70 cents/kWh – the most expensive electricity in Africa except Somalia. In 2009, the Government

of Liberia accepted the recommendation of donors to recruit a management contractor to bring the LEC to a level of functionality as a power utility with trained staff and build the customer base to a target level of approximately 20,000 customers within a five-year horizon [13], later fixed at 33,000 through the bidding process. The lower target was defined, with consultant support, based on the donor funding available at the time; the higher value was proposed by the operator on the basis of its hands-on utility experience.

Extensive due diligence undertaken by a Danish engineering firm set the parameters for the needed work. The IFC secured donor funding for the project through a combination of contractual and bilateral agreements, and structured the tender so interested operators could bid on improvements to the established baselines of the following performance indicators: improvements in operational efficiency, reduction in losses, number of new connections, and improvements in collection rates. The contract stipulated that the winning bidder would be required to produce a detailed electrical plan based on the proposed, additional connections.

2.5.2 Objectives

The objectives of the management services contract were as follows [24]:

- Manage system expansion and connection of new loads expected to come on stream within five years. This decision effectively meant the management contract was the vehicle for implementing the Grid Investment Program and ensuring donors continued to invest in it.
- Progress toward the Government of Liberia's objective of providing access to electricity to 30% of the population in Monrovia by the end 2015, including middle- to low-income households.
- Manage technical and commercial losses and operating and capital costs to minimize costs of service.
- Strengthen the LEC, enabling it to become a financially and operationally sustainable utility even after completion of the management contract.

The contract established the following principal obligations [24]: production of a multiyear investment plan which in turn required the operator to produce an annual investment plan. Preparation of the annual plan was to take into consideration the donors' available budgetary commitment; anticipated operating needs for implementation of the operator's LEC Electrical Master Plan; as well as the LEC business plan; the annual plan was required to show how the operator would meet contractual baseline targets. The first annual investment plan was due 90 days after the contract's commencement date. The operator was required to produce a master schedule for payment to contractors and a master plan that outlined and justified infrastructure investments (to be submitted to the Grantor Board and LEC donors for review and their approval within no more than 45 days). Specific terms of reference (TOR) were provided. While the operator considers these requirements to have been cumbersome and distracting from its core function of utility operations, the donors consider them to have been necessary for effective oversight of the contractor's performance.

An LEC business plan was required within 180 days of commencement, establishing a financial strategy for LEC. An LEC annual operating budget was to be proposed for board approval each year 60 days before the beginning of the operating year. An HR plan was required as well as

organization, staffing, and training plans for Liberian employees; a recruitment plan; safety plan; loss reduction plan; quality of service plan; and a number of Utility Service Standards. The majority of the aforementioned reports and plans were required to be updated on an annual basis. Monthly reports covering electric utility key performance indicators and data were also required, along with quarterly status reports [24] [13].

An amended management contract was signed almost a year later in February 2013; its duration was extended from June 2015 to December 2016 to accommodate network expansion that would permit evacuation of power from the Mount Coffee hydropower plant. Schedule 16 of the amended contract established the Mount Coffee Project Implementation Unit's (PIU's) responsibilities upon arrival, including mobilization, staffing and hiring, establishing and furnishing management space, procuring vehicles, developing communications and filing protocols, beginning donor outreach and coordination, and building a website via a website designer (to be procured). Multiple other requirements included reviewing design reports for work already done, writing contract documents for other work, performing legal review of several projects, and identifying proper approvals for some project work to proceed. In retrospect, although MHI agreed to the additional work, it strained the management team and broadened the focus of the work beyond what was practical, diluting the impact of the expatriate team [24] [13].

Training was given even greater emphasis. The operator was tasked with building an organizational, staffing, and training plan for maximizing Liberian training and employment. The operator also was tasked with the recruitment and preliminary management training of the local staff for turn-over. Additional incentives for on- budget and on-time completion were included in the revised contract [24] [13].

Governance and Oversight

The contract delegated management authority over the LEC service area but required that the operator comply with decisions of the Board of LEC in areas not subject to the delegated authority. Furthermore, the operator found it still needed to get Board approval for decisions that had been delegated, drastically reducing the operator's authority. At the beginning of the contract, the operator reported only to the Board of LEC, but interacted and shared information with all donors who shared an interest in the development of the power sector (including the Government of Germany, the Government of Norway, USAID, Japan International Cooperation Agency [JICA], the European Commission, the European Union [EU], the European Investment Bank [EIB], the World Bank, IDA). In later years, government participation in LEC affairs increased significantly.

Budget and Fees

The management services contract portion was a lump sum arrangement with incentive payments for the achievement of contractual targets, made up of loss reduction, operating efficiency, connections, and collections. Success fees were established on an annual basis, and payments for specific deliverables were established, namely the Electrical Master Plan and LEC business plan, and a report establishing utility service standards. Payment of success fee was contingent on verification by a technical consultant retained by the Government of Liberia/LEC and paid for by the donors [24] [13].

A retail tariff model was stipulated, and the operator was prohibited from charging higher fees without specific approval from the Grantor Board. The management contract went into great length to define the retail tariff model (2.5 pages of the contract were dedicated to its definition). The average retail tariff was defined as the aggregate of value added on distribution comprising all grantor costs excluding the cost of generation including fuel and operations and maintenance, taxes and other extraordinary costs, and a reserve for capital investment (specified on an annual basis) [24]. (Note that the tariff question was one that crippled the intervention from the start: see “Conclusions” section. In October 2011, the electricity tariff was 54 cents/kWh, one of the highest in Africa. The operator was only able to bring the tariff down by 5 cents over the course of the contract, failing to meet the target tariff of 28 cents that had been identified as the price at which large customers would switch over to LEC grid-supplied power. Essential to bringing the tariff down was the commissioning of two, donor-funded 10 MW heavy fuel oil generators expected to permit distribution of more cheaply-generated electricity. Neither of the two donor-funded generators came online during the contract period, leaving the operator with no good way to reduce the tariff. A separate, donor-funded investment in high speed diesel units did not bring down operation costs either, though they did add capacity.

In total the Government of Norway invested US\$42 million in the Grid Investment Program “to contribute to the stability and reconstruction in Liberia after the civil war.” Initially this funding by the Government of Norway, together with that from USAID and the World Bank, would finance the annual investment plans prepared by the LEC. The single bank account and fund management process envisaged in the management contract was never created by the donors, as it was determined to no longer be necessary. EU funding was originally intended to finance the construction of a 66-kV network around Monrovia, but attention shifted as refurbishment of the Mount Coffee hydropower station progressed. Originally intended to be completed by late 2015, improvements to the plant demanded that development partners shift their focus to connecting sufficient load to fully utilize Mount Coffee’s output. To date, the Monrovia grid remains undersized to properly evacuate Mount Coffee’s power.

Staffing

For management services, minimum qualifications and years of experience were established for all key personnel, with a requirement that any changes ensure that incoming person had equal or greater skills and experience than the person he or she was to replace. The operator was required to provide 29.5 person years of personnel over the 6.5 years of the management services contract [24] [13]. For Mount Coffee PIU Services, a PIU staffing plan was included, listing 16 individuals, of whom only 2 would be deployed to Monrovia and 14 would supply part-time services from Canada and in Monrovia, as required.

