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IDA/R2018-0039/1

February 27, 2018

**Closing Date: Friday, March 16, 2018
at 6:00 p.m.**

FROM: Vice President and Corporate Secretary

Mauritania - Supporting Gas Project Negotiations and Enhancing Institutional Capacities

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed IDA grant to Mauritania for a Supporting Gas Project Negotiations and Enhancing Institutional Capacities (IDA/R2018-0039), which is being processed on an absence-of-objection basis.

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Report No: PAD2423

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT

IN THE AMOUNT OF SDR 14.3 MILLION
(EQUIVALENT TO US\$20 MILLION)

TO THE

THE ISLAMIC REPUBLIC OF MAURITANIA

FOR A

SUPPORTING GAS PROJECT NEGOTIATIONS AND ENHANCING INSTITUTIONAL
CAPACITIES

February 22, 2018

Energy and Extractives Global Practice
Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective October 31, 2017)

Currency Unit = MRO (Mauritanian Ouguiya)

US\$1 = SDR 0.71190085

US\$1 = MRO 348.767

FISCAL YEAR

January 1 - December 31

ABBREVIATIONS AND ACRONYMS

| | |
|-------|--|
| API | American Petroleum Institute |
| Bbl | Barrel |
| BoE | Barrel of Oil Equivalent |
| BOPD | Barrels of Oil per Day |
| BP | British Petroleum |
| CAMEL | Algerian Liquid Methane Corporation (<i>Compagnie Algérienne de Méthane Liquide</i>) |
| CAPEX | Capital Expenditure |
| CEP | Exploration and Production Contract |
| CGI | General Tax Code (<i>Code Général des Impôts</i>) |
| CHG | Compressed Hydrogen Gas |
| CNG | Compressed Natural Gas |
| CPS | Country Partnership Strategy |
| CT | Corporate Tax |
| DA | Designated Account |
| DH | Directorate of Hydrocarbons (<i>Direction des Hydrocarbures</i>) |
| DWT | Deadweight Tons |
| E&P | Exploration and Production |
| EA | Environmental Assessment |
| EITI | Extractive Industries Transparency Initiative |
| EPC | Engineer Procure and Construct |
| EPCC | Engineer Procure Commission and Construct |
| EPIC | Engineer Procure Install and Construct |
| ERP | Enterprise Resource Planning |
| FEED | Front-End Engineering Design |
| FID | Final Investment Decision |
| FLNG | Floating Liquefied Natural Gas |
| FM | Financial Management |
| FOB | Free on Board |
| FPSO | Floating Production Storage and Offloading |
| GAC | Governance and Anticorruption |
| GDH | General Department of Hydrocarbons (<i>Direction Générale des Hydrocarbures</i>) |
| GDP | Gross Domestic Product |
| GoM | Government of Mauritania |
| GRS | Grievance Redress Service |
| GTA | Grand Tortue Ahmeyim |
| GW | Gigawatt |
| HFO | Heavy Fuel Oil |
| HR | Human Resources |
| IBRD | International Bank of Reconstruction and Development |
| ICA | Intergovernmental Cooperation Agreement |
| IDA | International Development Association |
| IFR | Interim Financial Report |

| | |
|----------|--|
| IMF | International Monetary Fund |
| IPF | Investment Project Financing |
| IRR | Internal Rate of Return |
| JOA | Joint Operating Agreement |
| LNG | Liquefied Natural Gas |
| M&E | Monitoring and Evaluation |
| MDF | Ministry of Finance (<i>Ministère des Finances</i>) |
| MEFP | Ministry of Economy and Finance (<i>Ministère de l'Économie et des Finances</i>) |
| MMBbl | Million Barrels |
| MPEM | Ministry of Petroleum, Energy and Mining (Ministère du Pétrole, de l'Énergie et des Mines) |
| MRO | Mauritanian Ouguiya |
| MT | Million Tons |
| MTPA | Million Tons Per Annum |
| NGO | Non-Governmental Organization |
| NOC | National Oil Company |
| OPEX | Operating Expenditure |
| PDO | Project Development Objective |
| PETROSEN | National Oil Company of Senegal |
| PIU | Project Implementation Unit |
| PPSD | Project Procurement Strategy for Development |
| PSC | Production Sharing Contract |
| PSGP | Mauritania Public Sector Governance Project |
| SCD | Systematic Country Diagnostics |
| SDR | Special Drawing Rights |
| SESA | Strategic Environmental and Social Assessment |
| SMH | Mauritanian Hydrocarbons Company (<i>Société Mauritanienne des Hydrocarbures</i>) |
| SMHPM | Mauritanian Hydrocarbons and Mining Resources Corporation (<i>Société Mauritanienne des Hydrocarbures et de Patrimoine Minier</i>) |
| SoE | Statement of Expenditures |
| TA | Technical Assistance |
| Tcf | Trillion Cubic Feet |
| ToR | Terms of Reference |
| UUOA | Unitization and Unit Operating Agreement |
| WB | World Bank |
| WD | Water Depth |

| | |
|---------------------------------|-------------------------------|
| Regional Vice President: | Makhtar Diop |
| Country Director: | Louise J. Cord |
| Senior Global Practice Director | Riccardo Puliti |
| Practice Manager: | Christopher Gilbert Sheldon |
| Task Team Leaders: | Ilhem Salamon, Susana Moreira |

**BASIC INFORMATION**

| | | |
|--------------------------------------|--------------|------------------------------|
| Is this a regionally tagged project? | Country(ies) | Financing Instrument |
| No | | Investment Project Financing |

- ☐ Situations of Urgent Need of Assistance or Capacity Constraints
- ☐ Financial Intermediaries
- ☐ Series of Projects

| | | |
|---------------|--------------|-----------------------------------|
| Approval Date | Closing Date | Environmental Assessment Category |
| 15-Mar-2018 | 23-Sep-2022 | B - Partial Assessment |

| |
|------------------------|
| Bank/IFC Collaboration |
| No |

Proposed Development Objective(s)

To support the government capacity to drive negotiation towards final investment decision, and lay the foundations for the gas sector's contribution to the economy through enhanced legal and regulatory frameworks and capacity building.

Components

| Component Name | Cost (US\$, millions) |
|--|-----------------------|
| Capacity building and technical support for the GTA negotiations | 16.00 |
| Strengthening of the institutional and regulatory framework | 3.00 |
| Project management and coordination | 1.00 |

Organizations

| | |
|-----------------------|---|
| Borrower : | Ministry of Economy and Finance |
| Implementing Agency : | Ministry of Petroleum, Energy and Mines |



PROJECT FINANCING DATA (US\$, Millions)

| | | | | | |
|--|-------------------------------|-------------------------------------|---|--------------------------------------|---|
| <input type="checkbox"/> Counterpart Funding | <input type="checkbox"/> IBRD | <input type="checkbox"/> IDA Credit | <input checked="" type="checkbox"/> IDA Grant | <input type="checkbox"/> Trust Funds | <input type="checkbox"/> Parallel Financing |
|--|-------------------------------|-------------------------------------|---|--------------------------------------|---|

Total Project Cost:

20.00

Total Financing:

20.00

Financing Gap:

0.00

Of Which Bank Financing (IBRD/IDA):

20.00

Financing (in US\$, millions)

| Financing Source | Amount |
|------------------|--------------|
| IDA-D2730 | 20.00 |
| Total | 20.00 |

Expected Disbursements (in US\$, millions)

| Fiscal Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------|------|------|------|-------|-------|-------|
| Annual | 0.67 | 1.67 | 3.04 | 5.46 | 7.56 | 1.60 |
| Cumulative | 0.67 | 2.34 | 5.38 | 10.84 | 18.40 | 20.00 |

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas



Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

| Risk Category | Rating |
|---|---------------|
| 1. Political and Governance | ● Substantial |
| 2. Macroeconomic | ● Substantial |
| 3. Sector Strategies and Policies | ● Low |
| 4. Technical Design of Project or Program | ● Low |
| 5. Institutional Capacity for Implementation and Sustainability | ● Substantial |
| 6. Fiduciary | ● Substantial |
| 7. Environment and Social | ● Substantial |
| 8. Stakeholders | ● Substantial |
| 9. Other | ● Substantial |
| 10. Overall | ● Substantial |

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

☐ Yes ☒ No



Does the project require any waivers of Bank policies?

☐ Yes ☒ No

Safeguard Policies Triggered by the Project

| | Yes | No |
|--|-----|----|
| Environmental Assessment OP/BP 4.01 | ✓ | |
| Natural Habitats OP/BP 4.04 | | ✓ |
| Forests OP/BP 4.36 | | ✓ |
| Pest Management OP 4.09 | | ✓ |
| Physical Cultural Resources OP/BP 4.11 | | ✓ |
| Indigenous Peoples OP/BP 4.10 | | ✓ |
| Involuntary Resettlement OP/BP 4.12 | | ✓ |
| Safety of Dams OP/BP 4.37 | | ✓ |
| Projects on International Waterways OP/BP 7.50 | | ✓ |
| Projects in Disputed Areas OP/BP 7.60 | | ✓ |

Legal Covenants

Sections and Description

Schedule 2. Section I.A.5.: The Recipient shall, no later than three (3) months after the Effective Date, hire a financial management officer and a procurement specialist, with qualification and experience satisfactory to the Association.

Sections and Description

Schedule 2. Section I.A.6.: The Recipient shall, no later than six (6) months after the Effective Date: (a) prepare and adopt the Manual of Administrative and Financial Procedures, in form and substance satisfactory to the Association; (b) set up an accounting information system satisfactory to the Association; and (c) hire an internal auditor and an external auditor, with qualification and experience satisfactory to the Association.

Sections and Description

Schedule 2. Section I.C.1.: The Recipient shall ensure that a Master Plan for Gas Development is prepared in accordance with terms of reference approved by the Association. If the Master Plan for Gas Development is finalized during Project implementation, the Recipient shall prepare a Strategic Environmental and Social Assessment of the oil and gas sector, acceptable to the Association.



Conditions

PROJECT TEAM

Bank Staff

| Name | Role | Specialization | Unit |
|---|---|------------------------------|----------|
| Ilhem Salamon | Team Leader(ADM Responsible) | Oil and Gas Development | GEEX2 |
| Susana Moreira | Team Leader | Oil and Gas Development | GEEX2 |
| Brahim Hamed | Procurement Specialist(ADM Responsible) | Procurement | GGOPF |
| Fatou Fall Samba | Financial Management Specialist | Financial Management | GGOAW |
| Africa Eshogba Olojoba | Environmental Safeguards Specialist | Environmental Safeguards | GEN07 |
| Alistair Watson | Team Member | Fiscal Modeling | GEEX1 |
| Ana Francisca Ramirez | Team Member | Research | GEEX2 |
| Faly Diallo | Team Member | Disbursement | WFACS |
| Fatou Fall | Social Safeguards Specialist | Social Safeguards | GSU01 |
| Helen Ba Thanh Nguyen | Team Member | Team Assistant | GEEX2 |
| Honore F. Le Leuch | Team Member | Taxation and Fiscal Modeling | GEEX2 |
| Jinghua Zhou | Team Member | Operations | GEEX2 |
| Juliana Chinyeaka Victor | Team Member | M&E | GEE08 |
| Mamata Tiendrebeogo | Team Member | Procurement | GGOPF |
| Nicolas Kotschoubey | Team Member | Environmental Safeguards | GEN07 |
| Patrice Philippe Marie Joseph De Martin De Vivies | Team Member | Oil and Gas Development | GEEX2 |
| Pierre Rene Bauquis | Team Member | Gas Exploration | GEEX2 |
| Sachiko Morita | Counsel | Country Lawyer | LEGEN |
| Wael Mansour | Team Member | Economist | GMTA2 |
| Extended Team | | | |
| Name | Title | Organization | Location |



THE ISLAMIC REPUBLIC OF MAURITANIA
SUPPORTING GAS PROJECT NEGOTIATIONS AND ENHANCING INSTITUTIONAL CAPACITIES

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I. STRATEGIC CONTEXT

A. Country Context

1. The Islamic Republic of Mauritania, part of the Maghreb region of Western Africa, is located at the gateway between Sub-Saharan and Northern Africa. Its coastline extends 754 km along the Atlantic Ocean. Desert stretches from the northern area to the central and eastern regions, rendering only 0.5 percent of the 1,030,700 km² national territory arable. With a national population of slightly over 4.1 million, Mauritania is sparsely-populated, and 60 percent of its population is concentrated in urban areas, mostly in Nouakchott and Nouadhibou.
2. Despite being arid and mostly desert, Mauritania is a resource-rich country with mainly iron ore, copper, gold and crude oil. In the past 15 years, booming revenues from the extractives sector have sustained a robust economic growth in the country. From 2003 to 2015, real gross domestic product (GDP) growth averaged 5 percent a year, on par with Sub-Saharan Africa. With an annual population growth averaging 2.5 percent GDP per capita has risen by 6.2 percent per year (and stood at US\$1,192 in 2017, elevating Mauritania to a lower-middle-income country. Between 2008 and 2014, the poverty rate declined significantly from 44.5 percent to 33 percent, bringing about net gains for the bottom 40 percent of the population.
3. Mauritania's sustained growth since 2003 has been driven primarily by the rising value of its mineral exports and of oil. As a result of the dramatic rise in world commodity prices, the value of mineral exports jumped from US\$318 million in 2003 to US\$2,652 million in 2013, despite most of mining production being stagnant. Over this period, the extractives sector accounted for, on average, 25 percent of GDP, 82 percent of exports, and 23 percent of domestic budgetary revenue. The improvement in terms of trade is estimated to have brought, on average, 2.5 percent of additional national income per year. The mining boom translated into large foreign investments in the extractives sector and significant public investments. Regarding the domestic sectors, the traditional primary sectors of agriculture and fisheries have made the largest contribution to GDP growth due to their overall size, despite slower growth than the economy as a whole. In the meantime, it is worth noting that Mauritania's GDP growth rate fell from 6.1 percent to 3.0 percent between 2013 and 2015. This slowdown was driven by falling commodity prices combined with a 13 percent decline in iron ore production and an 11 percent drop in oil production in 2015, reflecting the country's heavy reliance on extractives.
4. Substantial fiscal revenues from natural resources have allowed the Government to sustain its new national development model and to make significant public investments in infrastructure. To date, however, these have not substantially contributed to encourage private sector-led economic diversification. While investments in transport and water infrastructure, as well as rural development have positively improved the country's inclusive growth trajectory, the private sector remains underdeveloped and has limited influence driving economic diversification.
5. Expectations over the effective use of natural resource rents have prompted the Government of Mauritania (GoM) to adopt a series of measures to enhance transparency, to review/develop new legislation and to improve the monitoring and enforcement capacity of relevant government entities. The World Bank has supported the Government's efforts towards enhanced transparency and improved natural resource rent management since 1999 under several projects such as the Mauritania Public



Sector Governance Project (PSGP - P146804), the Mauritania Extractive Industries Transparency Initiative (EITI - P166307) and the Mining Sector Capacity Building Project (PRISM - P057875 and P124859) I and II.

6. Although the country's fiscal policy has remained mostly prudent, with efforts to contain recurrent expenditures and raise non-extractive revenues, the contraction of extractives industries and increased public investment over the past few years have fueled a rapid expansion in the public debt and deteriorated fiscal balances. Between 2006 and 2013, the overall fiscal deficit remained at, or below, 3 percent of GDP, supported by extractives revenues and notable foreign grants. Tax revenues increased rapidly from an average of slightly higher than 12 percent of GDP in 2000-2011 to an average of 17.4 percent of GDP in 2012-2014. In addition, the Government set aside oil revenues in a fund which helped to finance the 2011 drought response and remained at almost US\$100 million in 2013, before falling to US\$60 million in 2015. The steady rise in investment spending over the past two years has, however, undermined the Government's efforts at fiscal consolidation, as revenue growth failed to keep pace with rising public expenditures. Deficits reached 3.4 percent and 3.3 percent of GDP in 2014 and 2015, respectively. The ambitious Public Investment Program (PIP) by the Government, with a 35.6 percent externally financed component (up from 21.0 percent in 2000), pushed the public debt stock to 98.4 percent of GDP by the end of 2015, a 15 percent rise since 2010. The absence of fiscal buffers and the Government's recourse to bilateral loans and other less-concessional forms of external financing have worsened the debt profile and increased the vulnerability of the debt stock to exchange rate risks, leaving the country at a high risk of debt distress. However, the situation reverted starting 2016 with the government implementing a strict fiscal consolidation plan. The plan was built on expanding the tax base, improving revenue collection, controlling operational spending especially of public enterprises, and controlling public investment financed through external borrowing. The result was a primary fiscal surplus for two consecutive years (respectively 0.5 and 1.2 percent of GDP) and a decline in public debt ratio to 93.6 of GDP. This decline was the first to be observed in over a decade.
7. Years of significant economic growth and accelerated poverty reduction did not translate into commensurate levels of human development in the country. Mauritania ranks 157th out of 188 countries on the 2016 Human Development Index, and 147th out of 159 on the Gender Inequality Index (United Nations Development Program - UNDP, 2016). There are also significant inequalities between urban and rural populations. One of the most binding constraints to shared growth in Mauritania and more broadly in West Africa is access to affordable electricity. Increasing the availability and efficient use of natural gas for power could significantly contribute to reducing power generation constraints and lower the cost of electricity in the whole sub-region. Development of gas-to-power projects could be a game changer for the sub-region, by providing an opportunity for a significant increase in electrification rates and supporting the energy transition to low carbon technologies, away from coal and heavy fuel oil (HFO), as part of a wider climate change strategy involving the diversification of energy sources towards cleaner fossil fuel and renewable energy. Today in West Africa, only 32 gigawatt (GW) of the 71 GW required to achieve enough electricity generation to sustain universal access by 2030 is planned. Gas based generation could play a key role as it is expected to account for 63 percent of the 2030 overall regional energy mix.



B. Sectoral and Institutional Context

Sector Context

8. Exploration has been conducted for a long time in Mauritania, but until recently leading only to very small oil and gas discoveries. Owing to continuous promotion efforts over the past decades, the Ministry of Petroleum, Energy and Mines (MPEM, *Ministère du Pétrole, de l'Énergie et des Mines*) supported by the Mauritanian Hydrocarbon Company (SMHPM, *Société Mauritanienne des Hydrocarbures et de Patrimoine Minier*) has been able to attract a number of petroleum companies. As a result, several hydrocarbon discoveries were made offshore Mauritania, namely: Chinguetti (2001), Banda (2002), Tiof (2003), Pélican (2003), Tevet (2004), Labeidna (2005), Faucon (2005), Aigrette (2006) and Cormoran (2011).
9. A world class gas discovery was made in 2015 with the Grand Tortue Ahmeyim (GTA) ultra-deep offshore gas field which straddles the maritime boundary between Mauritania and Senegal. This discovery has the potential to transform Mauritania's economy. In addition, the Bir Allah gas discovery was made but it remains to be appraised. New prospects have also been identified, including Lamantin to be drilled in late 2018.

Government Policy

10. In September 2015, the GoM adopted the Accelerated Growth and Shared Prosperity Strategy (*Stratégie de Croissance Accélérée et de Prospérité Partagée*) which covers 2016-2030. It is based on three pillars: (i) ensuring strong, sustainable and inclusive growth; (ii) promoting human capital and access to basic services; and (iii) creating conditions to foster good governance.
11. The policy framework for the oil and gas sector is defined by the petroleum law and its decrees of application.

Petroleum Legal, Fiscal, Regulatory and Contractual Framework

12. The current legal and regulatory framework applicable to the upstream petroleum sector in Mauritania is governed by Law No. 2010-033 of June 20, 2010, as amended by Law No. 2011-044 and Law No. 2015-016, and its Decrees of application, referred to as the "Petroleum Code" of Mauritania. The midstream or downstream matters are covered by the downstream law (*Loi réglementant les activités aval du secteur des hydrocarbures*) of 2002 (Ordinance No. 2002-005) dealing with the domestic distribution and sale of hydrocarbons and petroleum products in Mauritania.
13. The fiscal framework of upstream activities is provided by the Petroleum Code, which contains, *inter alia*, specific upstream petroleum tax rules and special tax exemptions regarding upstream petroleum activities, taking precedence on the provisions of the "General Tax Code" (*"Code Général des Impôts" - CGI*). The Petroleum Code applies to the upstream petroleum activities in the country as do other laws and regulations of Mauritania and the tax provisions, included in the petroleum agreements.
14. The Petroleum Code empowers the Government to enter into upstream petroleum (exploration and production- E&P) agreements, namely Exploration and Production Contract (in French named under the



acronym CEP) under the production sharing contract (PSC) type.¹ The PSC scheme was introduced in Mauritania in 1981 and is therefore a type of upstream petroleum arrangement well known by the country. Ten CEPs are currently in force. Most petroleum agreements are now public in Mauritania, including those related to the GTA project.

Petroleum Institutional Framework

15. Mauritania's oil and gas sector is directly managed by the MPEM, in liaison with the Ministry of Finance (MDF - *Ministère des Finances*) regarding tax issues. Its mandate is to formulate and implement government policies relevant to oil and natural gas, mines and the energy sector. Specifically, it is responsible for: i) promoting and regulating the production, import and export, transport, storage, and commercialization of hydrocarbons; and ii) encouraging exploration of new oil and gas resources. With a special regulatory mandate, the MPEM is also responsible for issuing petroleum E&P rights, through the signing of CEPs, approved by Decree.
16. Within the MPEM, the General Department of Hydrocarbons (GDH, *Direction Générale des Hydrocarbures*) is responsible for the development, implementation and monitoring of the strategies related to hydrocarbons, including the development and enforcement of policies, as well as monitoring and implementation of laws and regulations. More specifically, the GDH is involved in, among other things: i) preparation of legal and regulatory frameworks for activities in the oil and gas sector; ii) participation in the contracts and agreements negotiations; iii) development and implementation of sectorial development plans; iv) promotion of investment opportunities; v) training design and delivery for oil and gas professionals; and vi) dissemination of studies and data in oil and gas sector.
17. The Mauritanian Hydrocarbons Company (SMH, *Société Mauritanienne des Hydrocarbures*) was created in April 2004 by the Decree No. 039-2004. As a public company under the supervision of the MPEM, its primary objective was to manage the state participation in the exploration, development, production, and commercialization of oil and gas resources in Mauritania. In 2014, the SMH changed its name to the Mauritania Hydrocarbons and Mining Company SMHPM according to Decree No. 2014-011, as the company expanded its mission to include oil, gas and mining exploitation. Based on the legislation and petroleum contracts, the SMHPM is responsible for collecting and commercializing the Government's share of hydrocarbons following modalities determined by the MPEM.

Hydrocarbon Discoveries

18. While further exploration is expected to lead to new prospects, the main discoveries made since 2001 are described hereinafter.
19. **Chinguetti.** The extraction of oil in Mauritania started in 2006 with the development of the Chinguetti field. The field was discovered by Woodside Petroleum in 2001 and production initially planned at a capacity of 75,000 Barrels of oil per day (BOPD) began in 2006 via a Floating Production Storage and Offloading (FPSO) unit. In 2007, Woodside ceded – at a loss – to Petronas, all its upstream interests held

¹ The Petroleum Code does not use the expression "production sharing contract" but provide for the more generic terminology of "exploration and production contracts" ("*contrat d'exploration et de production, ou CEP*"). However, the clauses in the Petroleum Code defining the content of any CEP shows that indeed it corresponds to the internationally recognized "production sharing contract (PSC)." For clarity, the term PSC is used in the PAD.



in Mauritania for US\$418 million. The sale included the yet un-appraised Banda gas resources, as well as the producing Chinguetti oil field, which was developed by a Woodside led consortium of companies at an estimated cost of US\$700 million. Chinguetti was expected to produce over 50,000 BOPD for a period of 20 years. It started producing in 2006 with a brief production peak of 75,000 BOPD which immediately plummeted to 15,000 BOPD in 2007, and continued to decline to 7,000 BOPD in 2013 and then to even lower levels. The Chinguetti field is in the preparation phase for being decommissioned this year. The rapid drop in production was due to unforeseen and un-remediable reservoir discontinuities, which can happen in a complex lithology – such as the one found in Chinguetti, which have irregular water and gas saturations, and present permeability barriers, only allowing probabilistic reservoir assessments before production.

20. **Banda.** The Banda gas resource was discovered offshore Mauritania in 2002 by the Woodside Group. In 2011, Tullow took Petronas' lead operatorship of the Banda discovery, and conducted the screening studies needed to design a gas development project concept. Given the small size of the offshore gas resource, a gas export project concept was not an option and, instead, a gas to domestic power project development concept was adopted in line with the operator's objective. The primary rationale supporting the choice of this concept hinged on the assumption that the gas produced would power the then prosperous local mining industries, which needed electricity to further expand production with international price trends in the mining industry skyrocketing over 2011-12. In addition, the project was potentially able to boost access to affordable electricity in Mauritania as well as in Senegal and Mali in a context of high oil and gas international market price trends (also over 2011-12). Despite progress towards a Final Investment Decision (FID) between 2012 and 2014, following the dramatic drop in international oil and gas market prices starting in 2014, Tullow decided to monetize many of its gas assets, including through the sale of its gas assets in Pakistan and Bangladesh. At the same time, a spectacular drop in international mining prices resulted in the need to revise downwards mining production plans in Mauritania and elsewhere in the world. In this context, Tullow abandoned the development of the project. Since then, the Government has undertaken two studies to identify options that could make the development of the project attractive to a public-private partnership, which it considers more appropriate to market conditions.
21. **Grand Tortue/Ahmeyim (GTA).** The recent gas discovery in the Grand Tortue/Ahmeyim field, situated in very deep waters straddling the country's maritime border with Senegal, represents an opportunity that could turn Mauritania into a significant natural gas exporter. In 2015, Kosmos (90 percent, operator) in partnership with the SMHPM (10 percent) made a discovery in the Ahmeyim-1 offshore well in southern Mauritania, close to the border with Senegal. In early 2016, Kosmos (60 percent, operator) in partnership with Timis now replaced by British Petroleum (BP) (30 percent), and National Oil Company of Senegal (PETROSEN) (10 percent) reported another offshore gas discovery in Senegal in the Geumbeul-1 well located roughly five kilometers from the Ahmeyim-1 well. Both drilling operations reached the target formation at a water depth of approximately 2,700 meters and a well depth of over 5,000 meters. Moreover, both exploration wells encountered about 100 meters of net gas pay. In March 2016, the Ahmeyim-2 well, which was drilled in Mauritania, encountered 78 meters (256 feet) of net gas pay. The drilling confirmed reservoir continuity on both sides of the border. The appraisal program for GTA demonstrated that the gas resource in GTA is 15 to 20 Trillion cubic feet (Tcf), and is part of a larger formation that is expected to hold substantially more gas as well as liquids. Late December 2016, BP signed a farm-in agreement with Kosmos Energy to acquire a 62 percent working interest, including development operatorship, of Kosmos' exploration blocks in Mauritania, and a 32.49 percent effective



working interest in Kosmos' Senegal exploration blocks. BP/Kosmos have started the engineering work needed to fine tune the project concept in order to reach a FID for GTA by the end of 2018. Given the large size of the resources and low international market price trends for Liquefied Natural Gas (LNG), the PSC holders are seeking to develop the gas resources in phases. The first phase is meant to establish both Mauritania and Senegal as gas exporters, using a low-cost project development concept (near-shore floating LNG) which can be fast-tracked. As of today, substantial progress was made towards a FID, with a pre-front-end engineering design (FEED) nearing finalization, the FEED tendered, and early discussion on gas marketing and project financing under way.

22. **Further Exploration.** In May 2017, the GoM and Total signed an CEP on block C7 of the coastal basin which will enable the country to further promote gas E&P. Total will be the operator with a 90 percent interest and SMHPM will hold 10 percent interest. In November 2017, Exxon Mobil was also granted E&P rights for three blocks of the coastal basin.

Challenges Ahead for Oil and Gas Development

23. Now that a world-scale discovery has been made offshore in Mauritania, operators are refining the project development concept and assessing the detailed costs of the project development, as required before they can make a FID. The period separating the moment that resources are discovered from the time a decision is made on whether and how to develop them (i.e., the FID) involves critical work. Often underestimated in newly producing countries, the work needed during this period is substantial and directly impacts the fiscal and non-fiscal revenues that the resource exploitation will bring to the host country. With gas discoveries come expectations of fiscal revenues and local content, and there is generally greater public interest in how to invest these revenues and train people for future industry needs, rather than in how best to choose a project development concept, supplement the petroleum law and the PSC, and set-up or reinforce institutions.
24. Yet, the choice of a project development concept will irreversibly define the project's socioeconomic impacts as well as its ability to bring more than fiscal revenues for a country. During the early screening phase, it is essential that all relevant development concepts be screened. In countries, such as Mauritania and Senegal, where the limited access to affordable electricity is one of the key binding constraints on growth, it is essential to make sure that the concepts under preliminary analysis include options for gas destined for domestic power generation. While such concepts may not always be commercially viable, there can be instances where they compete with concepts excluding gas for power generation, and access to concessional financing can make a difference. Some project development concepts come with more local content than others, and it is important to make sure they too are analyzed as needed. Such concepts are not always optimal, especially when market prices trends are low and key infrastructures underdeveloped. Yet, expectations of local content are often higher than what is feasible, and ruling out such concepts without a rationale can add substantial time and costs to project negotiations. It is therefore important for governments to proceed methodically and focus on firming up a FID before widening their efforts to manage future revenues. Once operators near a FID, based on factors that can optimize the Government's revenues and other positive externalities, the Government can switch to focusing on managing the revenues that will be generated by the project after its development.
25. During the conceptualization phase, governments and operators must work in collaboration to finalize all agreements needed for a FID. While the greatest part of the work falls to the lead operator(s),



governments must grant approval for a large number of decisions. In newly producing countries, governments often need to complete the legal and regulatory framework so that it covers all critical uncertainties that could affect the feasibility of the project. Governments will also be asked to review the FEED of gas development concepts as well as field developments, which typically requires new capacity. Before they make a FID, private operators will also have to make sure that project financing is adequate and that all parties, including national oil corporations, can assume their share of development and production costs. This suggests that the Government should determine its stake and secure ways to finance it ahead of time. In the development of LNG, the private operator will lead the gas marketing strategy and find buyers for the gas. However, the Government may still need to provide clearance for the gas marketing strategy and gas sale agreements in a timely manner.

26. Key milestones that need to be achieved in the earliest stage of evaluating the discovery of GTA include the following:
 - a. Ratification of an Intergovernmental Cooperation Agreement (ICA) for the development of the transnational resource, which will leverage cooperation between Mauritania and Senegal;
 - b. Adoption of a Unitization and Unit Operating Agreement (UUOA) complying with the ICA;
 - c. Approval of project development concept for GTA discovery that optimizes fiscal revenues under existing PSC and other positive impacts for the country (e.g. gas for domestic power generation) while meeting investors' requirements; and
 - d. Identification of the optimal level of participation of the SMHPM in the development and liquefaction of GTA and option(s) for financing.
27. The proposed Technical Assistance (TA) will support the GoM's efforts to mobilize and build up the capacity needed to partner with the private sector to ensure progress toward completion of these specific milestones and broader needs associated with the Government's responsibility for a FID.

C. Higher Level Objectives to which the Project Contributes

28. The proposed TA will help ensure that Mauritanian oil and gas development projects take place in an environment conducive to private sector investments aligned with the public interest. Supporting GoM negotiations toward FIDs will be achieved by mobilizing international third-party expertise, strengthening key institutions, enhancing the fiscal, legal, and regulatory framework, and engaging with all stakeholders while ensuring that they join in the efforts needed for oil and gas developments to contribute to the country's economic growth in a resilient and sustainable way. Through this TA (US\$20 million), the GoM will enhance its capacity to secure over US\$5 billion in investments from oil and gas private operators, and in the long-run amounts significantly higher depending on the size of existing and future discoveries. In the short run, the TA is expected to help the GoM make sound progress toward FID for the first phase of the GTA development. In the long term, it should contribute to the production and commercialization of these oil and gas resources and accelerate FIDs in the next phases of GTA development. This TA could thus play a catalytic role in leveraging private investments, which will in turn generate billions in fiscal revenue flows over the life of the project.
29. Strengthening the Government's institutional and technical capacity will be instrumental to ensuring optimal project outcomes, as well as setting up realistic expectations regarding the potential revenues generated by oil and gas developments. When gas price trends were higher and LNG was structurally undersupplied, it was easier for governments to negotiate onshore solutions requiring the construction



of large infrastructure that could be developed using the local workforce. Given current market price trends and the structural oversupply of LNG, such solutions are increasingly seen as too lengthy and costly. Innovations in floating solutions, such as near-shore Floating Liquefied Natural Gas (FLNG) concepts, are attracting increasing interest. While offshore LNG solutions typically bring less local content than onshore LNG solutions, they can be developed at a faster pace and require a lower upfront investment. To secure a FID, Mauritania will have to develop realistic expectations regarding short-term revenue generation and local job creation. A well-designed communications strategy – at the local and national level – that allows the Government to set realistic expectations throughout the life cycle of the oil and gas development, starting from the negotiations phase, is key. The proposed TA will develop the social platforms necessary to share with the greater public reliable information on the timing and scope of potential fiscal revenues, employment opportunities and local content opportunities through stakeholder engagement and a communications campaign.