Performance Indicators

The operator was to submit utility service standards within six months of commencement date for approval. The standards covered 11 areas: (1) quality of customer service, (2) quality of supply, (3) tariffs and costs of associated services, (4) engineering guidelines, (5) asset management policy, (6) IT systems policy, (7) safety and environmental standards, (8) operating guidelines, (9) financial guidelines, (10) procurement procedures, and (11) HR policy [24] [13].

For the management services portion of the contract, multiple reporting requirements were established: monthly reporting of operation data (e.g., generation [kWh]; feeder supply [kWh]; station usage [kWh]; cumulative operating hours by generator unit, fuel, and oil usage [gallons];

average fuel efficiency [kWh/gallon fuel]; average effective fuel price, daily peak load [kW at time of occurrence); daily availability [hours of power]; daily power quality readings; records of planned and unplanned power generation and distribution outages; quality of supply indices; and nontechnical losses; commercial data (e.g., billings, collections, number of customers by class); financials (e.g., detailed direct costs, monthly unaudited balance sheets, cash flows, capital, and operating budgets); and certain metrics generated by comparing operating costs to unit of electricity sold, generation cost per unit, number of customers per employee, and revenue per customer group [24] [13].

For the Mount Coffee portion of the work, the operator handled five project contracts related to infrastructure upgrades and civil works, including installation of turbines, generators, exciters, step-up transformers, power station civil work structures, hydraulic steel structure, repairs to the dam spillway structure and gate, installation of 66kV lines connecting the dam with Monrovia, and related civil works for three substations. In addition, the PIU would be responsible for day-to-day oversight of the owner's engineer and environmental and social impacts, as well as managing communications and donor coordination [24] [13]. Monthly, quarterly, semi-annual, and annual reports were required in addition to the key deliverables listed above.

2.5.3 Results

The contract was founded on four key performance indicators: reduction of losses, new connections, improvements to revenue through collections, and cost of operation. The first performance indicator for this contract was increased number of connections. From an initial value of 2,403 connections, MHI increased the number of connections to 45,712, surpassing the baseline 2015 target of 35,403 but just missing the amended target of 48,000. For the reduction of cost of electricity metric, little progress was made for the reasons stated above. In fact, costs actually increased slightly mid-contract due to fuel prices. Metrics results regarding LEC profitability were similarly disappointing, as tariff restrictions obliged LEC to continue operating at a loss for most of the operating period. The contract targeted reducing commercial and technical losses from 23% to 12% over the period. MHI envisaged achieving this by connecting large customers on dedicated, high quality feeders that would experience virtually no losses. Because the cheaper HFO generation was never provided by the donor community, these customers never got connected, and in fact losses increased from 24% to 46% over time. The primary drivers for losses were electricity theft, faulty meters for which no funding was provided to replace them, and the government's own unpaid electricity consumption, the primary example of which was street lighting. In fact, as MHI replaced non-functioning street lamps, losses went up as increased street lighting was not met with a corresponding increase in payments by the government. The government of Liberia, when it did pay, paid in chunks, causing cash flow problems for the operator [25]. But the outbreak of ebola was an equally important cause, as staff that perished or abandoned their posts threw the entire system into disarray, and brought maintenance and repair to a standstill.

2.5.4 Conclusions

Despite significant challenges during implementation, MHI managed to make significant progress on the measures used to quantify improvements to LEC's financial and technical operations, revenue, and reliability of electricity. MHI did not manage to reduce the price of electricity to the consumer because other parties failed to add new, lower-cost generation

capacity as expected, forcing MHI to continue selling higher cost electricity and alienating potential new industrial customers who instead opted to continue using their own diesel generators, and therefore impeding economies of scale. The LEC management contract is more instructive than others in lessons learned through implementation; the following challenges were identified as the primary challenges experienced under the Liberia management contract [25].

Complexity

The challenges faced by LEC were complex and covered most, if not all aspects, of power generation, distribution, and customer management. Thus, the management contract was also voluminous, detailed, and complex. Its focus on operational improvements, and continuous formal reporting at multiple intervals, consumed vast amounts of time for the management contractor. No modern information systems were available, so all data had to be manually collected on an ongoing basis to stay abreast of reporting requirements. For example, even the customer management and billing database was in its earliest stages and consisted of a Microsoft Access database managed on a personal computer. Reporting requires data, and Liberia's institutions had little to no data with which to facilitate reports. Worse, while under normal conditions the information requested by the donors would have been produced by standard, existing utility systems, in Liberia the operator had to produce the data manually, which drew valuable time and resources away from other important activities and quickly became an annoyance [13].

Government Commitment

There was a lack of government commitment to full reform of the LEC. The operator was perceived as a threat from the earliest days, and LEC was seen by some government officials as a cash cow that could be coerced into financing nontransparent procurements to hand-picked contractors. Serious trust issues emerged immediately upon start of the contract, which undermined the relationship between operator and government and worsened after one of the primary government representatives involved was promoted to a leadership role in the Ministry of Energy, permitting him more direct oversight of the operator and more leeway to frustrate the operator's potential for success [25].

Exogenous Investments

The management contract was written in the context of an existing commitment by donors to supply supplemental generation equipment in the form of 3 MW of high-speed diesel generators, a 12 MW leased heavy fuel oil (HFO) plant, another 10 MW HFO plant to be financed by JICA by December 2012, and 18 MW of imported energy available midway through the management contract via a West African Power Pool Cote d'Ivoire, Guinea, Liberia, and Sierra Leone transmission line. None of these generation assets were actually put in place, forcing the management contractor to continue selling higher priced electricity. Higher electricity costs competed unfavorably with self-generation, which precluded LEC's ability to attract new commercial, industrial, and residential customers and therefore improve the technical and non-technical loss ratio, a key performance metric [25].

Tariffs

The issue of retail tariffs left all parties unsatisfied. Tariffs were simultaneously too high, and as noted above, they were a function of expensive, diesel generation costs, as recognized by the management contract itself. High tariffs prevented LEC from competing effectively with self-

generation, thereby deterring larger businesses from becoming LEC customers. That in turn, reduced the available working capital with which LEC could decrease technical and non-technical losses. Requests to *raise* tariffs were rejected for obvious political and socioeconomic reasons, but the Government of Liberia also proved unwilling or unable to pay for its own consumption of electricity, which further hamstrung the operator's ability to cover the costs of operational improvements [25].

Complexity of Stakeholders and Reporting Relationships

An operational framework involving too many parties diluted the operator's authority to act. The fact that required approvals implicated too many parties (and those parties being reluctant or unable to grant them quickly) quickly mired the process in bureaucratic lethargy and inefficiency. The Board of Directors was a political body that made decisions not on their technical merit but on the basis of anticipated political impact [25] [13].

Conflict Between Operator and the "Technical Consultant"

The contracting structure drew the Technical Consultant and the operator into immediate conflict. While the Technical Consultant engineer was incentivized to find and complicate as many issues as possible, the operator was denied the financial resources to fix them. This led to a punch list of issues such as interpretation of standards or revisions to reports that the operator was ultimately unable to address, because each issue distracted from the main work of improving operations [25].