30. The proposed TA seeks to support the Government's capacity to progress negotiations towards final investments decisions in the gas sector, and lay the foundations for the sector's contributions to the economy through enhanced fiscal, legal and regulatory framework and capacity building. As such, the proposed project is fully aligned with the three focus areas of the upcoming World Bank Group's Country Partnership Framework (CPF) for the Islamic Republic of Mauritania for the period of FY18-FY22, planned for Board discussion in June 2018. By supporting large private investment decisions, the proposed project will *"expand economic opportunities and enhance resilience"* (Focus Area 1). By strengthening institutional capacity and improving legal, fiscal and regulatory framework for doing business in the gas sector, the proposed project will *"build human capital and inclusiveness"* (Focus Area 2) and *"support governance and institutional accountability"* (Focus Area 3).
31. The 2017 Systematic Country Diagnostic (SCD²) for the Islamic Republic of Mauritania highlighted that higher inclusive growth and more stable macroeconomic environment will be required to reach the goal of eliminating poverty by 2030. The SCD identifies four critical resource pathways to sustained inclusive growth and shared prosperity, two of which are directly linked to the objectives of this proposed operation: (i) leveraging mineral wealth through transparent and sustainable extraction management, optimizing revenue generation and ensuring resource rents support labor-intensive and poverty-reducing public investments and transfers; and (ii) harness natural endowments for pro-poor growth. Three policy areas were identified as priorities: (i) improved macro-fiscal rules to counter-balance the cyclical nature of Mauritania's resources based economy; (ii) improved public expenditure management; (iii) improved investment climate and business environment. The SCD reiterated that the weak management and inadequate institutional underpinnings in the upstream and downstream extractives sector represented a binding constraint to inclusive growth, as it limits both the optimal and pro-poor utilization of revenue and impedes much needed economic diversification and institutional capacity along the entire revenue value chain.
32. Therefore, by implementing proposed project activities to strengthen institutional capacity and engage broad stakeholders in the gas sector, the proposed TA will directly echo the findings and recommendations presented by the SCD and contribute to inclusive growth in the long run.³
33. The proposed TA seeks to enhance the Government's capacity to manage its gas resource through

² 2017/07/16. World Bank Report n°116630.

³ The World Bank. Systematic Country Diagnostic for the Islamic Republic of Mauritania. December 2016.



interventions focused on strengthening governance systems and processes to enhance the predictability, credibility and accountability of the Government. As such, this project is in line with the World Bank's updated Governance and Anticorruption (GAC) agenda and is complementary to other World Bank projects that aim to enhance Mauritania's management of its resource rents such as the Mauritania Public Sector Governance Project (PSGP - P146804), and the Mauritania Extractive Industries Transparency Initiative (EITI - P166307). The *PSGP* aims, among others, to improve transparency and control in public resource management and to strengthen the administration of mining taxation. The *Mauritania EITI* aims in turn to ensure increased transparency of payments and revenues from the mining, oil and gas sectors in the country and to support compliance with the EITI. The Second Fiscal Consolidation and Private Sector Support Development Policy Operation (P163057), which was approved by the World Bank in December 2017, is designed to support the GoM as it adjusts to a protracted terms of trade shock through, among others, the support to the government's ongoing fiscal consolidation efforts by boosting domestic revenues, enhancing fiscal transparency and increasing the efficiency of public spending.

34. In addition, informed by the World Bank's Gender Strategy (FY16-23)⁴, the proposed TA will contribute to increasing women's participation in Mauritania's natural gas sector. The World Bank's new Gender Strategy focuses on four objectives: i) improve human endowments; ii) remove constraints for more and better jobs; iii) remove barriers to ownership and control of productive assets; and iv) enhance women's voice and agency and engaging men and boys. Currently, the gas industry remains a male-dominated industry in Mauritania but also around the world.⁵ Women account for a limited share of the gas industry's workforce, and they tend to work mostly in support/non-technical functions.⁶ By supporting efforts to recruit and train sector and relevant professionals that are female, and by developing gender-sensitive local content strategy, the proposed TA expects to enable women to benefit directly from jobs created by gas development operations, and from jobs created to support the workers along the gas development value chain.
35. The proposed TA is also consistent with the World Bank's Maximizing Finance for Development strategy and will help the GoM enhance its capacity to secure over US\$10 billion in investments from private operators for the development of Great Tortue Ahmeyim (GTA), the world class gas resources straddling Mauritania and Senegal. To do this, the project will enhance capacity as well as the legal and regulatory framework to provide private sector investors with the stability and confidence needed to irreversibly commit funds to the development of the country's gas resources. The project will also support strong cooperation between the Governments of Mauritania and Senegal, as needed for the development of a trans-border gas resource. The Government of Senegal is receiving a similar project support from the World Bank (IDA 6053-SN approved on May 26, 2017), which supports the development of GTA as well as other gas prospects that have been confirmed in the country. Importantly, this investment is expected to trigger further private sector commitments in the future downstream gas and electricity sectors.

⁴ World Bank Group gender strategy (FY16-23) : gender equality, poverty reduction and inclusive growth. WP 102114. 2017/03/29

⁵ According to the Petersen Institute for International Economics, women account for only 11 percent of senior executive positions in the oil and gas industry in the world.

⁶ Once they join, women tend to stay longer in their jobs. Research by the International Gas Union (IGU) and others has found the attrition rate for female employees to be significantly lower as compared to their male colleagues, in all regions of the world. In addition to lower attrition rate for female employees, in a study conducted by Ernest Young, 61 percent of participants believe that gender diversity increases financial performance, whereas 77 percent of participants believe it influences nonfinancial performance.



II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

36. The project development objective is to support the government capacity to drive negotiation towards final investment decision, and lay the foundations for the gas sector's contribution to the economy through enhanced legal and regulatory frameworks and capacity building.

B. Project Beneficiaries

37. At the macro level, the beneficiaries of the proposed project will be, first of all, the Mauritanian people in general through planned activities that will contribute to: (i) strengthening the government's capacity in the gas sector to generate sustained benefits and economic growth for the country; (ii) better socioeconomic returns from gas investment and broad stakeholder engagement in the country; and (iii) potentially increases in access to reliable power through future gas-to-power development. Secondly, the extractives industry will benefit significantly from an improved gas investment climate, enhanced legal, regulatory, and institutional frameworks, and government counterparts with greater capacity, which together will facilitate economic efficiency and extractives-related business activities.

38. At the micro level, direct beneficiaries of the proposed TA include:

- a. Government institutions, especially the MPEM, the MDF, the SMHPM and other Government Departments, as well as their staff involved in managing the gas sector and through capacity building activities;
- b. Civil society, including community-based and non-governmental organizations (NGO) and associations that would benefit from local content strategy, communication strategy, and information campaigns on gas development project at GTA field, decision-making, and impacts.

C. PDO-Level Results Indicators

39. Progress in achieving the PDO will be measured by the following key indicators:

- Institutional analysis conducted and results publicly disseminated;
- Field Development Plan and Development Concept for GTA validated and determined;
- International Cooperation Agreement and Unitization Agreement for the GTA field developed and approved;
- Institutional capacity enhanced and necessary technical equipment installed within MPEM and SMHPM;
- Local content strategy for the hydrocarbons sector developed.

III. PROJECT DESCRIPTION

A. Project Components

40. The proposed TA has three components: (Component A) Capacity building and technical support to the GTA negotiations; (Component B) Strengthening of the institutional and regulatory framework; and



(Component C) Project management and coordination. The project components are detailed in Annex 1 and summarized hereinafter:

41. **Component A - Capacity building and technical support for the GTA negotiations (US\$16 million equivalent).** The activities undertaken under Component A are designed to enable the GoM to develop the institutional capacities and to acquire the third-party expertise needed to negotiate effectively a FID on the GTA. This capacity building and technical support will enable the Government to ratify the technical, legal, fiscal, commercial and financial agreements underpinning the FID. These capacities and expertise will also be applicable for gas prospects that could be identified and appraised during the life of the project.
42. **Sub-Component A.1. Institutional analysis, training and capacity building (US\$8 million).** The objective of this sub-component is to assess the needs for capacity building, as well as to develop and implement training and technical resource buildup programs.
 - a. **Institutional analysis:** This activity is intended to provide a detailed analysis of the operations, policies and internal procedures of government institutions involved in gas E&P and in revenue management, taking into consideration international best practices. Targeted institutions will include line ministries (Energy, Economy, Finance, Transport, Infrastructure and Environment) and the SMHPM.
 - b. **Training:** This activity is intended to provide high-level training to gas policy makers (including line ministers, parliamentarians and SMHPM) and in-depth training of the staff of the SMHPM, the Project Implementation Unit (PIU) anchored in the MPEM, and the ministries directly involved in project negotiations and their implementation. Both trainings will seek to include as much as possible female professionals and stakeholders involved in the sector. The high-level training aims at facilitating the decision-making process on the legal provisions necessary for the finalization of the gas legal framework, the ratification of an ICA, the adoption of an Unitisation Agreement, the validation of gas development concepts, etc. In addition to the strategic training of decision-makers, in-depth training - based on industry needs, which will similarly seek to include as many female experts as possible - will be offered to senior management and executives of key institutions involved in resource development and management. This in-depth training will be subdivided into two categories:
 - i. The first category will provide tailored training rapidly to the teams working on the project (negotiating team, GTA project team, etc.) considering the project schedule and its specific needs; and
 - ii. The second category will focus on strengthening the capacities (in terms of training as well as staffing) of the intervening institutions, including the Ministry of Environment, based on the results of the institutional diagnosis.
 - c. **Recruitment of key personnel and development of a Human Resources (HR) retention policy:** This activity is intended to support the short- and medium-term efforts of the Mauritanian authorities to mobilize additional skills in petroleum engineering, development of LNG projects, gas economy, project financing, taxation and relevant law for the gas sector. Experts will be recruited as consultants and will mainly support the MPEM, the PIU and the SMHPM. In addition, this activity will develop a HR retention policy for the main governmental agencies involved in the project (in this case MPEM and SMHPM) to increase the sustainability and effectiveness of the recruitment and training strategy. The goal is to give MPEM and SMHPM the tools to keep the trained and talented state sector employees that otherwise



may leave, attracted by the higher salaries of private sector companies in a nascent oil and gas sector. Gender sensitivity will be key in order to attract competent female experts and increase their very limited number in the sector.

- d. **Strengthening of technical resources:** This activity is aimed at conducting a needs assessment and enabling key institutions, in particular MPEM and SMHPM, to have the equipment, tools and facilities required for the sustainable management of the country's hydrocarbon resources (modeling platform, a document center for technical data, an integrated information and management system).

43. **Sub-Component A.2. Technical support for effective negotiation of the GTA agreements (US\$8 million).**

The objective of this sub-component is to support the efforts of the Mauritanian authorities to engage rapidly and constructively with the Senegalese authorities and the holders of the CEPs (the PSC-holders) to guarantee the sustainable development and production of its gas resources. This support will be extended to other gas prospects, if future appraisal confirms the potential. This subcomponent includes the following activities:

- a. **Reservoir engineering:** Provide the Mauritanian negotiation team with independent third-party expertise needed to validate the operator's estimates as well as the methodology used for the delineation of GTA and the estimation of transnational gas resources that will be the object of an ICA and an Unitization Agreement.
- b. **Project development and construction engineering:** Assist MPEM in validating the field development plan and engineering studies related to the production and liquefaction of the gas submitted by the operator.
- c. **Legal support:** Assist the Mauritanian authorities in finalizing the necessary agreements to move towards GTA's FID, including the ICA and the UUOA, operational agreements, marketing agreements and financial agreements.
- d. **Project financing support:** Support government efforts to assess the fiscal impacts of various LNG development concepts, finalize project financing, identify the optimal share of the national company in gas and LNG developments and how to finance it.
- e. **Gas and LGN marketing:** Assist the Mauritanian negotiation team in validating the commercialization agreements for GTA and in identifying viable options for gas to domestic power generation.

44. **Component B – Strengthening of the institutional and regulatory framework (US\$3 million equivalent).**

The objective of this component is to assist the GoM in updating its policy and strategy for the development of the gas sector. The specific activities to be implemented under this component are:

- a. **Policy, strategy and action plan for the gas sector:** This activity aims to support the efforts of the GoM in updating its gas policy once the concept for the development of GTA and its implementation schedule are adopted. In this context, options for managing the gas sector (both upstream and downstream) and for determining the use of future gas production (gas for power and other uses) may be considered. The gas revenue management policy will be reviewed and updated as needed. This component will take into account all gas resources in the country.



- b. **Master Plan:** All work required to develop or update the sectorial policy and strategy, or to ensure its implementation, will be funded under this activity. This includes the development of a master plan that will help articulate how offshore gas development could benefit domestic power generation and local industries. The Master Plan will be developed after the GTA Pre-FEED study is approved by the Government. It will among other things include a gas-to-power development strategy and an assessment of the social and environmental risks associated with the project development concept, as well as the readiness of Mauritania safeguards designed to mitigate these risks.
 - c. **Local content strategy:** All work required to develop the local content strategy for the hydrocarbons sector will be funded through this activity. This will include a diagnosis of industries that exist or could be developed upstream or downstream of the GTA project with the goal of helping the Government determine an adequate level of local content. A strategy and an implementation plan will also be developed to clarify how domestic investors could gradually win service, supply and works contracts associated with the gas development projects. This local content strategy will also develop a monitoring and evaluation (M&E) framework that will measure progress on the participation of women (workers and business owners) in the hydrocarbons sector workforce, particularly those associated with the gas projects.
 - d. **Strategy for the involvement of stakeholders in the gas sector:** The main objective of this activity is to mobilize international expertise from third parties with a view to developing a communications strategy and an information campaign aimed at engaging all the relevant actors in the sector in an efficient and sustainable way on issues relating to the gas development projects at GTA. This activity will consist of an assessment of the existing communications and institutional options/mechanisms for communication, information and engagement of key target audiences in public bodies, in particular the Presidency, the Prime Minister's Office, the MPEM and the SMHPM. In addition, it will finance a communications strategy and a stakeholder engagement campaign. The communication strategy and engagement campaign will be materialized through user friendly tools, adequately formulated per target group such as publications on relevant ministries' websites, specific media messages and informative consultations with civil society.
45. **Component C - Project management and coordination (US\$1 million equivalent).** The proposed component will provide targeted support to the project management and coordination in the amount of US\$1 million, which will be used to finance the core project execution team and operating costs that are essential for effective project implementation. This will include financing the costs associated with the recruitment of a procurement specialist, an accountant, an administrative and financial officer, as needed to build the MPEM's procurement, financial management, M&E capacities in a sustainable manner.

B. Project Cost and Financing

- 46. The proposed grant in the amount of US\$20 million is designed as an Investment Project Financing (IPF) through an IDA Grant to the Islamic Republic of Mauritania.
- 47. The Government of the Islamic Republic of Mauritania will assist project implementation through in-kind contribution in support of the project management and coordination. The GoM is supporting the



estimated cost of US\$1.2 million associated with GTA negotiations until procurement under the World Bank TA starts. In addition, the GoM will be providing additional in-kind contribution in the amount of approximately US\$0.5 million during project implementation.

Table 1: Project Components and Cost

| Project Components | Project cost | IDA Financing |
|--|----------------|----------------|
| A - Capacity building and technical support for the GTA negotiations | US\$16 million | US\$16 million |
| B – Strengthening of the institutional and regulatory framework | US\$3 million | US\$3 million |
| C - Project management and coordination | US\$1 million | US\$1 million |
| Total Costs | US\$20 million | US\$20 million |
| Total Project Costs | US\$20 million | US\$20 million |
| Front-End Fees | | |
| Total Financing Required | US\$20 million | US\$20 million |

C. Lessons Learned and Reflected in the Project Design

48. *Developing a common understanding of the milestones and conditions for progress towards an FID.* Based on industry and policy experience, the time elapsing between the first discoveries and actual gas shipment can be much lengthier than what governments might hope. This is particularly the case in the LNG industry as the need to liquefy the gas for its commercialization adds substantial project costs. Various factors can explain the difference between a timely and successful project and a less successful one for a country. Some of these factors, such as LNG market prices trends at the time of the discoveries, cannot be influenced by governments. The key lesson for governments is therefore that key decision-makers must work together seamlessly and have a thorough understanding of the milestones and conditions for progress toward a FID. This is needed to develop a negotiation strategy based on realistic outlooks, manage public expectations, and engage constructively with private operators. Annex 7 describes the key phases of LNG projects, which are generally considered to be among the most complex in the gas industry, as well as success stories and lessons learned in the industry from over 50 years of LNG project development and implementation.
49. *Obtaining technical, legal, fiscal, marketing and project financing expertise at the earliest stage possible to facilitate achievement of FID.* During negotiations, government decision-makers must be provided with a thorough understanding of the socioeconomic and fiscal impacts of the technical concept as well as the technical, legal, marketing, and financing agreements they will be required to clear. In new producing countries, this generally requires the recruitment of international third-party expertise. This impact analysis must be conducted early in the process to avoid cases where governments refuse to move forward with a concept after its detailed engineering is finalized and both the sales contracts and the capital costs are ready to be engaged for its execution (e.g., Arzew GL3Z in Algeria, Abadi FLNG in Indonesia), or cases where they may want to renege on other commitments made to operators. This would negatively affect not only petroleum-related developments but also any private sector investments being contemplated in a country.



50. *Managing outlook and expectations for extractives-derived benefits for long-term sustainable fiscal performance.* Unrealistic government outlooks and public expectations generally result in delays in FID (in Mozambique, the first FID was initially contemplated for 2013 but remains pending) and skyrocketing budget deficits (as in Mozambique, where production is still years away, and Ghana, a new deep offshore producer since December 2010) due to premature investments in non-petroleum sectors and public infrastructures, unaffordable increase in public wages, uneconomic strategic investments, and subsidies. Importantly, Ghana benefitted from substantial TA and enacted a detailed petroleum revenue management law following good practices. However, it overestimated the ramping up of petroleum revenues and ended up spending too quickly and committing too early, resulting in excessive debt. It is therefore very important to understand the timing of gas project developments and ramping up of petroleum revenues. Until a FID is implemented, the focus must be on negotiation, strengthening institutions, and stakeholders' engagement.
51. *Enforcing legal and regulatory framework and enhancing governance to avoid "resource curse".* When the FID is implemented, the focus should switch to the preparation and enactment of a petroleum revenue management law, the design of a prudent fiscal rules and fiscal path, and the development of petroleum funds. As is the case for any resource-rich country, Mauritania will also be running the risk of a "resource curse" that could negatively affect the country's economic performance, bring fragility, and make the country vulnerable to violent conflicts. Unless effectively managed, the sector development could lead to a "paradox of plenty" rather than growth, shared prosperity, and poverty reduction. Political decision-making rooted in good governance principles of transparency and accountability will be needed to make the extractive resources of the country a blessing and not a curse.
52. *Promoting stakeholder engagement and an open communications platform throughout the life-cycle of gas projects to ensure inclusive development.* During negotiation and throughout the life of the development, sustainable gas project management also requires the strengthening of an information platform at both the local and the national level to set realistic expectations among stakeholders and include the broader population in the development process. For this reason, it is important to carry out participatory communications and stakeholder engagement campaigns, in parallel with other proposed activities to enhance stakeholder engagement in the gas sector, harness transparency and accountability, and promote inclusive development in the country.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

53. The implementation and coordination of the TA project will be performed by a PIU anchored within the MPEM, with a coordinator appointed by the Minister of MPEM who has experience and proven skills in the hydrocarbons sector and qualifications acceptable to the World Bank. This unit (PIU-MPEM) will implement and coordinate all oil and gas technical assistance projects, which will be granted to the GoM from now on (including this proposed World Bank TA). In this way, the capacity of this PIU is expected to increase overtime, which would in turn contribute to the overall institutional capacity in the gas sector in a sustainable manner. PIU-MPEM will carry out all planned activities financed under this TA as well as day-to-day coordination and management, under the authority of the MPEM.
54. While the PIU-MPEM is being established within the MPEM, there will be an interim period during which



the administrative and financial director of SMHPM will be formally assigned as temporary administrative and financial director of the PIU. During this interim period, dual signature from the PIU coordinator and the administrative and financial director of the SMHPM is required for all expenses regarding the project implementation. In addition, the SMHPM will also provide interim and ad-hoc support from a procurement specialist, an accountant, an internal auditor, legal and technical experts, and an environmental and social specialist (assigned from an existing department i.e SMHPM as suggested by the Client) who will remain physically in the SMHPM with continued responsibilities with the SMHPM.

55. The SMHPM will support the PIU-MPEM until this PIU is fully and adequately staffed with the recruitment of the following staff, who will be financed through this TA: (i) an internal auditor, external auditor and a seasoned financial management officer to ensure FM and reporting requirements; (ii) a procurement specialist to ensure that all activities financed by the project are executed following World Bank rules that apply to Borrowers; and (iii) an assistant to provide administrative assistance to the whole team. The setup of the PIU is an opportunity to build the Hydrocarbons Department of the MPEM. Both through the temporary arrangements, which will rely on SMHPM and through long-term arrangements, the administrative (FM and procurement), as well as the technical capacity of the MPEM will be strengthened. Before the PIU can operate without ad-hoc support from the SMHPM, and prior to the official transfer of the fiduciary responsibilities to the PIU-MPEM, the approval from the MPEM as well as assessment and non-objection from the World Bank will be required to ensure the PIU's capacity to effectively handle the project and the adequacy of the FM arrangements. The preparation and adoption of the Manual of Administrative and Financial Procedures, in form and substance satisfactory to the Association will be key in the readiness assessment, which will be performed by the World Bank.

B. Results Monitoring and Evaluation

56. The overall M&E responsibility rests with the PIU-MPEM complemented by close World Bank supervision. A results framework and monitoring matrix tracking inputs, outputs, and outcomes has been developed for the proposed TA along with key performance indicators and milestones (Section VII). Where applicable, gender-disaggregated data is included and examined during the M&E process.
57. More specifically, the objectives of the M&E of this project include: (i) ensuring the efficiency of project activities; (ii) providing accurate and timely information to help management make the right decisions; (iii) providing accurate and timely information needed to adjust or modify activities in relation to the evolution of the context during project implementation; (iv) ensuring transparency; and (v) improving project management. In addition, strengthening the Client's capacity for project implementation and M&E in the gas sector as an integral part of the project will also enable the relevant agencies to keep track of environmental and social safeguards implementation and compliance for future gas development projects.
58. The M&E team of the PIU-MPEM will be responsible for the overall M&E process, including data collection and reporting, and will produce monthly, quarterly, bi-annual, and annual project activity reports, including procurement and financial summary reports, to the World Bank. Bi-annual reviews, the first one of which must take place six months following effectiveness, should provide detailed analysis of implementation progress toward achieving the project development objectives and include evaluations of FM and post-review procurement aspects.



59. Key milestones in the results M&E process will include the following:

- a. **Status Reports:** With inputs from the supervising ministries, the PIU-MPEM will prepare status reports on the implementation of the project activities. These reports must be submitted to the World Bank on a bi-annual basis. The goal of status reporting is to ensure timely support and feedback from the GoM on the activities planned under this TA. These reports will also include the status of the PDO level indicators as well as intermediate indicators contained in the results framework (Section VII) where applicable.
- b. **Completion Report:** With inputs from the supervising ministries, the PIU-MPEM will prepare a completion report within six months of project closing date to ensure that the objectives outlined in the Project Appraisal Document (PAD) are duly achieved and that there is a plan for sustainable continuation.
- c. **Financial Statements:** The PIU-MPEM is required to prepare financial statements and interim financial reports (IFRs) that reflect the operations, resources, and expenditures related to the activities detailed in the PAD. Independent auditing of financial statements will be required within six months after the end of each fiscal year.

C. Sustainability

60. From the onset, the GoM has demonstrated commitment and ownership of the proposed TA, with the MPEM being the prime advocate for the need to enhance the country's institutional capacities to negotiate gas project developments. In addition to having the strong support from the Government, the project is built on existing governance and oversight structures within and between the MPEM and the SMHPM.
61. Institutional sustainability will be enhanced through the capacity building activities (Component A) of the TA which will seek to strengthen key government institutions' capacity to monitor the expansion of Mauritania's oil and gas sectors. Financial sustainability will be enhanced through this TA, which will support the Government's ability to attract and secure additional private sector investments in oil and gas developments. The proposed TA will support the Government's efforts to enhance the governance of the extractive sector, which include the compliance with the EITI, a global standard for transparency and accountability.

D. Role of Partners

62. Donor engagement in the gas sector in Mauritania has been limited and piecemeal due to the sector's limited history. The World Bank will use its convening power to help GoM scale up engagement of other donors in strategic activities with financial and technical support.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

63. Overall risk is rated substantial due to: (i) the history of gas development worldwide⁷; (ii) institutional

⁷ Based on decades of industry and policy experiences, it appears that the time between the first discoveries and the time of actual oil and gas shipment can be a lot lengthier than what governments might hope. During this lengthy process, many factors



capacity to manage the gas sector in Mauritania; (iii) the complexity of mega projects, which depend on several ministries and their capacity to coordinate effectively; and (iv) the fact that this TA supports the negotiations of a shared resource with Senegal. However, given the key risk mitigation measures in place, the government's commitment to ensuring that the gas sector develops successfully and contributes sustainably to the country's overall economic and sustainable growth, and the fact that the GTA gas developments are led by seasoned operators, the PDO is likely to be achieved and the long-term benefits of the proposed TA outweigh the risks identified. In the meantime, it is important to note that the final achievement of the PDO will be determined by GoM's take up and use of knowledge and technical opinions offered by this proposed TA.

Table 2: Risk Category

| Risk Category | Rating |
|---|--------------------|
| 1. Political and Governance | Substantial |
| 2. Macroeconomic | Substantial |
| 3. Sector Strategies and Policies | Low |
| 4. Technical Design of Project or Program | Low |
| 5. Institutional Capacity for Implementation and Sustainability | Substantial |
| 6. Fiduciary (Financial Management and Procurement) | Substantial |
| 7. Environment and Social | Substantial |
| 8. Stakeholders | Substantial |
| 9. Other Risks (gas development - technical) | Substantial |
| Overall | Substantial |

64. **Political and governance risks are rated as *substantial*.** Independent in 1960, Mauritania experienced a post-independence era characterized by military coups and internal governance crisis, which contributed little to enhancing the governance environment or shifting the low political equilibrium. Since 2009, Mauritania has been slowly recovering from its internal government crisis, and the leadership has achieved a period of sustained political stability. Based on this context, political sensitivity and potential local conflict of interests associated with the recent gas discoveries may pose certain challenges for smooth project implementation. In addition to managing expectations related to economic benefits derived from gas production, the management of the GTA field itself, which straddles the Senegal Northern maritime boundary with Mauritania, could present a particular challenge given the countries' history of cooperation but also of confrontation over natural resources. For this reason, identifying potential sources of grievances or governance weaknesses early on prior to the generation of gas revenues could contribute to mitigating conflicts and improving resource revenue allocations down the line. The GoM is aware of these risks at the early stage of exploration.
65. Mitigating measures for potential political and governance issues have been built into the project design in the form of strict coordination mechanisms, which: (i) provides strategic guidance for all gas project implementation; (ii) ensures coordination between the various ministries that need to be involved in gas sector decision-making to ensure its sustainable development; and (iii) includes reviewing of key issues and decision-making as needed.

and uncertainties, such as international oil and gas price, political stability, etc., can influence the eventual development of the project.



66. **Macroeconomic risks are rated *substantial***, since GTA development is expected to increase the country's dependency on fiscal revenues from natural resources, affecting its current account, savings rate, public spending and investment. Mitigating measures have been built into the project design in the form of capacity enhancement.
67. **Institutional capacity for implementation and sustainability risks are *substantial***. Responsibilities for project implementation falls under the PIU-MPEM. To ensure quality execution from the outset, key personnel with particular technical skills on petroleum engineering, LNG development projects, gas economy, project financing, taxation and gas law will be recruited to support the PIU-MPEM. In addition, a Manual of Administrative and Financial Procedures will be required to articulate how the planned activities will be undertaken by the PIU-MPEM. The World Bank task team will provide technical support during implementation, monitor operational progress, and provide fiduciary oversight and clearances.
68. **Fiduciary risks are *substantial***. While the SMHPM has a good record in implementing projects, it has little experience in complying with fiduciary procedures required by the World Bank financed projects. This risk is mitigated through robust interim and capacity transfer arrangements.
69. **Procurement risks are *high***. The preparation and implementation of the TA project in support of the development of LNG of GTA will be provided by the MPEM and the SMHPM. Until the PIU-MPEM is fully staffed and operational, the project will be implemented with the support of the SMHPM, which has competencies in the Mauritanian procurement procedures but is unfamiliar with the World Bank procedures, except the Director General. The SMHPM has a manual of procedures describing the procurement procedures but it does not cover the specificities of an IDA-funded project. The SMHPM uses the country standard documents for procurement. It does not have an internal complaints mechanism nor an archiving system (physical and/or electronic) nor does the MPEM. Based on this, the risks mitigation measures have been identified and are summarized in the "Appraisal Summary".
70. **Environmental and social risks are *substantial***. The TA itself will not have major environmental and social impacts. However, it does have eventual implications for addressing the environmental and social impacts related to oil and gas development. The Master Plan for Gas Development will ensure that broad environmental and social risks in the sector are identified and an assessment is commissioned to examine the readiness of the Mauritanian safeguards related regulatory framework to deal with current and future gas development projects. Mauritania legal framework includes an Environmental Code (Law N° 2000-045 of July 26, 2000) and two decrees defining how the Code should apply (decree N°94.2004 dated November 4, 2004 and decree N°2007-105 dated April 13, 2007). These legal dispositions are meant to cover Environmental Impact Assessments and related issues.
71. **Stakeholders' related risks are *substantial***. While the primary direct beneficiaries of the proposed project are government industries, it involves a broad body of stakeholders ranging from private gas operators to civil society and local community members, who may have diverse interpretations, expectations, and levels of interest in the proposed project. To mitigate risks from stakeholders as well as to engage them throughout the project's life cycle, an information and communication campaign will be carried out, with adequate and user-friendly tools, as part of Component B to inform citizens early on of: (i) the steps required to develop gas and LNG projects; (ii) the possibility of an extended period before production can commence and revenues can flow; and (iii) the possible impacts from the project in order to mitigate undue expectations.



72. **Other risks linked to the gas development projects (technical) themselves are *substantial*.**

- a. **E&P risks are *moderate*.** While gas exploration is by nature a risky activity until production begins and sometime even after, the risks related to the GTA development are rated as moderate.
- b. **Resource risks are *low*.** The appraisal campaign developed for GTA is not yet finalized but has already demonstrated that there should be substantially more gas than what is needed for the first phase of GTA LNG development.
- c. **Economic risks are *moderate to substantial*.** Because of the deep offshore location of GTA, the costs of its development could be substantially higher than expected if the long-term productivity of the wells is lower than expected and the number of producing wells is higher than currently anticipated. These risks are currently mitigated by the record low prevailing offshore drilling and construction prices. While there is no indication that such prices should experience any substantial rebound for now, this could occur in the form of future increases in gas prices.
- d. **Reputational risks are *substantial*.** The risk that the gas development projects do not progress as expected towards a FID or that they face delays would negatively impact the reputation of the World Bank. Success will depend on how the GoM takes up and uses the knowledge and opinions offered by the TA. The project component design is likely to contribute to mitigating these risks, in addition to close monitoring of project progress and perceptions in Mauritania.
- e. **Coordination risks with Senegal are *substantial*.** The Government of Senegal is receiving a similar technical assistance from the World Bank (IDA 6053-SN approved on May 26, 2017), which supports the development of GTA as well as other gas prospects that have been confirmed in the country. Both countries chose to develop activities separately but in a coordinated manner. There are indeed risks that disagreements over the opinions resulting from the third-party advice financed by the TA would arise. For example, the TA for the reservoir studies and related production studies would present some added difficulties should Senegal choose a different scope for its TA compared to Mauritania. Access to third party experts is enabled by the two technical assistance projects as a way to manage potential disagreements. However, the nature and content of the possible technical differences should be assessed before devising a conflict resolution / solution mechanism.