Staffing Changes

The MHI team's Chief Executive Officer (CEO) transferred out of Monrovia after a two-year engagement due to lack of schooling options for his children. This departure led to accusations that MHI was not respecting its contract while it struggled to find a replacement. The Ebola crisis made it nearly impossible to find technical personnel willing to work in a viral and deadly environment. Difficult living conditions in Monrovia, which lacks amenities common even in other developing West African countries, made it hard to staff the contract with technical resources, and even harder to staff it with the top-level personnel stipulated by the contract. Other staff turn-over was high due to the frustrations of not being able to accomplish individual mandates, particularly training outcomes. Staff departure left MHI vulnerable to accusations of not respecting its contract and a worsening reputation. Forces unfavorable to LEC quickly seized upon these circumstances to build accusations that MHI was incompetent and too expensive [25].

Training of Liberian Workforce

While the operator effectively trained a contingent of Liberian managers expected to take on responsibility for LEC operations upon departure of the operator, the budget did not provide ample resources to train them as efficiently and effectively as possible. Furthermore, Liberian capacity was far lower than anticipated: Diplomas and educational certificates had been forged in many cases due to the civil wars of the 1990s, during which time the educational system collapsed, most staff had little or no formal education. The expectation of training a competent workforce with limited resources and limited time turned out to be unrealistic given the actual abilities of the LEC managerial workforce. Unlike training programs where employees simply need targeted skill building in their area of expertise, training in Liberia required improvement to basic mathematical ability and the fundamentals of science and engineering [25].

Force Majeur (Ebola Outbreak)

Liberia faces extreme technical, historical, cultural, and economic challenges on the best of days, but MHI had the misfortune of implementing its management services contract just as one of recent history's most ravaging bouts of an extremely deadly, viral disease broke out: the 2014 West African Ebola epidemic [26] [27]. The first death occurred at the intersection of Guinea, Sierra Leone, and Liberia's northern borders in a remote village town in April 2014. By August 2014, Ebola had been transmitted into the capital of Monrovia, which went on to experience more frequent death and contagion than any other geographic region in West Africa. At its peak, Liberia experienced 200+ deaths per week, many of which occurred in Monrovia. As Liberians fell ill, died, or departed their homes to attend to loved ones or to avoid contagion, all activity ground to a halt. On August 18, 2014, MHI PIU staff were evacuated from Liberia: One was stationed in Ghana and others were reassigned to Fichtner offices in Germany. Some work continued from these remote offices, but control of operation reverted *de facto* to the Ministry of Energy, which remained on the ground to react to immediate demands, to set up field stations for intake of Ebola patients, and to try to keep systems operating. Data collection and reporting were totally interrupted. MHI reports it did not declare *force majeure*, thinking the Ebola outbreak would be limited [24], but fact, it was not. The Ebola crisis lasted over 21 months and claimed over 11,000 lives in six countries [28]. Following the Ebola crisis, Liberia's reputational risk made it nearly impossible to attract and hire qualified technical personnel willing to travel, to work in Liberia [25].

3. RECOMMENDATIONS FOR IMPLEMENTATION OF MANAGEMENT CONTRACTS

3.1 Establishing Preconditions

The most important phase of a management contract starts and ends before the management contract is even written. The success or failure of a management contract can be predicted with reasonable accuracy before the contract is even signed on the basis of how well the following preconditions for success are addressed.

3.1.1 Unequivocal Political Support

The single most important element to successful implementation of a management contract is total political will and total, unequivocal support of the partner government for the work to be done. Securing this support requires consensus building among key government and energy sector stakeholders, as well as any international donors expected to support the process. Public—or formerly public—utilities are frequently riven with vested interests, patronage networks, and a legacy of corrupt practices (such as in public procurements) [30].

In many countries, it is common knowledge that public utilities are financial black boxes that finance special—including political—interests. In fact, such practices are frequently at the heart of their dysfunction and poor performance. Using a management services contract is potentially an effective tool to sweep away the individuals, networks, and procedures that propagate such dysfunction, but only if a higher political power recognizes both the nature of utility dysfunction, agrees to root it out, and offers vocal, political support for the operator, who is effectively the government's agent to effectuate these sweeping changes. Implicitly, higher political offices are agreeing to do away with black boxes, exchanging them for functioning public utilities that deliver better services to the people and the national economy. Financial and technical partners (i.e., the donor community) can help build support for this kind of intervention but cannot impose it; they also should be scrupulous in assessing honestly whether government support for a transition in utility performance is whole hearted or begrudging.

There is a related problem: Even when there is a government in place that is committed to reform, it may well be replaced by a new administration with different priorities. The window of opportunity for reform may vanish with the change of a single minister or member of parliament, and rotating staff in donor institutions has an impact as well. The management contracts in both

Tanzania and Liberia were adversely impacted by changes in government that shifted the agenda away from reform.

The single strongest theme across all interviews conducted and all reports studied show that in cases where the partner government agreed with the goals and parameters of the intervention, and offered overt and vocal support for the operator, the work proceeded more effectively. Meanwhile, silence on the part of the government is interpreted by utility employees and the nation as a lack of support; the interjection of foreign management is interpreted as imposed, and both operator and donor are cast as an enemy of public interests [6] [31] [5] [32]. Ideally, the government should explicitly support the politically unpalatable but financially critical aspects of improving billing, collections, and disconnecting customers in arrears (even where these three aspects pertain to the government itself). If the government is unable to make these commitments, the donors and operator should be made aware prior to contract signature, to avoid building false assumptions into performance indicators and anticipated results.

The most important steps in developing a management contract are the donor's and the partner government's to undertake: defining the precise parameters of the management contract, communicating to the public the expected benefits of the intervention, and communicating unequivocally that it is the government's will that this work succeed. Studies show that when asked about problems in the delivery of public sector services, most people do not understand the true, technical/managerial reasons leading to dysfunction [33]. It is incumbent on the government to explain to the public the expected benefits to the consumer in order to build support for potentially contentious and well-organized opposition by the utility's employees or union. By framing the work in terms of improved service to the consumer, better reliability, and improved prospects for industrialization and economic growth, the government can preempt the complaints of excised employees and set the stage for reforms that might involve tariff increases.

3.1.2 Consensus on the Intervention's Goals

Key to this consensus building is the clear understanding by donors and the partner government on which problems they are trying to solve and on the overall desired impacts to be introduced into the energy sector as a whole. Disagreement—or simply incomplete agreement—over the management contract's goals undermine the ability of diverse stakeholders to work together to achieve them, opening up breaches in alignment that can eventually jeopardize the work [6] [34]. It is worth pointing out that the partner government and donors are best placed to establish this objective, as technical consultants have commercial agendas of their own and may naturally develop plans or strategies that imply or generate additional consulting opportunities (i.e., a lack of government leadership or vision runs the risk of generating endless studies but little real action). In accomplishing this important tasks, the best advice comes from utility operators with real experience in the day-to-day operations of utility management, not from management or energy sector consultants [35].