73. **Major climate risks and natural hazards that are likely to affect the country's sustainability include sea level rise, drought and extreme precipitation.** The coast of Mauritania is very dry at the edge of the Sahara Desert. Due to lack of urban planning and regulations, large numbers of people have settled on the flood plains. Coastal cities are important for subsistence fishing but increasingly susceptible to sea level rise. As the sea level rises and natural sand dune defenses crumble, the coast is at risk of permanent inundation, which will negatively impact population settlements, aquatic resources, crop productivity, coastal zones and biological diversity. Highly variable rainfall and arid climate in Mauritania results in acute droughts and limited agricultural production. Mauritania experienced severe droughts over the past 30 years, affecting thousands of people across the country. The decrease in rainfall over the years has resulted in adverse ecological, economic, social and cultural consequences. Food harvests and livestock have continuously shrunk due to decreasing and unpredictable rainfall. Mauritania experiences heavy rainfall events that often lead to flooding in urban and rural areas, mostly in August. Sewer systems are limited in major cities which worsens the situation. Mauritania is vulnerable to flooding, salt intrusion and loss of wetland biodiversity. From the energy and extractives perspective, changes in climate patterns and climate risks such as floods and sea-level rise may potentially render energy supply and fuel storage vulnerable. The TA on supporting gas project negotiations and enhancing institutional capacities



in the country aims to enhance the capacity of the GoM to manage its hydrocarbons sector for improved development outcomes. The achievement of the project development objective would enable the country to diversify its energy mix in a sustainable manner, and with the production and potential increasing utilization of gas, contribute to improving energy efficiency and environmental benefits.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

74. The future economic and financial benefits of GTA cannot be attributed to the proposed TA, nor can they be quantified since too many external factors would have to be considered. The economic analysis for the proposed TA can only be conducted on the basis of “with TA vs. without TA” considerations. In this context, the main benefits of the proposed TA are due to the fact that Mauritania is new to world-scale gas developments, such as GTA, which will represent the largest private investments ever made in the country. The economic benefits of the project would thus derive from improved decision-making with respect to the development of the gas reserves. It is not possible to quantify the increased likelihood that an optimal decision will be reached as a result of this project, nor to quantify the economic benefits that would accrue from such a decision as there are too many unknowns at this stage in terms of the quantity and quality of the reserves, the costs of the various technology choices, and the international price of oil and gas.
75. However, experience from other natural resource extraction projects indicates that there are a number of ways in which the economy may be affected by an LNG project. The construction phase may generate substantial direct employment, but much of this will be of skilled labor, which has to be imported (this is especially true for an off-shore project). The construction phase is of limited duration, and the temporary injection of demand this brings about will not generate long-term jobs in the local economy. Although the operational phase of the project would be expected to last for many years, LNG production is highly capital intensive and generates few permanent direct jobs. The construction and operation of large-scale plants requires other inputs, some of which can be provided by the local economy. Many of these are in the service sector (transport, catering, etc.) and have the potential to create substantial indirect employment opportunities. Although many of these jobs do not demand high skill levels, there is usually a premium for workers who are particularly well-qualified in their particular sector. Economies with shortages of such workers often see a rapid increase in wages for the best qualified, leading to higher wage differentials within occupations.
76. In addition to these direct and indirect demand effects, there will be induced effects as the impact of increased wages and employment creates higher consumption. Where there are bottlenecks in local supply, imports of such goods are likely to increase. House prices too will come under pressure from both expatriate contract workers and local employment created by the rapid build-up of the hydrocarbons sector. Where the gas discoveries are sufficiently substantial for the Government to decide to divert some supply to domestic production (for power generation or other industrial uses), further important impacts will be felt. Both power and local industry would require some construction along with its associated local demand. The creation of a gas-to-power link should also result in increased power supply, thus reducing the cost of outages and reliance on HFO. The use of domestically produced gas in the power generation sector not only reduces pollution from combustion but can also provide some reduction in risks from volatility in international oil prices.



77. Another channel through which gas production will impact the economy is fiscal revenue flowing from the gas producers. The Government will have a number of options on how to use this additional tax revenue, ranging from saving the revenue in a resource fund, spending some or all of the revenue, or distributing the revenue through tax reductions or welfare payments. The uncertainty over the magnitude of the future revenue stream combined with the likelihood that it will vary substantially over time as a result of variation in production over time, progressive variation in the Government's share in the PSC profits in relation to levels of production, variation in international oil and gas prices, and variation in CT payments means that the Government will have to make an outline plan and then gradually adjust it over time as circumstances change. The needs of the country for infrastructure investment to raise productivity and for social investment in health and education suggest that these will be priority areas for the first years of hydrocarbon revenues.
78. While a financial analysis of the proposed TA would not be relevant, the analysis developed in Annex 8 is meant to provide a preliminary understanding of the broad range of revenues that GoM could expect from the development of the GTA discovery. It is important to underline that these calculations are not meant to reflect the operators or government views, but to confirm that the gas project developments happening off-shore Mauritania have the potential to be transformational for the country, hence the rationale for the proposed World Bank engagement. The latter will build on several decades of World Bank assistance in the extractive industries in Africa, as well as on the success stories and lessons learnt from decades of industry practice. The proposed technical assistance also builds on an in-depth knowledge of the Mauritania extractives sector that the World Bank has developed since 1999 through the Mining Sector Capacity Building Projects (P057875, P078383 and P124859, approved 1999, 2003 and 2011 respectively), Mauritania Minerals & Petroleum Institutional Capacity Building (P110923 approved 2008) and support to EITI implementation (P122367 and P150123 approved in 2010 and 2015 respectively).

B. Technical

79. Building on the lessons learnt from international experience (see Annex 7), the proposed TA has been designed to provide the GoM with all the support needed to drive negotiations towards final investment decisions for the GTA project. It comprises the timely review of the various studies and agreements to be developed by the private operators, while avoiding any duplication of work done by the operators since this would not only bring no value, but would also be costly and time consuming. The detailed terms of reference (ToR) prepared to tender the activities financed under this TA provide a clear definition of the work that needs to be done by the set of consultants who will be supporting government efforts to negotiate. There is also no duplication of work in the various consultancies planned under this project.
80. The training activities will be based on an institutional diagnostic, and will be tailored based on existing capacity and future industry needs. The oil and gas operators and service providers will be closely associated to the diagnostic and the design of the training program, since there are ideally positioned to define future industry needs and will be themselves developing substantial effort to build capacity in the nascent gas sector.
81. Stakeholder's engagement strategy and the communication campaign are built on best available practices.



C. Financial Management

82. The objective of the assessment was to determine whether the Hydrocarbons Directorate of the MPEM has acceptable FM arrangements in place that satisfy the World Bank's Policy and Directive for IPF. These arrangements would ensure that the implementing entity: (i) uses project funds only for the intended purposes in an efficient and economical way; (ii) prepares accurate and reliable accounts as well as timely periodic financial reports; (iii) safeguards assets of the project; and (iv) has acceptable auditing arrangements. The FM assessment was carried out in accordance with requirements under World Bank's IPF Policy and Directive as well as FM manual for IPF, issued on February 4, 2015 and effective from March 1, 2010.
83. The FM system of the MPEM had the following capacity constraints: (i) lack of sufficient FM staff; (ii) weak internal control and; (iii) lack of adequate accounting and reporting system. As a result, the MPEM will be required to implement the following action under the PIU that will be established under its responsibility:
- (i) set up an acceptable FM arrangement including the preparation and adoption of the manual of administrative and financial procedures;
 - (ii) recruit a FM officer, an internal auditor and an external auditor with qualification and experience satisfactory to the World Bank; and
 - (iii) set up an adequate accounting information and reporting system.
84. The conclusion of the assessment is that the FM arrangements of the MPEM are not adequate to manage the project and do not meet the World Bank's minimum requirements under World Bank IPF Policy and Directive. The overall risk for the project is rated *substantial*.
85. Risks posed by the inadequacy of the FM arrangements of the MPEM, will be mainly mitigated during a transitional period by the PIU-MPEM with the support of SMHPM in terms of administrative, human and financial resources, until the PIU with capacity acceptable to the World Bank is established at the MPEM. SMHPM has good financial arrangements in place, even if it has no experience in managing a World Bank-funded project. The SMHPM's FM system has been assessed and found to be adequate to handle the project's activities until the PIU is established.
86. With regard to SMHPM:
- (i) the FM team includes, a financial director, and six (6) accountants and an internal auditor, all have required qualifications and experience to manage the project's FM activities during the transition. Specific training on the World Bank's FM procedures will be provided to them to be fully operational from the beginning of the project implementation.
 - (ii) the existing administrative and financial manual of procedures is acceptable. However, before the authorized opening of a designated account (DA), a few adjustments will be made under a form of an addendum to the manual to include some World Bank FM specificities;
 - (iii) the accounting system is operational and allows segregate accounting for the project activities. However, to compensate the lack of experience in managing a World Bank funded project, a SMHPM fiduciary team will be trained to generate the information and reports that World Bank-financed projects are requested to produce.
87. There is no condition for effectiveness. However, before the opening of a DA, SMHPM should develop



an addendum to the FM manual to include some World Bank FM specificities. The current FM arrangements within SMHPM are acceptable and will be maintained and a FM officer of the SMHPM with skills and experience satisfactory to the World Bank will be designated to perform FM tasks for this program, until the new PIU is established and fully effective. Prior to the transfer of the fiduciary responsibilities to the PIU, the World Bank FM team will assess the PIU capacity to effectively handle the project and the adequacy of the FM arrangements.

D. Procurement

88. Based on the Project Procurement Strategy for Development (PPSD), the proposed project will be carried out in accordance with the World Bank's "Procurement Regulation for IPF Borrowers: Procurement in Investment Financing Projects for Goods, Works, Non-Consulting Services and Consulting Services" published by the World Bank on July 1, 2016.
89. The project will be implemented under the responsibility of the MPEM, with fiduciary and technical support from SMHPM at project start. The project implementation team will include a procurement specialist who will be appointed based on terms of references satisfactory to IDA. In addition, "Guidelines on preventing and Combating Fraud and Corruption in projects Financed by IBRD and IDA Credits and Grants", dated October 2006 and revised in January 2011 and as of July 1, 2016 will apply.
90. Until the PIU anchored within the MPEM is fully and satisfactorily staffed, the procurement of all activities will be handled with the following measures, which are expected to mitigate Substantial Procurement risks.
 - The chief contract officer of SMHPM will handle all procurement activities until the MPEM PIU is fully staffed and operational, including with a procurement specialist, with a record of experience satisfactory to IDA;
 - A qualified procurement commission will provide all technical and fiduciary analysis needed to underpin procurement activities;
 - Training will be delivered to both SMHPM and MPEM PIU on the World Bank's New Procurement Framework, and the implementation of the PSD;
 - The Manual of Administrative and Financial Procedures prepared for MPEM PIU will include provisions that apply to procurement;
 - An annex will be added to SMHPM Manual of Administrative and Financial Procedures to clarify that the World Bank procurement rules applies to all procurement done by SMHPM until the MPEM PIU is in place;
 - An archiving system satisfactory to IDA will be adopted.

E. Social and Environmental (including Safeguards)

91. The proposed TA precedes the preparation of feasibility and environmental and social studies, thus exerting no environmental and social safeguards related risks to the communities or to the country at large. However, the TA has eventual implications for environmental and social impacts and thus has an Environmental Assessment (EA) rating of Category B. To take preventive measures, a Gas Master Plan will be prepared after the Government approves the pre-FEED study developed for GTA. The ToR will ensure that the plan addresses broad environmental and social risks in the sector. Once the Master Plan is developed and if a FID is made during the life time of the TA and based on the types of activities



planned, the Government will prepare relevant safeguards instruments as need be. In addition, the category might be changed to reflect the potential impacts. To prepare the country and the PIU-MPEM for future gas development projects, an assessment will also be commissioned to examine the readiness of the Mauritanian safeguards related to the regulatory framework applicable to gas development projects. Finally, given that OP/BP 4.01 is triggered, the World Bank team will work with the Government to provide with legal and technical advice on good international practice regarding environmental and social management in the gas sector.

F. World Bank Grievance Redress

92. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

G. Climate Co-Benefits Assessment

93. While the project cannot be assigned direct climate co-benefits, it has potential for increasing climate co-benefits. Sub-Component A.1. Institutional Analysis, Training and Capacity Building and Sub-Component A.2. Technical Support for Effective Negotiation of the GTA Agreements are two project Sub-Components with potential to address climate change risks by enhancing the intent to address vulnerability.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY : Mauritania

Supporting Gas Project Negotiations and Enhancing Institutional Capacities

Project Development Objectives

To support the government capacity to drive negotiation towards final investment decision, and lay the foundations for the gas sector's contribution to the economy through enhanced legal and regulatory frameworks and capacity building.

Project Development Objective Indicators

| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|--|------|-----------------|----------|------------|-----------|-----------------------------------|------------------------------------|
| Name: Institutional analysis conducted and results publicly disseminated | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Institutional analysis of key ministries and SMHPM conducted by international experts recruited by the Government, with findings of the diagnostic being publicly available. | | | | | | | |
| Name: Field Development Plan and Development Concept for Grand Tortue Ahmeyim (GTA) validated and determined | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |



| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|--|------|-----------------|----------|------------|-----------|-----------------------------------|------------------------------------|
| Description: Development concept proposed by the private operator is validated by the Government, and eventually determined by the private operator and the Government. | | | | | | | |
| Name: Intergovernmental Cooperation Agreement and Unitization Agreement for the GTA field developed and approved | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Unitization agreement for jointly developing the GTA field with Senegal is developed and approved by the Government using technical expertise provided by international experts. | | | | | | | |
| Name: Institutional capacity enhanced and necessary technical equipment installed within MPEM and SMHPM | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Institutional capacity enhanced and necessary technical equipment installed within MPEM and SMHPM. | | | | | | | |
| Name: Local content strategy for the hydrocarbons sector developed | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Overarching local content strategy for the hydrocarbons sector developed for the Government using technical expertise recruited by the Government. | | | | | | | |



Intermediate Results Indicators

| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|---|------|-----------------|----------|------------|-----------|-----------------------------------|------------------------------------|
| Name: Instrumental staff members recruited to fulfill technical and fiduciary capacities | | Number | 0.00 | 10.00 | Once | Status Reports; Completion Report | MPEM |
| Description: Experts specialize in petroleum engineering, LNG development projects, gas economy, project financing, taxation and gas law, strategic/financial advisor(s), as well as geoscience and reservoir experts/coaches recruited to support the technical and fiduciary capacities of MPEM and SMHPM. | | | | | | | |
| Name: Training sessions conducted to build institutional capacity | | Number | 0.00 | 20.00 | Annual | Status Reports; Completion Report | MPEM |
| High level training sessions conducted for gas sector policy makers including high management of relevant ministries and parliamentarians | | Number | 0.00 | 10.00 | Annual | Status Reports; Completion Report | MPEM |
| In-depth training sessions conducted for staff of MPEM, SMHPM and key ministries directly involved in gas project negotiations and implementation | | Number | 0.00 | 10.00 | Annual | Status Reports; Completion Report | MPEM |



| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|--|------|-----------------|----------|------------|-----------|-----------------------------------|------------------------------------|
| Number of participants in the high level training sessions | | Number | 0.00 | 15.00 | Annual | Status Reports; Completion Report | MPEM |
| Number of female participants in the high level training sessions | | Number | 0.00 | 5.00 | Annual | Status Reports; Completion Report | MPEM |
| Number of participants in the in-depth training sessions | | Number | 0.00 | 35.00 | Annual | Status Reports; Completion Report | MPEM |
| Number of female participants in the in-depth training sessions | | Number | 0.00 | 14.00 | Annual | Status Reports; Completion Report | MPEM |
| Description: Training institutions recruited by the Government that specializes in providing trainings in the extractives industry conduct tailored trainings to build institutional capacities in key ministries and agencies. | | | | | | | |
| Name: Unitized delineation and estimation of the transnational gas resource area produced | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Unitized delineation and estimation of the transnational gas resource area regarding the GTA reservoir produced by international experts recruited by the Government. | | | | | | | |
| Name: Intergovernmental Cooperation Agreement | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |



| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|--|------|-----------------|----------|------------|-----------|-----------------------------------|------------------------------------|
| developed and cleared | | | | | | | |
| Description: Intergovernmental Cooperation Agreement for joint development of GTA reservoir with Senegal developed by the Government using technical expertise provided by international experts, and the final agreement approved by the Government. | | | | | | | |
| Name: Commercialization agreements for GTA LNG developed | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: Commercialization agreements for GTA reservoir developed by international experts recruited by the Government. | | | | | | | |
| Name: Policy, strategy and action plan for the gas sector updated | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: After adoption of GTA field development plan, implementation schedule, policy, strategy and action plan, including gas revenue management policy, for the gas sector updated by the technical experts recruited by the Government. | | | | | | | |
| Name: Oil, Gas and Electricity Master Plan | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |
| Description: A Master Plan that helps articulate how offshore gas development could benefit domestic power generation and local industries. | | | | | | | |
| Name: Communications strategy and information | | Yes/No | N | Y | Once | Status Reports; Completion Report | MPEM |



| Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source/Methodology | Responsibility for Data Collection |
|---|------|-----------------|----------|------------|-----------|--|------------------------------------|
| campaign strategy developed | | | | | | | |
| Description: Communications strategy and information campaign strategy aimed at engaging all stakeholders involved in GTA gas development projects developed by international experts recruited by the Government. | | | | | | | |
| Name: Citizen engagement survey conducted | | Number | 0.00 | 2.00 | Twice | Status Reports; Completion Report; Survey Reports | MPEM |
| Separate focus group discussions for female citizens conducted | | Number | 0.00 | 2.00 | Twice | Status Reports; Completion Report; Focus Group Reports | MPEM |
| Description: Communications and citizen engagement experts recruited by the Government develop methodology and conduct citizen engagement surveys. | | | | | | | |



Target Values

Project Development Objective Indicators

| Indicator Name | Baseline | End Target |
|--|----------|------------|
| Institutional analysis conducted and results publicly disseminated | N | Y |
| Field Development Plan and Development Concept for Grand Tortue Ahmeyim (GTA) validated and determined | N | Y |
| Intergovernmental Cooperation Agreement and Unitization Agreement for the GTA field developed and approved | N | Y |
| Institutional capacity enhanced and necessary technical equipment installed within MPEM and SMHPM | N | Y |
| Local content strategy for the hydrocarbons sector developed | N | Y |

Intermediate Results Indicators

| Indicator Name | Baseline | End Target |
|---|----------|------------|
| Instrumental staff members recruited to fulfill technical and fiduciary capacities | 0.00 | 10.00 |
| Training sessions conducted to build institutional capacity | 0.00 | 20.00 |
| High level training sessions conducted for gas sector policy makers including high management of relevant ministries and parliamentarians | 0.00 | 10.00 |
| In-depth training sessions conducted for staff of MPEM, SMHPM and key ministries directly involved in gas project negotiations and implementation | 0.00 | 10.00 |



| Indicator Name | Baseline | End Target |
|---|----------|------------|
| Number of participants in the high level training sessions | 0.00 | 15.00 |
| Number of female participants in the high level training sessions | 0.00 | 5.00 |
| Number of participants in the in-depth training sessions | 0.00 | 35.00 |
| Number of female participants in the in-depth training sessions | 0.00 | 14.00 |
| Unitized delineation and estimation of the transnational gas resource area produced | N | Y |
| Intergovernmental Cooperation Agreement developed and cleared | N | Y |
| Commercialization agreements for GTA LNG developed | N | Y |
| Policy, strategy and action plan for the gas sector updated | N | Y |
| Oil, Gas and Electricity Master Plan | N | Y |
| Communications strategy and information campaign strategy developed | N | Y |
| Citizen engagement survey conducted | 0.00 | 2.00 |
| Separate focus group discussions for female citizens conducted | 0.00 | 2.00 |



ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY : Mauritania

Supporting Gas Project Negotiations and Enhancing Institutional Capacities

1. The proposed TA has three components – (Component A) Capacity building and technical support to the GTA project negotiations, (Component B) Strengthening of the institutional and regulatory framework, and (Component C) Project management and coordination – which will be implemented during a five-year timeframe. During the first 18 months, implementation will be focused on the most urgent activities for which the ToR have already been completed. From mid-term, all other activities will start implementation.
2. This annex provides a detailed project description with a focus on the activities that will be implemented in the first 18 months.
3. **Component A - Capacity building and technical support for the GTA negotiations (US\$16 million equivalent).** GTA is the first world-class discovery made in Mauritania with a potential for gas production and revenue 30 times bigger than any other discoveries made in the country before. The gas resource is also dramatically bigger than what could be absorbed domestically or regionally for gas to power or other local industry needs. This puts Mauritania as a brand-new actor in the gas export arena, and requires that the country develops a new set of knowledge in engaging with gas sector operators on various agreements needed for FID. While the immediate objective of this TA is to support the GoM to progress towards negotiation of GTA and other gas prospects that could be developed in the future, it seeks to build in-house capacity for the Government to sustain long-term development in the gas sector. Through this component, the proposed project aims to identify the needs for capacity building, develop and implement tailored training programs to build capacity and acquire the technical resources required for the effective negotiation, development and operation of the GTA, and other gas prospects. The strengthening of capacity and technical resources aims at ensuring the sustainable development of gas resources beyond the negotiation phase of the GTA. In contrast, support for the negotiations is likely to be more limited in time, and to rely on independent third-party expertise will ensure that the Government has the necessary resources to effectively develop or validate the various agreements required under the FID. Specific activities to be implemented under this component include the following sub-components:
4. **Sub-Component A.1. Institutional analysis, training and capacity building (US\$8 million).** Through this sub-component, the proposed project aims to identify the needs for capacity building develop and implement training and technical resource buildup programs. During the first 18 months of project implementation, priorities will be given to the following activities.
 - a. **Institutional analysis:** This activity is intended to provide a detailed analysis of the operations, policies and internal procedures of government institutions involved in gas E&P and in revenue management, taking into consideration international best practices. Targeted institutions will include line ministries (Energy, Economy, Finance, Transport, Infrastructure and Environment) and the SMHPM.
 - b. **Training:** This activity is intended to provide high-level training to gas policy makers (including line ministers, parliamentarians and SMHPM) and in-depth training of the staff of the SMHPM, the Project Implementation Unit (PIU) anchored in the MPEM, and the ministries directly involved in project negotiations and their implementation. Both trainings will seek to include as much as possible female



professionals and stakeholders involved in the sector. The high-level training aims at facilitating the decision-making process on the legal provisions necessary for the finalization of the gas legal framework, the ratification of an ICA, the adoption of an Unitisation Agreement, the validation of gas development concepts, etc. In addition to the strategic training of decision-makers, in-depth training - based on industry needs, which will similarly seek to include as many female experts as possible - will be offered to senior management and executives of key institutions involved in resource development and management. This in-depth training will be subdivided into two categories:

- The first category will provide tailored training rapidly to the teams working on the project (negotiating team, GTA project team, etc.) considering the project schedule and its specific needs; and
- The second category will focus on strengthening the capacities (in terms of training as well as staffing) of the intervening institutions, including the Ministry of Environment, based on the results of the institutional diagnosis.

c. **Recruitment of key personnel and development of a HR retention policy:** This activity is meant to support the Government's efforts to mobilize additional local expertise in, but not limited to, reservoir engineering, gas and LNG project development, and petroleum fiscal modelling. These experts will be recruited as consultants to reinforce the capacities the MPEM and the SMHPM.

- i. Geologist(s) and reservoir engineer(s) will provide technical opinions on gas and condensate resource and reserves, as well as on the technical grounds on which the GTA reservoir assessment and underpinning Unitization Agreement will be made. They will also provide technical opinions on the appraisal of GTA and the potential of other gas prospects not yet appraised. Further, they will review and provide inputs to the SMHPM and the MPEM on the gas resource in place and recoverable gas reserves. Finally, they will peer mentor and train selected staff within the SMHPM and the MPEM.
- ii. Gas and LNG project development expert(s) will provide independent opinion on the technical and environmental risks associated with GTA development, as well as the SMHPM and the MPEM's readiness to mitigate and handle potential HSE issues. They will also review and provide opinions on the cost and duration of the gas and LNG project development as well as the choice of equipment, procedures and methods.
- iii. Petroleum fiscal modelling expert will review and provide opinions on the petroleum fiscal analysis developed by all parties (operators, international firms advising the government, etc. They will also provide peer mentoring and training to the MPEM and the SMHPM on tax and royalty regimes, tax consolidation and incremental value, bonuses and abandonments, PSC-based fiscal regimes, PSC modelling, and PSC regime variation.

d. **Strengthening of technical resources:** This activity aims at strengthening key institutions' capacity for the sustainable management of the country's hydrocarbon resources, in particular the MPEM and the SMHPM. Following an assessment of the short and medium-term needs; equipment, tools and facilities (modeling platform, a document center (including a drilling core storage facility) for technical data, an integrated information and management system ERP) that meet the required specifications will be procured through the project. This assessment, which will consider the project timetable, will ensure that institutions such as the SMHPM are not over-equipped or under-equipped in relation to short- and medium-term needs.

5. ***Sub-Component A.2. Technical support for effective negotiation of the GTA Agreements (US\$8 million).***



There is no typical timeframe for the negotiation of an LNG projects. Based on industry experience, the time elapsing between the first discoveries and actual shipment can take a few years or a few decades. While there are factors that Government cannot influence, many negotiations have been lengthier than what was initially anticipated because of a lack of capacity to make informed decisions in a timely manner. Importantly, the decisions made through the adoption of a project concept developed by private operators are irreversible in most respects and must be fully understood by the Government at an early stage in the negotiations. These decisions define the cost and profitability of the project for all parties, as well as the revenues the Government may derive from the project. The choice of a concept may also produce irreversible consequences for gas to domestic power generation, employment opportunities, etc. To avoid potentially negative or uninformed outcomes, this project component aims to support the GoM by providing it with an understanding of the feasibility of project concepts, as well as their social, economic, and fiscal impacts. This project component thus aims to provide GoM with world-class expertise so that key decision-makers can work together flawlessly with a thorough understanding of the milestones and conditions for progress toward an FID.

- a. **Reservoir engineering.** The negotiations of gas and LNG projects require solid reservoir engineering expertise from the lead operators, and an excellent capacity of the Government to clear operators' requirements in a timely manner. Under the proposed TA, the project will support GoM's efforts to mobilize third party expertise as needed to engage in a timely manner with the operators. The GoM (through the SMHPM) will be required to form a technical opinion on the cross-border gas resource assessment of the GTA, which has been developed by the lead operator. Similarly, GoM will need to rely on good reservoir engineering capacity to provide clearance on the methodology proposed for delimitating the gas resource that will be subject to a unitization agreement and joint development, as well as the inter-governmental cooperation agreement; and propose amendment if needed. Finally, it will be instrumental for the GoM to rely on good reservoir engineering capacity to review and clear the unitization agreement in a timely manner.
- b. **Project development and construction engineering.** Under this activity, the project will help GoM mobilize the expertise needed to approve the concept for the development of GTA, future field development plans, and engineering studies. Clearing an LNG concept development can be particularly challenging for governments. While it is the responsibility and expertise of the lead operators to conduct extensive and thorough analytical work, the governments will need to feel the ownership and fully endorse the concept in order to clear it. When market conditions are challenging, as is currently the case, commercially viable concepts can be limited to low cost options with narrower benefits for host countries than what higher gas market price trends allow. In such instances, it is important for governments to get world class expertise needed to clear a concept on time and with the comfort needed to reassure stakeholders it is the best for all parties. This generally reassures all stakeholders that private sector development is - aligned with public interests. Under this project activity, the World Bank will also support the GoM's effort to review all the technical studies, developed by the lead operator to screen potential concepts for gas production, treatment and liquefaction and identify the optimal concept for the GTA development. Such studies could potentially offer amendments to the proposed concept for GTA gas liquefaction project including the gas pipelines for the supply of the domestic market. Finally, the World Bank will support the GoM's effort to review all other technical work needed for the clearance by the Mauritanian authorities and SMHPM of the studies (pre-FEED, FEED) and agreements needed for a final decision on the project concept.



- c. **Legal, fiscal, and regulatory framework.** Under this activity, the project will help the GoM mobilize the legal and fiscal expertise needed to progress toward FID for the GTA. The World Bank will assist GoM to finalize and clear the ICA between Mauritania and Senegal, as well as the principles of the Unitization Agreement. To engage constructively and proactively with the operators towards a FID, the GoM will also benefit from legal and fiscal advice on the LNG project structure to clarify whether the LNG facilities are within the limits of the PSC's or outside these limits. Given the size of the investments needed for the liquefaction, it is essential to ensure that the operator can have full visibility and the assurance needed to make their investments. In the context of gas and LNG development, GoM might also need to develop and adopt in a timely manner additional laws, regulations and agreements, inter-alia operating agreements, financing agreements and marketing agreements. Finally, the World Bank will support GoM's efforts to assess the possible major legal risks which could affect SMHPM and the Republic of Mauritania as part of the new gas development.
 - d. **Project financing.** This activity will expedite the GoM's efforts to assess the project financing structure of the upstream and liquefaction facility as well as the underlying project financing principles that would apply for the various project components (field development, pipelines and liquefaction facilities). It will also support the GoM's efforts to evaluate the potential impact of different financing options for the development project, based on the main technical choices to be made regarding the liquefaction facilities. The GoM will also need to calculate its revenue share (i.e. LNG share plus taxation on profit) based on the various potential technical schemes for similar LNG sale profiles and prices assumptions and to get specialized advice on the financing of the National Company's share in the project, both for the field and upstream facilities as well as for the LNG facilities.
 - e. **Gas and LNG Marketing.** Under this activity, the project will support GoM's effort to be attuned to world gas and LNG markets. Support will also be provided to ensure that the GoM can benefit from a thorough understanding of LNG marketing strategies that could apply to GTA LNG project (one single seller or different sellers; one single market or a variety of markets; split between long and short term; a split between F.O.B and CIF, etc.), and how the Government's and SMHPM's LNG shares (resulting from the PSC) could be marketed. Finally, marketing advisors would help GoM assess options for domestic use of gas (power generation, fertilizer, etc).
6. **Component B – Strengthening of the institutional and regulatory framework (US\$3 million equivalent).** Exploration has been conducted for a long time in Mauritania, and GoM has experience in engaging with gas operators. While the immediate objective of this TA is to support the GoM to progress towards negotiations of GTA, at a higher level, it seeks to build in-house capacity for the Government to sustain long term development in the gas sector. Through this component, the proposed project aims to assist the GoM in updating its policy and strategy for the development of the gas sector. During the first 18 months, the specific activities to be implemented under this component are:
- a. **Policy, strategy and action plan for the gas sector:** This activity aims to support the efforts of the GoM in updating its gas policy once the concept for the development of GTA and its implementation schedule are adopted. In this context, options for managing the gas sector (both upstream and downstream) and for determining the use of future gas production (gas for power and other uses) may be considered. The gas revenue management policy will be reviewed and updated as needed. This component will take into account all gas resources in the country.



- b. **Master Plan:** All work required to develop or update the sectorial policy and strategy, or to ensure its implementation, will be funded under this activity. This includes the development of a master plan that will help articulate how offshore gas development could benefit domestic power generation and local industries. The Master Plan will be developed after the GTA Pre-FEED study is approved by the Government. It will among other things include a gas-to-power development strategy and an assessment of the social and environmental risks associated with the project development concept, as well as the readiness of Mauritania safeguards designed to mitigate these risks.
- c. **Local content strategy:** All work required to develop the local content strategy for the hydrocarbons sector will be funded through this activity. This will include a diagnosis of industries that exist or could be developed upstream or downstream of the GTA project with the goal of helping the Government determine an adequate level of local content. A strategy and an implementation plan will also be developed to clarify how domestic investors could gradually win service, supply and works contracts associated with the gas development projects. This local content strategy will also develop a M&E framework that will measure progress on the participation of women (workers and business owners) in the hydrocarbons sector workforce, particularly those associated with the gas projects.
- d. **Strategy for the involvement of stakeholders in the gas sector:** A lack of planned and effective stakeholder engagement strategy has the potential to negatively impact the development of gas resources and its contributions to the country's economic growth, social and environmental development. Therefore, the design and implementation of a strategy for stakeholder involvement is an essential element of ensuring the economic, social and environmental sustainability of gas development projects in Mauritania. An effective strategy is needed to engage with all relevant stakeholders from citizens, to civil society, as well as the public and private sector, who will be involved in the different stages of gas development projects in Mauritania. In addition, the nature of the gas resources (off-shore reservoirs, and shared gas resources with Senegal) as well as how they will be developed by the operators and national companies offers a set of complex challenges and opportunities in terms of economic, social and environmental development as well as governance frameworks. This component will be implemented in close coordination with the private sector, with the main objective of mobilizing international expertise from third parties with a view to developing a communications strategy and an information campaign aimed at engaging all the actors in the sector in an efficient and lasting way on issues relating to the gas development projects at GTA. Under this activity, the World Bank will help the GoM develop:
 - i. An audit of current communications options and mechanisms and institutional capacities needed to communicate, inform, and engage with key target audiences across relevant government agencies.
 - ii. A need assessment outlining priority communications mechanisms and institutional capacities that will need to be put in place across as well as within relevant government actors.
 - iii. A communications strategy and implementation roadmap based on a stakeholders mapping meant to identify key audiences for GoM communication around gas and LNG, as well as a survey of key stakeholders and target audiences' opinions, perceptions, interests and communication preferences around gas and LNG development issues.
 - iv. A stakeholders' engagement campaign to support the development of an information and engagement campaign, based on the communication strategy.
 - v. Capacity-building for gas sector development communications through training program for key GoM staff who will play a role in the implementation of the communication strategy and



engagement campaign.