Institutions that agree to pursue utility reform via a management contract must agree on fundamental issues: Is it a step toward privatization?; Is it a mechanism for capacity building for the management team?; or is it an excuse to throw out incumbent managers and their client/patronage networks? The change required of a utility may require changing the senior management team, which will absolutely necessitate support from one level higher. However, if change does not necessarily require a change in utility senior management leadership, the

terms of the management contract and its resulting communication plan should address that decision specifically to set at ease those who would seek to undermine the operator for fear that the operator will cost them their employment [6]. In fact, if senior leadership does not require dramatic change, a management contract might not be necessary: Simple technical assistance may suffice [35].

3.1.3 Exit/Transition Plan

Management contracts are best understood as a bridge, a time-defined and specific intervention whose purpose is to take a utility from one steady state to another improved, steady state. Thus, it is essential to identify what that second steady state will look like before any management contract is tendered and secure appropriate government commitments for the post-management contract phase. Ostensibly, the new steady state will consist of local staff managing and operating the utility using improved tools, equipment, techniques, and knowledge so that the management contractor is engaged for the express purpose of identifying new leadership; installing modern systems and processes; training the new leadership; and effectuating a staged withdrawal [36]. (Note that this vision is simplistic and utopian: In reality, change management in the utility sector can take many years and require many tools and the building of significant capacity). Nonetheless, any management contract should be seen as a transitory phase that leads a dysfunctional utility to an improved, new steady state: This goal should be communicated widely and soon, to deflect growing gloom and labor discontent easily provoked to drum up antagonism for the “foreign interlopers here to destroy vested interests” [37] [6]. It should be noted that destroying vested interests may realistically be the implicit goal of a management contract, but full agreement on what will happen once the management contract ends will help preemptively deflect criticism and provide some measure of security to the labor unions and utility employees. In either case, failure to secure government commitments for the post-management contract phase runs the risk of spending large sums of donor money only to find that eventually the utility, now bigger and wealthier, reverts to old ways once under government ownership again.

Good transition plans should map specific benchmarks for handover, the termination of the management contract, and the withdrawal of the operator. In reality, management contracts are frequently developed with too narrow a focus on the key performance indicators expected to be improved during the management contract, as though those key performance indicators are the goal rather than measurements. Management contracts serve to introduce new systems, install better senior leadership, reduce losses, and improve revenue, and are therefore most effective when a discrete end phase is identified and work plans, transition plans, and handover processes are geared to respect that end date. As part of that process, the transition period should enable local management and staff to continue meeting expectations for service delivery and cost recovery, customer-oriented business measures, and efficiency [6] [37].

3.1.4 Communication Plan

As noted above, misinformation about the purpose and ramifications of a management contract are a major risk. Communicating strategically about the reasons for such an intervention in a utility, possible ramifications for employees, and benefits to the consumer is essential. Failure to anticipate the rumor mill will allow the worst sort of rumors to breed and take hold, toxifying relations between the operator and the labor union, for example, tainting the political

environment to the point where otherwise vested political actors find it impossible to support the operator for fear of political ramifications from their constituents. This risk is doubly true in the utility industry, as utilities tend to be exceptionally strong financial anchors and have immense networks of political and economic connections, which develop concurrently, and the wherewithal to influence important stakeholders [37].

3.2 Defining the Performance Improvement Plan

Even in the best of circumstances, it is infeasible to have the management contractor perform its own needs assessment upon arrival. It is incumbent upon the institution funding the management contractor – or the partner government in a more perfect world – to undertake thorough due diligence of the utility, identify key areas for intervention, and establish framework objectives, typically improvements to revenue and operational efficiencies, decrease in aggregate technical and non-technical losses, and utility customer satisfaction metrics. Customer satisfaction metrics to date have not been integrated into management contracts, an important omission we find merits correction. This obliges ensuing timely investments in network upgrades to better detect outages and voltage fluctuations, and the management contract retention fee should be structured accordingly. These objectives take the form of a performance improvement plan that identifies key utility management functions in need of radical change, identifies whether changes to the Board of Directors will be required as a condition precedent, and provides a technical and financial basis for the proposed retention- and success-fee structure.

The performance improvement plan should identify how extensive the reforms are to be; whether during the course of the contract significant changes are expected to operations; personnel structure; investment planning; operational tools, software, and systems; and whether the utility's existing management team will be trained and strengthened or if the management contract is part of a strategy to identify a new utility management team. This performance improvement plan provides the long-term strategy identifying the overall objectives to be attained through the temporary imposition of a foreign management team, and establishes the basis for the contract and tender process. The tender process then allows bidders to propose their long-term strategy for performance improvement, quantifiable improvements to operations for which they will be held accountable and which will be used to assess their success and therefore their fee. The performance improvement plan should be limited to high level but specific objectives, allowing bidders to commit to their own, proposed improvements to revenue, cost of operation, new connections, and possibly customer service metrics.

Unfortunately, building proper performance improvement plans is not easy. The due diligence process requires high level political support and access to as much of the utility's operations and finance as possible. Utilities – and often governments – naturally are inclined to resist this deep inspection. The work is ideally carried out by a team with direct, first-hand experience managing a utility (rather than just consulting to a utility). This team's primary challenge, even with political support from the ministry or higher, will be the lack of information available on which to establish a benchmark for performance, or worse, inaccuracy of the data provided.

3.2.1 Reduce Implementation Risk of Missing or Inaccurate Information

At the crux of most contentious management contracts is a fundamental information asymmetry. In many utilities, lack of functioning asset and customer databases, and incomplete customer

billing and collection records, lead to a lack of understanding about a utility's true depth or the extent of its dysfunction. Ascertaining and fully characterizing the procedural, technical, operational, and financial shortcomings within a utility that impede its performance require a somewhat lengthy, in-depth study by a technical team that works within the utility for an extended period of time [34]. The challenge is where to embed that team and how to ensure proper reporting of the challenge. Since donor money is at play, the utility will have an obvious interest in helping the team develop a wish list that maximizes eventual investment by the donor community and prioritizes interventions that will benefit the right individuals. It is incumbent on the donor to situate the due diligence team where it will have political support and access to appropriate information. Priority should be given to analyses of senior management skill, weaknesses in financial controls, procurement systems, and operational strategy to identify whether the management contractor is to simply improve operational performance or if a change in the utility's senior leadership (CEO, VPs, key technical division leaders) will be required during the management contract period of performance: in theory, management contracts should be accompanied by a change in management; for political reasons it is sometimes not possible and in the worst cases the old management is retained as technical advisors [35].

Ideally the technical team would be embedded as an advisor to the CEO's office, with full authority to—over the course of 8–12 months—characterize the utility's shortcomings, develop estimates for capital improvement requirements, select and prioritize areas for improvement, and develop a performance improvement plan. Utility management can be persuaded to support the process if they are shown it will lead to their survival in the context of a political framework that is resolved to improve utility performance at any cost. The need to work with a dysfunctional utility's management to prepare the plan also reveals the approach's weakness: It works only when the political window of opportunity is properly aligned, consisting of political determination to improve the utility and a popular mandate to incur the costs of doing so. These political windows are often narrow, and do not offer the luxury of extended lead-time and project preparation.

Assuming adequate support exists so that a team can establish a comprehensive analysis of the utility's weaknesses, having a stand-alone performance improvement is advantageous to all parties involved: the government, the donor, the utility, the utility's board of directors, and even the eventual operator. It allows for challenges to be outlined, permits stakeholders to prioritize interventions, and provides an opportunity to build consensus, assuaging the concerns of the utility labor union, for example, and offering senior utility management a chance to become part of the solution. The plan also facilitates selection of a management contractor (as we shall see below) and allows donors to properly manage procurement of any infrastructure requirements to accompany the management intervention. In Kenya, the KPLC management contract benefitted significantly by the diagnostic and analytic work performed by Nexant, which helped frame the problems and prioritize areas of intervention.

If data is of poor quality or non-existent, or if the operator is unfortunate enough to overestimate the utility staff and its own ability to turn around operations, the operator may find upon starting work that the problems were deeper or more severe than anticipated. An operator may discover there are insufficient data or systems in which to collect it or that the true depth of the dysfunction has been obscured or was underestimated.

The management contract in Liberia reveals the worst of the surprises: a technical team with education, skills, and literacy far below what was anticipated and well below the minimum acceptable standards for the industry: in fact, technical staff had frequently misstated their qualifications or justified them using falsified papers. Understanding of basic English, math, and physics was far below expectations, and, therefore, the process of training staff in improved techniques had to begin at a far lower point than anticipated. It is not impossible, as part of the performance improvement planning process, to estimate staff performance and skills and to ensure adequate budget for training is taken into consideration as part of the management contract. Likewise, bidders should take staff performance concerns into consideration when proposing their performance objectives as part of their bids [35]. Bad or nonexistent information leads to risk-averse operators negotiating hard for higher fees, or underestimating the severity of the challenge and over-promising in its bid. The latter simply facilitates politicization of the management contract by an impatient partner government, growing discontent among the utility employees and labor union, little perceived change by consumers, and circulating rumors. Even if the operator eventually overcomes the challenge, it may be at crippling expense and too often happens too late, by which time everyone else has agreed that the operator is incompetent, noncompliant, or otherwise at fault, and the project is largely doomed [25] [31] [7].

3.3 Developing the Management Contract

3.3.1 Standardization of Some Clauses with Case-by-Case Application

Management contracts currently suffer from two contradictory shortcomings. First, they must first be written on a case-by-case basis to address the specific shortcomings that are to be addressed, which differ in each utility and each country. Second, management contracts must be written in the context of, and with full understanding of, the business and political climate in which the utility operates [7]. Yet, management contracts written over the past 10 years have been so radically different that their very architectures are difficult to compare [6]. The World Bank Public Private Partnership in Infrastructure project began an initiative in 2007 to produce a standardized management contract, but it has not been adopted by the broader community [38]. The goal of the donor community should be twofold: (1) to build and stock a repository of management contracts that can serve as a basis for study and comparison; and (2) to ensure gradual convergence that permits standardization of contract clauses (termination, settlement of disputes, etc.) much like engineering contracts have coalesced around the FIDIC red and yellow book standard contracts, to which individual clauses can be amended. Standardization of documents provides confidence to the business community, breeds familiarity, and leads to a decrease in both perceived and actual risk to the implementers. Nonetheless, there is no one-size-fits-all management contract: beyond the introduction of standardized legal clauses, design of the contract's baseline and performance elements must be undertaken on a case-by-case basis.

3.3.2 Targeted Intervention

It is impossible for outsiders to fully understand the inner-workings of a utility, the political and economic connections, and the depth of the dysfunction. Management contracts should be designed to provide remedies to specific shortcomings [34], and ideally should focus on management structure and procedures, the individuals chosen to occupy key positions in

management, and the systems they use to operate their business. Where utilities suffer from multiple shortcomings it is preferable to prioritize where possible rather than taking on all problems simultaneously. Under these circumstances it is likely donor priorities, such as financial self-sufficiency and increasing the number of connections, will guide prioritization. Frequently, management contracts are put in place where utilities are in dire financial straits. In these cases, the operator should target loss reduction and financial health of the utility. Where the situation is less urgent, operators can focus on specific interventions, such as providing or improving operational systems and processes, and avoid designing a sprawling, complicated project that will require complex measurement and evaluation systems, avoid the risk of taking on a bigger task than necessary, and can limit the inherent risk of designing an intervention in the context of missing or bad information that will never fully be overcome. For clarity, management contracts should start with problem statements that identify the exact problem they are trying to solve, and all interventions should flow specifically and obviously from there, targeting a small number of specific objectives and their corresponding performance indicators [6].

Assuming specific dysfunctions have been identified and whose remedy will turn a struggling utility around, the purpose of the management contract team should be to fulfill an interim management role, training the leaders who will replace them. This Transitory Management Team is appointed through the management contract, and its duties should be [6] [36] [37] as follows:

- Oversee daily management, operations, and business functions, and facilitate operational improvements in distributing energy to customers and billing them for it.
- Implement a previously prepared performance management plan that has identified the targets for intervention.
- Assuming the management contract has been designed to replace senior management with a new team, run competitive hiring procedures for each position, identifying individuals who will serve as deputy directors under the foreign Transitory Management Team while they are present and who will replace the foreigner staff once the management contract concludes.

3.3.3 Improve Customer Care

Customer service should be a key goal and metric, and cannot be emphasized enough, because public perception of the benefit of the intervention is crucial to its success. Too many management contracts focus more on backend systems and processes and neglect improvements to customer-facing services (e.g., connections, billing, repairs), which lead to popular discontent that the foreign operator has made no difference. Focusing on customer service is doubly important if any part of the management contract's authorization and responsibilities will lead to any increase in consumer tariffs [37]. While customer-facing improvements can be catalyzed through improvements to operation and targeted community engagement strategies, notable improvements in service reliability and quality are useful to help build popular support for the intervention and for the operator. At a minimum, scheduling service cuts allows customers to plan for the availability of energy and schedule accordingly.

3.3.4 Tariffs and Revenue

Where possible, it is best to structure the work in a way that prevents tariffs from rising. This study demonstrates that management contracts that addressed utility revenue issues first seem to have had the greatest success, because the revenue provided capital for other purposes and helped consolidate government support for the reform. ESBI's management contract in Georgia enjoyed a unique perk consequential to the utility's prior dysfunction: Many staff inside the utility had not been paid their salary for many months and in some cases up to two years. ESBI used early revenue improvements to begin paying all employees owed back pay, which helped consolidate union support as well [5]. A management contract can be structured so that the government is required to finance whatever operating expenses the tariff doesn't recover, and can include a clause obligating the government to pay its own electricity bills on a timely manner as a condition for the contract being put in place. A management contract can also stipulate what capital investments should be undertaken during the management contract: the retainer fee will potentially be higher as a result.

3.3.5 Align Key Performance Indicators to Work Where the Operator has Control

In some contracts, the performance indicators chosen do not align with work over which the management contractor has complete autonomy, or measure factors where exogenous factors can negatively impact results. The Haiti management contract is such an example: The CRI was used as an indicator, but government nonenforcement of arrears by state institutions forced the indicator downward and buried actual progress made by the operator (it also was a revealing litmus test of Government of Haiti support for the utility's turn-around) [18].