7. **Component C - Project management and coordination (US\$1 million equivalent).** The project will provide targeted support to the project management and coordination in the amount of US\$1 million, which will be used to finance the core project execution team and operating costs that are essential for effective project implementation. During the first 18 months of the project, the World Bank will support the Government's efforts to mobilize fiduciary expertise needed for PIU-MPEM, update SMHPM operation manual, and develop a Manual of Administrative and Financial Procedures for PIU-MPEM.
8. In addition to the US\$1.2 million cost incurred until procurement under the World Bank TA starts, the GoM will be providing additional in-kind contribution in the amount of approximately US\$0.5 million during project implementation. This will include office space and utilities, as well as administrative team.



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY : Mauritania

Supporting Gas Project Negotiations and Enhancing Institutional Capacities

Project Institutional and Implementation Arrangements

1. The project's institutional and implementation arrangements are described in Section IV of this project document.

Financial Management

2. The project's FM and disbursement arrangements will consist of the following elements:

2.1. Internal Control and Internal Auditing arrangements:

2.1.1. Internal control arrangements

The Administrative and Accounting Procedures Manual will be prepared and adopted by the Recipient within six months after the effectiveness of the project. It will provide a clear description of the approval and authorization processes in respect of the rule of segregation of duties.

2.1.2. Internal auditing arrangements

The MPEM has an internal audit unit called "Internal Inspectorate of the Ministry". This unit has limited capacity to carry out the internal audit of the project's activities. An internal auditor will be recruited within six months after the effectiveness of the project to work with close collaboration with the Inspectorate with focus on the project's activities.

2.2. Accounting arrangements

SMHPM has a multi-entities computerized accounting system, which is adequate to take into account the project's activities. The MPEM-PIU will set up an adequate accounting information and reporting system within six months after the effectiveness of the project acceptable to the World Bank.

The current accounting standards in use in Mauritania for ongoing World Bank-financed projects will be applicable. Project accounts will be maintained on an accrual basis, supported with appropriate records and procedures to track commitments and to safeguard assets. Annual financial statements will be prepared.

Accounting staffing levels at MPEM are generally adequate but not versed in the World Bank FM procedures. A qualified FM officer with relevant experiences in handling World Bank financed project operations will be recruited within three months after the effectiveness of the project.

2.3. Budgeting arrangements



The project coordination unit will prepare an annual budget based on agreed annual work program and annual procurement plan. The budget will be adopted by the Program Steering Committee before the beginning of the year and its execution will be monitored on a quarterly basis. Annual draft budgets will be submitted to the World Bank's non-objection. Periodic reports of budget monitoring and variance analysis will be prepared by the FM team. More details will be provided in the Manual of Administrative and Financial Procedures to be prepared within six months of effectiveness.

2.4. Financial reporting arrangements

The MPEM-PIU will prepare an IFR each quarter for the project in form and content satisfactory to the World Bank. These IFRs will be submitted to the World Bank within 45 days after the end of the quarter to which they relate. They will be prepared based on the templated agreed during project negotiations. The PIU will also prepare Project' Financial Statements in compliance with World Bank requirements.

2.5. External auditing arrangements

The MPEM PIU will submit to the World Bank Audited Financial Statements for the project within six months after the end of each fiscal year end. The audit report should reflect all the activities of the project. An external auditor with qualifications satisfactory to the World Bank will be appointed within six months after the effectiveness of the project to conduct annual audits of the project financial statements. Audit reports are due within six months following the end of the year. The first audit will include special audit opinion of expenditures occurred during the transition period. The external audit's ToR will be agreed with the World Bank during negotiations.

2.6. Flow of funds and disbursement and banking arrangements

2.6.1. Disbursement arrangements

The following disbursement methods may be used under the project: reimbursement, advance, direct payment and special commitment as specified in the Disbursement Letter and in accordance with the World Bank Disbursement Guidelines for Projects, dated February 2017. Disbursements would be transactions-based whereby withdrawal applications will be supported with Statement of Expenditures (SOE).

All replenishments or reimbursement applications will be fully documented. Documentation will be retained at Hydrocarbons Directorate of MPEM (PIU) for review by World Bank staff and auditors. The Disbursement Letter will provide details of the disbursement methods, required documentation, DA ceiling and minimum application size.

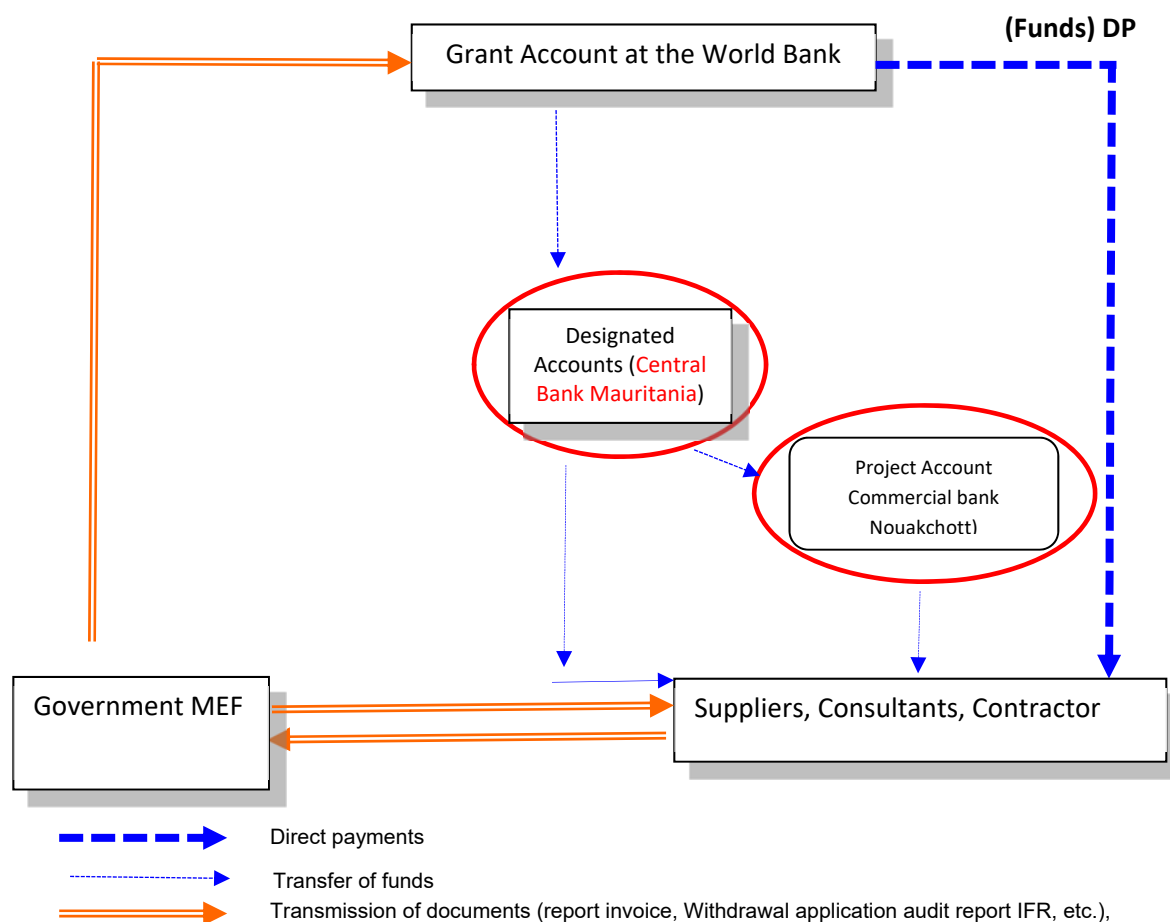
2.6.2. Banking arrangements

A DA for the project will be opened in the Central Bank of Mauritania and a project account will be opened in a commercial Bank in Nouakchott on terms and conditions acceptable to the World Bank. The DA will be used for all eligible payments financed by the grant as indicated in the specific terms and conditions of the Financing Agreement. The DA would be managed by the SMHPM during the transition based on a double signature. The management of the DA will be transferred to the MPEM PIU, once it the permanent arrangements become effective.



Flow of Funds Arrangements:

Figure 2.1: Flow of funds during project execution



3. FM Action Plan

The following table summarizes the actions needed to ensure satisfactory implementation from a financial management perspective:

Table 2.1: FM Action Plan

| | Action | Date due by | Responsible |
|---|---|--|-----------------|
| 1 | Recruitment of an FM officer with experience and qualification satisfactory to the World Bank | No later than three (3) months after effectiveness | MPEM PIU /SMHPM |
| 2 | Recruitment of an internal and external auditors with experience and qualification satisfactory to the World Bank | No later than six (6) months after effectiveness | MPEM PIU /SMHPM |



| | Action | Date due by | Responsible |
|---|---|---|---------------|
| 3 | Adopt a Manual of Administrative and Financial Procedures | Not later than six (6) months after effectiveness | PIU and SMHPM |
| 4 | Set up an accounting information system | Not later than six (6) months after effectiveness | PIU and SMHPM |

4. Implementation Support Plan

Based on the outcome of the FM risk assessment, the following implementation support plan has been agreed upon with the objective to help MPEM-PIU maintain a satisfactory FM system throughout the project's life.

Table 2.2: Implementation Support Plan

| FM Activity | Frequency |
|--|---|
| Desk reviews | |
| IFRs review | each quarter |
| Audit report review of the program | Annually |
| Review of other relevant information such as interim internal control systems reports. | Continuous as they become available |
| On site visits | |
| Review of overall operation of the FM system | Annual for Implementation Support Mission |
| Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, internal audit and other reports | As needed |
| Transaction reviews (if needed) | As needed |
| Capacity building support | |
| FM training sessions | During implementation and as and when needed. |

Procurement

- Procurement arrangements.** Based on the PPSD, the proposed project will be carried out in accordance with the World Bank's "Procurement Regulation for IPF Borrowers: Procurement in Investment Financing Projects for Goods, Works, Non-Consulting Services and Consulting Services" published by the World Bank on July 1, 2016. The project will be implemented under the responsibility of the MPEM, with fiduciary and technical support from SMHPM at project start. The project implementation team will include a procurement specialist who will be appointed based on terms of references satisfactory to IDA. In addition, "Guidelines on preventing and Combating Fraud and Corruption in projects Financed by IBRD and IDA Credits and Grants", dated October 2006 and revised in January 2011 and as of July 1, 2016 will apply.



6. **Risks identified under the project.** Until the PIU anchored within the MPEM is fully and satisfactorily staffed, the procurement of all activities will be handled with support from technical and fiduciary experts from the SMHPM. In this context, it is expected that the project activities will all be implemented in line with the agreed PPSD, and subsequent regulation, in particular the World Bank “Procurement Regulations for Investment Project Financing – Goods, Works, Non-Consulting Services and Consulting Services, dated July 2016 (“the Procurement Regulations”). The project implementation is currently benefiting from SMHPM’s procurement unit, which has experienced working with the Sectoral Procurement Commission and the National Procurement Control Commission as well as using the country standard documents for procurement. SMHPM also has a manual of procurement procedures that can be easily adjusted to reflect IDA procurement requirements. However, given the strong technical content of the project and its sensitivity, the procurement risks associated with project implementation are substantial and include the following:
- Neither the MPEM nor the SMHPM has an archiving system (physical and/or electronic);
 - SMHPM does not have an internal complaints mechanism;
 - Only the Director General of SMHPM has experience with procurement under IDA projects.
7. **Risks Mitigation.** The risk mitigation measures included as part of the project include the following:
- The chief contract officer of SMHPM will handle all procurement activities until the MPEM PIU is fully staffed and operational, including with a procurement specialist, with a record of experience satisfactory to IDA;
 - A qualified procurement commission will provide all technical and fiduciary analysis needed to underpin procurement activities;
 - Training will be delivered to both SMHPM and MPEM PIU on the World Bank’s New Procurement Framework, and the implementation of the PPSD;
 - The Manual of Administrative and Financial Procedure prepared for the project will include provisions that apply to procurement;
 - An archiving system satisfactory to IDA will be adopted.
8. **Advanced Procurement.** To facilitate progress and prompt execution of the proposed project, the World Bank allows retroactive financing up to two million eight hundred sixty thousand SDR (2,860,000 SDR) for Eligible Expenditures made on or after November 25, 2018.

Environmental and Social (including safeguards)

9. The project’s environmental and social aspects are described in Section IV of this project document.

Monitoring and Evaluation

10. The project’s M&E aspects are described in Section IV of this project document.

Role of Partners (if applicable)

11. The project’s involvement of partners is described in Section IV of this project document.



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY : Mauritania

Supporting Gas Project Negotiations and Enhancing Institutional Capacities

Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the design of the TA and its risk profile. It aims at providing “Mauritania - Supporting Gas Project Negotiations and Enhancing Institutional Capacities” project team with the technical support needed to ensure safeguards and fiduciary compliance with World Bank guidelines, as well as to carry out all risk mitigation measures defined during project preparation. More specifically, the strategy includes the following pillars:
 - **Technical:** The World Bank supervision team will work in close collaboration with PIU-MPEM and its international consultants to ensure that the support provided through this TA meets industry and international standards. Monthly conference calls including the World Bank team, the PIU-MPEM, and cognizant representatives from relevant contractors will take place to identify issues at the strategic and team level and help resolve them. The project team shall not interfere with the technical day to day decisions of the contractors of the project under any circumstances.
 - **Environmental and Social Safeguards:** The World Bank team will ensure quality supervision of the master plan financed under the project and stands ready to change the category from B to A in the unlikely event a FID is prepared during the life of the TA. In addition to the Manual of Administrative and Financial Procedures describing fiduciary arrangements, a the MPEM PIU will develop a note articulating any relevant environmental and social (E&S) safeguards arrangements that could apply to the project.
 - **Procurement:** The World Bank team will provide sufficient support to the Client to ensure timely review, evaluation and submission of key bidding documents. Support will also include necessary training and a workshop provided to the team staff in charge of procurement prior to the beginning of project implementation. In addition, oil and gas and LNG specialists will be part of the implementation support process and will help ensure a rapid clearance process of procurement documents by providing technical support to the project team.
 - **FM:** Supervision of project FM will be performed applying a risk based approach. The supervision will review project FM systems including but not limited to accounting, reporting and internal control. Based on the outcome of the FM risk assessment, the following implementation support plan is proposed.



Table 3.1: FM Implementation Support Plan

| FM Activity | Frequency |
|--|---|
| Desk reviews | |
| IFRs review | Quarterly |
| Audit report review of the program | Annually |
| Review of other relevant information such as interim internal control systems reports. | Continuous as they become available |
| On site visits | |
| Review of overall operation of the FM system | Annual for Implementation Support Mission |
| Monitoring of actions taken on issues highlighted in audit reports, auditors' management letters, internal audit and other reports | As needed |
| Transaction reviews (if needed) | As needed |
| Capacity building support | |
| FM training sessions | During implementation and when needed. |

- **Information Sharing:** A M&E specialist will ensure follow up on the results framework, track relevant information required to provide periodic updates on lessons learnt from project design and implementation and prepare a "lessons learnt" section that can be disclosed as needed during the Implementation Support Mission (e.g. through Aide Memoirs)

Implementation Support Plan and Resource Requirements

2. The task team will consist of experts in oil, gas, operations, environment, social, procurement, finance, and economics. Formal supervision and field visits will be carried out at least twice a year.