3.4 Selecting the Management Contractor

Among management contracts that struggled to meet their objectives, one of the most important factors was the operator finding that the situation within the utility was generally worse than expected, causing the operator longer than expected to develop an action plan for addressing it, during a critical phase when expectations are high. Developing a performance improvement plan, as discussed earlier in this report, helps address this challenge, establishes more clear expectations, and allows prioritization and sequencing of activities (for example, focusing on loss reduction and collections in early years and following through with training afterwards).

The traditional approach to procurement of the services of a management contractor is *quality-cost* procurement, that is, after a prequalification phase, a TOR with detailed specifications of the requirements is tendered, and companies compete on the basis of the quality of their proposed management team, corporate qualifications, and experience (as well as possibly its proposed technical approach). The top bidder, or the top three bidders' cost proposals are then opened in a second phase, and a final decision is made first on the basis of quality and secondly on the basis of cost, giving the donor the opportunity to choose the second- or third-highest technical proposal if its associated cost represents better value for money. The quality-cost method is troublesome to manage, as it inherently requires a judgment call about the trade-off in quality versus cost, and is therefore less transparent.

Furthermore, this process has serious implications for the operator of a management contract. Under this system, each bidder competes by proposing the absolute highest quality team it can to earn the highest technical score. Management teams thus tend to be composed of extremely

senior technical personnel, whose greater years of experience imply family obligations and better career choices if the work turns sour. High-level personnel find themselves living in difficult and uncomfortable, developing world places that do not offer the education their children require or that do not correspond to the individual's or their family's expectations. If the work takes a downturn or the individual finds him/herself vilified in the press or threatened with bodily harm, for example, s/he has multiple other offers of employment and finds a reason to depart. The management contractor is then required to replace the individual with another individual of equal or greater quality, which can be difficult, since the contractor proposed their strongest team member to win the bid. The operator is then either technically in default of its contract or forced to request a waiver. As a result, the partner nation has a new reason to vilify the operator and its personnel. Additionally, the cost of the management contract is high because a senior team staffs it.

An alternative mechanism provides more flexibility to the contractor without jeopardizing the results: a cost-based procurement involves establishing *minimum acceptable* standards of personnel required to undertake the responsibilities listed in the SOW. The evaluation committee gives each bidder's proposal a pass/fail based on those minimum standards, and then awards the contract to the firm that can perform the work at the lowest cost. There are two advantages: first, by facilitating the placing of less senior individuals, the risk of their flight if conditions onsite are not favorable is lessened, and secondly, in the case of staff departure, the bidder is afforded greater flexibility in identifying and placing a replacement (the contract should nonetheless require replacements be equal or greater to the departing individual). This approach helps to avoid growing acrimony between the host government and the management contractor, which allows it to continue doing its work in implementing reforms [37]. The risk of this approach is that experience is sacrificed by structuring the procurement to accept qualified individuals who are not the most senior. Accurately gauging necessary experience is nuanced, but can work and in doing so, offers the operator some breathing room. Among companies that have implemented management contracts, the notion that donors frequently require qualifications that far exceed what actual utilities employ in daily operations was a common refrain [13].

As done for the procurement of the LEC management contract, the selection of the operator can also be based on the extent to which bidders would improve on baselines for performance indicators. In the case of the LEC management contract, these performance indicators included number of new connections, loss reduction, operational efficiency gains and collections. This facilitates easier analysis of offers, provides a transparent mechanism through which the operator is held accountable for performance improvements, and still allows for innovation among competing bidders. However, this does necessitate significant upfront due diligence to establish credible baseline values in the procurement package.

3.5 Developing a Governance/Oversight Framework

3.5.1 Simplicity in Oversight

It is tempting to develop a governance or oversight framework to supervise the operator's work that includes too many parties; worse, each group invited to participate in oversight of the operator will bring its own vested interests and connections. Again, simplicity is the watchword. Under ideal circumstances, the operator provides a management team that sits at the top of the

utility and reports directly to the utility's board of directors. Even that can be problematic, however, if the board of directors itself is contributing to the dysfunction of the utility's performance.

3.5.2 Role of the Board of Directors

The goal of the governance/oversight framework is to hold the operator contractually accountable for results and to ensure consistent reporting on key metrics. The board of directors also has a role to play in facilitating the transformation of a utility. Donors contemplating use of a management contract should properly characterize the role of the board of directors as an agent of change. In cases where the board is perceived to contribute to utility dysfunction (e.g., through procurement and contracting oversight), the donor should precondition the management contract with a change in the board of directors (if their removal is deemed essential to proper functioning of the utility) or reserve the right to withdraw funding should Board disfunction unduly jeopardize the success of the operator's performance. Ideally, the partner government should review the board's performance and membership.

Frequently, management contracts are written so that they respect existing authorities of the board of directors. If the board of directors has displayed commitment to utility turn-around and support of the operator, it is reasonable to leave it in place and require the operator to solicit and obtain approval from the board before proceeding with significant investments, changes to personnel, or changes to management strategy. The board of directors must be prepared and committed to expedient review and approval or denial of such decisions, facilitating the advancement of the tasks at hand; however, this is not always possible. Due diligence should identify whether replacement of the board should be a condition precedent to investment and undertaking of the management contract, and should establish procedures for an expeditious board approval process.

3.5.3 Implementation Units

Implementation units are typically newly created managerial structures designed for a specific purpose and a specific time. They are purpose-built and inserted into existing organizational structures for the purpose of achieving specific goals and are staffed separately from the rest of the organization. Frequently, they are paid from a different source and using a different pay scale. For the purpose of engaging and positioning a team for utility turn-around, the establishment of an implementation unit within (or above) the existing organizational hierarchy is unadvisable and inconsistent with the definition of a management contract. By design, it weakens the entire framework. Instead of a temporary, fully authorized management team taking over (temporarily) an existing management role in the utility, relegating the management team to status of "implementation unit," makes it ancillary to the existing power structures, which are generally left in place to override or ignore the implementation unit. While this design gives comfort to utility senior management worried about their jobs, it undermines the entire purpose of bringing in qualified external expertise and basically converts a management contract into an embedded team of technical advisors. Advisors, by nature, provide advice that can be heeded or disregarded at will. By nature, implementation units are weak and therefore ineffective, and should therefore be avoided for successful design of a management contract.

3.5.4 Owner's Engineer/Supervisor

FIDIC engineering contracts oblige the owner to hire an “owner’s engineer,” a technical expert hired to defend the owner’s interest who is hired because of his/her technical understanding of the work a contractor is doing. The experience in Liberia showed that a disparity in contract types can alter incentives: Time and materials contracts provide no penalty for inefficiency or constantly finding new reasons to delay authorization/approval. At best, the owner’s engineer should share the same contract type as that signed with the operator; barring that, the owner (likely the donor) needs to take active interest in the project supervisor to ensure he/she is not causing so many delays that they jeopardize the work from advancing, because every additional delay in the operator’s schedule has real financial risk to the operator [25]. Alternatively, donors should ensure the supervisor plays a productive role in the relationship, striking a balance between quality of product and keeping the project moving.

3.6 Establishing Autonomy and Authorization

3.6.1 Unequivocal Autonomy

After political support for change, the next greatest factor in the success of a management contract is ensuring that the operator has total, unequivocal autonomy over the institution into which it has been injected to catalyze reforms. This is most easily accomplished when the preconditions listed earlier, including stakeholder consensus on what is to be reformed and the goals of the management contract, have been met during the design phase. If the operator is to report to a board of directors, proper due diligence should characterize—during the project design stage—whether the board is more likely to facilitate or hinder aggressive managerial improvements to a utility. If the board does not share the same enthusiasm as the national government for utility turn-around, the donor should insist on other framework interventions beyond just the management contract, such as working with the head of state of the relevant ministry to effectuate changes to the board itself. That is, requiring the operator report to the board of directors is only appropriate where, in the donor’s opinion, the board itself plays a facilitative role. A related risk is the departure of strong board members as a consequence of a change in minister or government. This risk should not be addressed through the management contract itself: donors should identify a higher level mechanism for refusing changes in the board that are detrimental to the management contract. A donor’s right of refusal during the period of performance of the management contract can be a pre-condition to funding the management contract in the first place.

Failing state-owned utilities frequently suffer from poor collections, an HR payroll that has swelled beyond its necessary size and often with technical staff that lack the proper skills or abilities, and managers responsible for poor planning or business decisions that have brought the utility to its present state of poor financial health. Utilities the world over are more prone than other businesses for corruption and shady business deals, as their business operations are poorly understood by the public and infrequently exposed to public scrutiny. As state-owned enterprises they therefore enjoy tight relationships with political interests. Access to electricity can become a political favor, because they provide services everyone wants or needs. Utilities require frequent procurement of goods and services and therefore offer frequent opportunities for contracts to be targeted to friendly political or business interests, engendering a climate of political patronage. Their poor performance over many years has led to low public expectations

for improvement. In times of crises, everyone, including the expatriate or donor community, is impatient to see service restored at any cost, opening avenues for poorly overseen contracts on dark commodity markets such as for procurement of illicit diesel. In sum, utilities are excellent vehicles for moving lots of politically expedient money.

Correcting these ills requires any management team to execute some very unpopular strategies, including removing poorly performing or unneeded staff, ending projects of uncertain financial or business value, or restructuring in ways that antagonize vested interests. Successfully tackling any of these challenges requires total operational and financial autonomy and undisputed authorization to undertake them—or a collective decision on which of these weaknesses will not be addressed and a clear-eyed understanding on whether objectives will still be achieved.

However, management contracts often place more emphasis on oversight of the operator than on operational autonomy. International donor institutions are by political necessity wary and intent on providing good stewardship of limited, taxpayer funds and develop management contracts in the same spirit they develop donor-funded investment projects. Recent management contracts analyzed as part of this study are complex and multifaceted, and many key decisions are subjected to approval by the board of directors, the government, both, or a combination of several institutions [32].

All parties interviewed as part of this study agree that the operator must be assigned specific, objectives, and then given total, unequivocal authority to carry them out. For this reason, management contracts are doomed to remain unclear unless the preconditions of identifying objectives and building political and stakeholder support have been met in the design phase. Key questions about the operator's HR authorities (e.g., hiring, firing, reassigning, demoting/disciplining), financial authority (e.g., signing subcontracts, entering into business agreements), and commercial license (e.g., changing expansion strategies) must be absolutely clear. In the case where meeting objectives requires the operator to assert its authority in any of these domains, its authorization to do so must be absolute. Stakeholders who have committed to the identified objectives must be resolute in their support for the operator.

The Kenya KPLC management contract provides a surprising reaffirmation of this principle. Kenyan authorities decided before writing the management contract that KPLC personnel were to be protected and that there was to be no reassignment, disciplining, or removal. Its management contract was extremely clear in this regard and withheld from the operator the authorization to deal in these matters. At the same time, the contract gave the operator full authorization to deal in all other matters necessary for it to meet the objectives of the contract. This approach not only assuaged the personnel and the labor unions on one hand, but freed the operator to engage effectively in the other domains [10].

3.6.2 Avoid Political Interference

Political interference disrupts the autonomy of the operator, reinforces the status quo lines of authority, and reestablishes the preeminence of political decisions over technical, commercial, or economic decisions. In short, it torpedoes the entire process, and one single political interference is enough of a precedent to stop reforms permanently. The Haiti EDH transition management contract achieved few results for myriad reasons but continued political interference in the reform process was the single most damaging. Among the worst offenses

was the frequent and continual changing of the Director General despite having served short terms. This instability not only set a precedent for intransience of senior leadership (in which case any reform is short lived, and staff attentions turn to rent seeking to ensure their continued employment rather than taking on difficult and possibly politically unfavorable reforms) but reinforced the notion that the management contract was imposed and possibly unwanted. It goes against the notion of autonomy and the authorization to carry out needed reforms, and makes clear the operator has neither [18].

3.7 Funding and Capital Investment Issues

Management contracts alone introduce change to corporate systems and frequently invoke changes to management and staffing structures. They do not, and are not intended to, introduce dramatic capital investments to systems. While many management contracts are written with the expectation that the operator will invest in computer or system hardware, improved metering solutions or other equipment that helps reduce technical and nontechnical losses and improve understanding of customer energy consumption patterns and thus respond more effectively to them, these investments are typically a small fraction of the actual investments that struggling utilities require. That implies two scenarios are the norm: (1) either these needs go unmet, or (2) the management contract takes place in the context of other planned capital investments that are undertaken by the government or the international and donor community. While under ideal circumstances, investments ought to be financed by utility cash flow, the experience of management contracts to date shows this is difficult, if not impossible.

Experience, and the review of these management contracts, shows a clear trend: The capex investment funding almost never aligns in time with the management contract. In the case of Liberia, the operator was mandated to reduce the cost of electricity, and yet these decreases in cost were largely predicated on the arrival and installation of new, more efficient generation assets that only appeared as the contract was being concluded. This prevented much-needed lowering of tariffs, which impeded signing up new customers and jeopardized the rest of the results expected [7].

Any capital investments identified outside the scope of the management contract must be organized and funded in time for them to play the proper role in the utility turn-around. The two projects (management contractor and donor investment plan) must be synchronized and managed/executed in lockstep. This is difficult, but imperative, and it is also a fundamental lesson learned for the role donors should play, as discussed in the following section.

3.8 Defining Success Fees and Payment Structure

This study has not identified any major difference in the structure of the success fees and other payments that made material differences to the relative success or failure of a management contract. Each management contract studied provided a reasonable/suitable payment structure that served its purpose in incentivizing a private sector operator to enter into and sign the management contract, and guided work activities toward achievement of the performance indicator objectives that would unlock payment of those fees. There is, nonetheless, room for improvement. Following are two lessons learned with regard to defining success fees and payment structure.

3.8.1 Tie Success Fees to Areas of Operational Autonomy

The operator's success fees must absolutely be tied to areas of work over which it has total control. The baseline, measurement process, verification process for those indicators must be established clearly to the satisfaction of all parties before the work begins. Several management contracts studied here were frustrated by exogenous factors that limited the operator's ability to meet its performance indicator objectives and therefore to earn its fees, setting up a conflict and eventual need for arbitration on whether those fees were earned and, if so, how much. To reinforce the importance of improving customer-facing operations, success fees should ideally be tied to metrics that correspond to customer service. Such metrics might include hours of power delivered, reliability and repair indices, new customers added, and billing metrics. If the management contract is focusing on other areas of performance, performance metrics and therefore success fees should follow suit. Note that even here, the risk of not meeting targets because of, for example, the government not paying for its own consumption of electricity, is a real risk.

3.8.2 Avoid Imposition of Too Many Indicators and Metrics

Too many performance indicators establish a structure in which monitoring and evaluation can subsume the operator's attention, diverting limited and valuable personnel time into monitoring, evaluating, and reporting instead of on the difficult work of managing personnel expectations, gathering support for unpopular and difficult reforms, installing new equipment and training personnel in its use, and establishing new procedures for internal management and operations. Baseline data is typically of questionable accuracy and sets up multiple avenues for conflict in interpretation if the operator begins executing the management contract only to find out baseline data was inaccurate, improperly recorded, or difficult to obtain with the frequency and quality necessary to justify performance incentive payments and success fees. It is this study's recommendation that one avoid the temptation to impose too many metrics on a management contract. Indicative indicators might, for example, focus on improvements to revenue and earnings (e.g., cost recovery ratio), new customers and regularization of previous nonpaying customers, and customer service metrics (e.g., length of time between outages, length of time from outage to service restoration, number of days in delay in obtaining a power connection) [39].

3.9 Defining the Role of the Donor

3.9.1 Make Turn-Around a Condition Precedent to Other Funding/Engagement

Management contracts are most successful when their successful completion is a condition precedent to other funding such as a conditional loan or an investment that will only be undertaken if the successful turn-around of the utility (for which support of the management contract is essential) is an essential pre-requisite, and even that might not be sufficient leverage if the government truly doesn't support the turn-around of the utility. Too many management contracts studied here failed because of the overpowering vested interests of local and national politicians, workers' unions and internal lobbies, and rent-seekers dependent on dysfunctional utilities for one reason or another.

Management contracts are put in place as a mechanism for achieving a result that will by necessity favor some interests and harm others. Making significant, future investments

contingent on the success of the management contract will help strengthen stakeholder support at all political levels, making it more difficult to oppose reform for fear of being the reason those future investments do not materialize, while focusing everyone's attention on the reforms at hand [18].

3.9.2 Consolidate Donor Efforts and Improve Coordination/Collaboration

Donor coordination and collaboration is a challenge even under normal circumstances, but management contracts are employed as a performance-improvement tool most frequently in the most challenging countries and under the most challenging circumstances. It is precisely these countries that suffer from multiple donors advocating multiple, sometimes conflicting approaches even in the same sector. Here, more than ever, an overt effort to improve donor collaboration must be insisted upon to achieve results. All individuals that held management contracts agreed that when donors have fundamental disagreements in approach, it frustrates the operator's ability to successfully execute a management contract and exacerbates any perceived lack of support by the partner government. Because so many dysfunctional utilities suffer from deep issues of political patronage and corruption, a consolidated effort strengthens the leverage of the international community and strengthens the resolve of the partner government to carry out reforms that are potentially politically difficult or detrimental to important beneficiaries of the patronage network.

Similar issues weakened results in Liberia. The operator's final report noted, *"If the project is supported by multiple donors, there needs to be good donor coordination and donors need to agree on the program and how to achieve its objectives. In the case of LEC management contractor donors began the project well-coordinated but with the addition of the Mount Coffee project there was a change in donor priorities and coordination. Donors involved in the rehabilitation of Mount Coffee were well coordinated through the Mount Coffee PIU and quarterly donor coordination meetings. Donors continuing to fund T&D and connections were fragmented and looked after their own ring fenced projects. Generally donors had no interest in the LEC electric master plan, the business plan, or the investment plan that were supposed to be the road map for recovery"* [25]. It's worth noting here that "donors" are lumped together in the above statements whereas donors are in fact a diverse set of actors which offer very different funding mechanisms, (e.g. grants vs loans), may have diverging political priorities that change as donor governments change, and have different processes and timeframes for expending funds. This should be taken into consideration when developing investment plans and timetables and creating mechanisms for coordinating and consolidating donor efforts.

3.9.3 Carry Out Financing Commitments on Time

Several management contracts studied required supplemental funding of capital investments intended to cover rehabilitation and repair of key infrastructure; finance the installation or upgrade of commercial and management systems, including software; or otherwise provide financial support to the system during the management contractor's tenure. However, in reality the required financing materializes late or not at all (as discussed in section 3.7 above). [18] [25] [7]. It is equally important to identify whether utility performance issues would be most easily improved by infrastructure changes through the management contract itself rather than an external capex plan managed by third parties. An example of such investment might be modernized meters and service drops. Other expenses to consider might be the cost of

enumerating customers at the beginning of the contract. If any of these are desirable, it is important to ensure the management contract is budgeted and structured to ensure funding for those activities is made available at the appropriate time and to the appropriate level.

4. CONCLUSION

Performance-based management contracts remain a compelling mechanism for inducing modern management methods, improved systems, and more effective processes in utilities that fail to serve their public. These contracts are useful where full concession is politically unappetizing financially unviable, or unpopular. When executed thoughtfully, political, technical, and economic forces align to strengthen staff and institutions and set a foundation for further financial and technical improvement. They are also useful where unpopular decisions must be made quickly and effectively, such as the replacement of a senior management team deemed unable to be a force for improvement. However, they are not a silver bullet. When executed in a political climate that reveals the partner government either does not entirely support the reforms or has accepted them grudgingly at the behest of a donor strategy, the operator steps into a situation that might preclude significant improvement to utility performance and that could even endanger the wellbeing of its personnel.

In the best scenarios, the partner government desires the change, the donor facilitates and finances it, and the operator executes it. Government support is communicated clearly so that the public understands the reasoning and the expected benefits, allowing the operator to be an agent for good. Facilitating such propitious circumstances however translates into greater need for precision in objectives, clarity, and consistency in public communication, as well as more effort up front from both partner government and donor to build stakeholder support and properly plan a management contract's execution. Additionally, the operator is given clear authorities to make relevant changes, and any parallel donor financing of important infrastructure (e.g., additional generation capacity) is planned and executed on time. Under these conditions, the operator can be left to improve systems, skills, and equipment, and coax struggling utilities into better health. Only then can the public receive the benefits of improved service delivery of electricity and can the economy grow as a result.

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ANNEX 1. PERSONS AND INSTITUTIONS CONTACTED

TABLE A-1. PERSONS AND INSTITUTIONS CONTACTED

Institution	Person Contacted
World Bank	Pedro Antmann, Energy Sector Specialist
IFC	Isabel Marques de Sa, Chief Investment Officer
University of Stellenbosch	Anton Eberhard, Professor, Energy, Utilities and Sector Reform
MHI	Nigel Wills, Project Manager
MCC	Jonathan Saiger, Senior Operations Advisor
ESBI	Brian Dowd, Project Manager; Francois Pienaar, Project Manager; and Joe Corbett, Project Manager
Private Infrastructure Development Group/World Bank	James Leigland, Director Private Infrastructure Resource Group
Tetra Tech	Ignacio Rodriguez, Director

U.S. Agency for International Development

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

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