Table 3.2: Task Team Support Plan

| Skills required | Number of Staff Weeks (SWs) | Number of Trips | Comments |
|--------------------------|-----------------------------|-----------------------------------|------------------|
| Task Team Leaders | 18 | Annually Field Visits as Required | |
| LNG expert | 12 | Annually Field Visits as Required | |
| Oil and Gas legal expert | 12 | Annually Field Visits as Required | |
| Operations | 12 | | |
| FM | 5 | Annually Field Visits as Required | Based in country |
| Procurement | 5 | Annually Field Visits as Required | Based in country |
| M&E | 2 | Annually Field Visits as Required | |



ANNEX 4: INTERGOVERNMENTAL COOPERATION AGREEMENT AND INTERNATIONAL UNITIZATION AGREEMENT RELATED TO CROSS-BORDER FIELDS AND INSTALLATIONS

Principles for joint exploitation of cross-border fields and installations between two states

1. Following the discovery of the GTA gas field, Mauritania and Senegal face the challenge of developing long-term cooperation for the joint appraisal, development, and production of a cross-border field along with its related installations to their mutual benefit. Such cooperation has to take into account the existing PSCs entered into by each sovereign country with their respective investors. The maritime border between the two countries being well delineated and without any pending dispute, there is no need to contemplate a “joint development zone.”⁸ Along with their respective PSC holders, Mauritania and Senegal are actively trying to draw on international best practices to develop a cooperation agreement and a unitization agreement.
2. Lessons learned in decades of oil and gas cross-border development projects are clear on the merits of a cooperative approach between countries. Where territories are not disputed, this means that part of the solution consists of setting up a *unitization agreement*, articulating the modalities according to which the joint development and production will occur, and coordinating how resource development will be conducted by all PSC holders in the separate tracts overlying the cross-border reservoirs, in conformity with a prior *intergovernmental cooperation agreement or treaty*. Early North Sea bilateral treaties (e.g., the UK/Norway Treaty of 1976 in respect of the Frigg field and the recent 2005 Framework Agreement between those two countries concerning cross-boundary petroleum cooperation) could be used as a starting point for the GTA cross-border field and its facilities. Although the Frigg field Treaty and the 2005 Framework Agreement were not designed for LNG development, seminal agreements offer useful lessons for the GTA development, which will be one of the very first cases of LNG development conducted on a transnational gas resource.
3. Generally, the principles for governing cooperation between two states with respect to cross-border petroleum reservoirs and fields, and their related installations, are now provided for under a bilateral ICA or Treaty entered into by the two states for the concerned field or fields, and their installations. The primary internationally recognized principle is that the cross-border reservoirs and fields must be appraised, developed, and produced *as a unit* under the supervision of the two countries, in order not to waste resources and for optimal petroleum recovery and investment. An international UUOA prepared in conformity with that ICA is then agreed by all the existing PSC holders concerned by the unit and submitted for approval to the two states. An immediate challenge and therefore priority for Mauritania and Senegal is to develop the foundations for a successful ICA agreed between the two countries. To do so, all parties should thoroughly analyze the specificities of LNG development versus oil or non-LNG gas development and anticipate the future development and installation schemes.
4. When justified, amendments to the existing PSCs regarding the cross-border project may be agreed upon with the relevant state and its PSC holder. Under the ICA, the existing PSCs will continue to govern the relationship between either state and its respective PSC holders. However, these are unlikely to adequately address all the relevant issues for a cross-border LNG development and will likely need to be amended or supplemented with additional midstream host government agreements.
5. The respective National Oil Companies (NOCs) of Mauritania and Senegal, SMHPM and PETROSEN, along with

⁸ By contrast, as a result of a maritime border dispute between Guinea Bissau and Senegal, a joint development zone has been established since 1993 between the two countries for petroleum and fishing activities.



Kosmos as operator, have entered on January 16, 2016 into a Memorandum of Understanding for sharing the data related to GTA and preparing a draft ICA and a draft UUOA. A joint working group, including representatives from the two governments, has been established to that end and met already 15 times. Further meetings are required to deal with all the aspects of the GTA project and prepare the draft ICA and the draft unitization agreement to be approved by each country.

Objectives of the bilateral Intergovernmental Cooperation Agreement (ICA) or Treaty

6. The object of an ICA is to provide a framework for the joint appraisal, development, and production of a cross-border project consisting of two main components: (i) a cross-border field subject to unitization; and (ii) installations related to that field (such as pipelines, condensate separation and exports, gas processing plants, and, for the GTA case, probably a NGL plant and an LNG plant or FLNG units). The field straddling the border must be exploited as a unit by a single operator on both sides of the border. The location of the installations may be in either country, inside or outside the unit area, based on the selected optimum exploitation scheme, and not justified by political considerations. Those installations may also be used for non-unitized fields by the PSC-holders or third parties under principles to be provided for in the ICA.
7. The ICA generally provides that it does not affect the sovereign rights or the jurisdiction each state has under international law over the continental shelf which pertains to it. All installations on the continental shelf of a state is under the jurisdiction of that state, including for regulation and taxation. To facilitate cross-border projects, the two states must use their best efforts to encourage (where possible) common health, safety, and environmental standards. However, each state retains its own taxation rights regarding the activities and production conducted under its jurisdiction. Therefore, the tax regime in effect in a country and the PSCs signed by a given state continue to have effect without any changes, subject to appropriate apportionment of the unit production, revenue, costs, and expenses related to the cross-border project. The ICA may however contain specific clauses dealing among others with accounting, imports and exports, taxation of personnel and subcontractors, financing, jointly designed with a view not to impeding the cross-border project. The development plan regarding the exploitation of the cross-border field as a unit, and its installations, is then approved separately by each country, in conformity with the ICA, its legislation and regulation, and the applicable PSCs.
8. The key objectives of the ICA are to foster cooperation between the two countries in order to encourage timely decisions for carrying out the cross-border project and to prevent the countries involved from impeding the project, for example by unreasonably withholding authorizations or approvals of activities, plans, programs, or budgets or by imposing discriminatory charges or by imposing requirements which may hamper the project. Moreover, the ICA contains provisions dealing with the exchange of confidential information and data between the two states, including over available wells and seismic data related to the unit area. To meet those cooperation objectives, a joint commission involving the two countries is established under the ICA. In addition, the ICA signed by the two countries, but not the PSC holders, is generally ratified as a treaty by the two states.
9. The ICA contains a provision requiring PSC holders in both states related to the cross-border project to enter into a UUOA. In case of conflict, the UUOA supersedes the existing Joint Operation Agreements (JOA) related to each PSC, which remain in force. The ICA sets forth an obligation for the two states to provide, at a pre-defined initial date, for their joint approval of the estimated cross-border field resources or reserves and their apportionment between the two countries as determined under the UUOA. Possible future



redeterminations of such apportionment are also set forth. If both countries do not approve the estimated resources or reserves and their apportionment, the ICA provides for an independent expert determination, which will be binding on all parties. The selection of that expert and the guidelines for its clear mandate are established in the ICA under a detailed procedure. The states may agree in the ICA on some basic principles for addressing the impact of any adjustments on production, costs, production sharing, and taxation resulting from reserves and apportionment redeterminations, with more detailed procedures set out in the UUOA. It is agreed that the UUOA to be prepared and signed by the PSC holders must comply with the ICA and must be approved by the two states.

Objectives of the inter-corporation Unitization and Unit Operating Agreement (UUOA)

10. The scope of an UUOA has become better defined in the international petroleum industry taking into account the large experience accumulated in unitization throughout the world. While the apportionment of reserves between parties and the process for subsequent redetermination can be difficult to agree upon in any intra-country unitization given the high stakes, the issue is amplified in cross-border field contexts due to the increased number of stakeholders and the additional geopolitical dimension. It is also made more challenging in the case of LNG development since the investments required are typically substantially larger. Aside from reaching an agreement on the initial apportionment, there are practical issues such as adjustments to production, costs, and taxation that arise following a redetermination that need to be carefully considered and addressed for gas and LNG.
11. These issues arise because even small movements in the apportionment of reserves may lead to a requirement to make substantial (retrospective) adjustments to address any over- or under-payment of costs or over- or under-lifting of hydrocarbons on the basis of the prior apportionment, implying also fiscal adjustments. Such adjustments may be affected by cash payments over pre-defined periods, which invariably will have production sharing and tax consequences, or through further adjustments to entitlement to hydrocarbons over a set period of time to adjust for historic over- and under-lifting. Agreeing appropriate redetermination and adjustment mechanics in the context of an LNG project can be more difficult due to the large amounts of capital expenditures involved in constructing the liquefaction facility and because the LNG produced will almost certainly be sold under committed long-term contracts. Thus, in the absence of any joint marketing arrangement, any redetermination has the potential to result in PSC holders of one country ceasing to receive a sufficient share of production to meet their delivery obligations, and the PSC holders of the other country having excess volumes that need to be marketed. Typically, unitization agreements include principles for future apportionment and redetermination.
12. Deciding on the correct approach for the pace of apportionment and redetermination is a matter of balancing the need for fairness against time constraints and the cost and disruption of each subsequent redetermination. Ideally, a reasonably accurate apportionment will be agreed before or at the time of the final investment decision (FID) as this will reduce the chances of a significant redetermination along with sizeable adjustments and associated complications being required at a later date. However, there may be insufficient information at the start of the development project, prior to the drilling of the development wells, to determine the reserves with a sufficient degree of accuracy, or the time it would take to do so may delay commencement of the project. If there is sufficient information to give the respective governments confidence that the initial project (in the event of a phased development plan) will not substantially deplete the field, the first redetermination can potentially be deferred until the time of the second phase of the project (e.g., under the 2015 intra-country unitization agreement for the Rovuma basin in Mozambique).



When such an approach is adopted, a fallback is defined in case a second phase of the development project is not implemented by a long-stop date.



ANNEX 5: CURRENT PETROLEUM LEGAL, CONTRACTUAL, AND FISCAL REGIME IN MAURITANIA IN COMPARISON WITH SENEGAL

The Mauritania 2010 Petroleum Code for hydrocarbons upstream (exploration, exploitation, pipeline transportation) operations

1. The current legal and regulatory framework applicable to the upstream petroleum sector in Mauritania is governed by Law No. 2010-033 of June 20, 2010, as amended by Law No. 2011-044 and Law No. 2015-016, and its Decrees of application, referred to as the “Petroleum Code” of Mauritania. Regarding taxation, this Petroleum Code contains, *inter alia*, specific upstream petroleum tax rules and special tax exemptions regarding upstream petroleum activities, taking precedence on the provisions of the CGI, which applies to the upstream petroleum activities in the country as the other laws and regulations of Mauritania.
2. The current legal and regulatory framework for upstream petroleum in Mauritania of 2010 is relatively up-to-date, concise (112 articles), and globally consistent with the main good practices for designing flexible petroleum acts in developing countries similar to Mauritania in terms of petroleum exploration and potential resources. The Petroleum Code deals with upstream activities only (exploration and exploitation, including petroleum processing and pipeline transportation of production) regarding petroleum (oil, condensate and natural gas), but not with midstream or downstream matters—which are covered by the downstream law (*Loi réglementant les activités aval du secteur des hydrocarbures*) of 2002 (Ordinance No. 2002-005) dealing with the domestic distribution and sale of hydrocarbons and petroleum products in the territory of Mauritania.
3. The Petroleum Code empowers the Government to enter into upstream petroleum (E&P) agreements, namely PSCs. The PSC scheme was introduced in Mauritania in the early 1980s⁹ and is therefore a type of upstream petroleum arrangement well known by the country. During the last three decades, over 30 PSCs have been signed; 10 PSCs are currently in force, of which eight are for the offshore and two for the onshore. They are based on a “model PSC” issued by Decree, periodically updated. Each PSC must be approved by Decree. Most petroleum agreements are now public in Mauritania, including those related to the GTA project.
4. The new 2010 Crude Hydrocarbons Law, replacing the 1988 Hydrocarbons Ordinance, was designed *inter alia* to make exploration and exploitation more attractive, to clarify some provisions, including on fiscal issues for contractors and subcontractors, and to give greater consideration to environmental and local content issues. Petroleum exploration has been carried out for a long time in Mauritania. Thanks to the continuous exploration promotion efforts of the past decades, MPEM, supported by SMH (now SMHPM) since its creation in 2005 triggered by the exploitation of the Chinguetti field, has been able to attract investments from petroleum companies to Mauritania’s onshore, shallow waters, deep offshore and ultra-deep offshore, where the GTA discovery is located.

Upstream petroleum fiscal regime applicable in Mauritania

5. The upstream petroleum fiscal regime is provided for in the Petroleum Code and in the general tax

⁹ The first PSC was signed with Mobil in 1981, followed by two PSCs signed in 1983 with Arco and Oxoco, and one PSC in 1989 with Amoco.



legislation of Mauritania, in particular, the CGI, subject both to the specific fiscal provisions contained in the Petroleum Code, which take precedence, and the special fiscal rules stipulated in the applicable PSC. The Petroleum Code contains specific tax and customs provisions in its Chapter 6 (art. 66 to 98) dealing with the taxes or contributions applied to upstream activities, and the corporate tax (CT) payable by each entity constituting the contractor, in addition to the Government's share in Profit Petroleum and the SMHPM's participating interest in net cash flows.

6. The Petroleum Code provides for some special tax exemptions. It states in Art. 67 that CT is determined per PSC, and not consolidated for all the activities in Mauritania of the PSC interest holder. Moreover, the Petroleum Code provides that some tax rules may be clarified in an CEP, including in its annexed accounting procedure. This authorization applies (for example) to the fiscal rules for CT depreciation, interest deductions, and the specific CT rate applied to a given petroleum agreement during its entire duration, which therefore may differ from one agreement to another depending on their signing date, subject to the condition of being at least equal at the general CT rate applicable at the date of signing the agreement. By contrast, Art. 89 provides that the activities other than exploration and exploitation are governed by the CGI, including for the applicable CT rate.
7. The CGI does not specifically clarify the determination of the CT taxable base for a PSC interest holder, nor does it address the specificities of upstream petroleum operations. Experience in other countries has often shown that guidance notes on taxation are highly desirable, both for contractors and their subcontractors and lenders, in order to ensure full consistency between the tax provisions contained in the Petroleum Code, those in the CGI and, when authorized by law as in Mauritania, those stipulated in a petroleum agreement. One of the objectives of such documents are to identify and address any possible tax inconsistencies or interpretation issues.
8. To that end, it is recommended that a tax review of the upstream tax regime currently applicable in Mauritania be conducted under the TA project, including *inter alia* a review of the current rules for petroleum costs accounting, CT determination and submission of tax returns related to PSC activities, thus allowing for the identification of any possible uncertainties and ensuring in the long run a smooth implementation of the upstream petroleum tax regime and contracts.

Production sharing contract regime applicable in Mauritania

9. The rights and obligations of a company—or a group of companies named “contractor” and acting under an unincorporated consortium, their respective rights being governed by a JOA dealing with the petroleum operations within a given exclusive area — are defined in the PSC entered into with MPEM and approved by Decree. Unless otherwise agreed, PSCs under the Petroleum Code are awarded after a competitive bidding. The signed PSCs are very close to the issued model PSC, with the exception (among others) of the negotiable clauses dealing with exploration work obligations, cost petroleum ceiling (within the maximum limit of 60 percent for oil and 65 percent for gas under Art. 38 of the Petroleum Code), profit petroleum sharing under an economic profitability criterion, and SMHPM participation, with a minimum participation rate of 10 percent.
10. Table 5.1 summarizes the main terms of the PSCs applicable to the promising GTA discovery under appraisal and the identified prospects to be drilled, namely the three 2012 PSCs in respect of the C8/C12 and C13 blocks.



Table 5.1: Main terms of selected PSCs in Mauritania related to GTA activities

| Term | Block C8 PSC, Block C12 PSC, or Block C13 PSC (applicable to the GTA project) | Block C6 PSC (may contain an extension of the C12 Lamentin prospect) | Comments |
|--|--|--|---|
| Signing date | April 5, 2012 | November 2016 | |
| Partners as of January 2017 | Kosmos (operator, exploration), 28 percent BP (operator, development), 62 percent State/SMHPM, 10 percent/14 percent | Kosmos (operator, exploration), 28 percent BP (operator, development), 62 percent State/SMHPM, 10 percent/14 percent | GoM may elect to rise its participation to 14 percent upon approval of the field development plan |
| State special participation rights | Carried interest during exploration/appraisal Paying interest thereafter | | The exploration carried costs have to be reimbursed |
| Current status of Activities | Exploration/appraisal phase of 10 years, in progress. Possible 3 (oil)–5 (gas) years retention period. | Starting exploration phase | Entering exploitation phase subject to the approval of a Field Development Plan |
| Royalty on production | Not applicable, though there is an implicit effective royalty rate under the PSC | Terms not yet available | Government receives its share of Profit Petroleum from start-up of production |
| Cost Petroleum Limit & eligible recoverable costs | 55 percent (oil) or 62 percent (natural gas) Recoverable costs including eligible interest. No depreciation | | Defined in the PSC per Exploitation Perimeter. |
| Profit Petroleum Split before CT basis (on an R-factor scale) | Government Share from 31 percent (when R-factor < 1) ... to 42 percent (when R-factor > 3) [6 tiers] <i>R-factor = Cumulative cash flows/Cumulative exploration and development investments</i> | | Same terms for oil and gas. <i>R-factor ring-fencing:</i> determined per exploitation area |
| CT rate in PSC & tax deductions | Agreed CT rate of 27 percent under the PSC, in lieu of general CT rate (25 percent) | | Depreciation is applicable to CT determination (see. Accounting Procedure annexed to the PSC) |
| Applicable law and Stability clause | Mauritania Law at all times and principles of international law Stability clause applicable (with the exception of labor, HSE) | | Stability clause may apply if legislation and regulations are aggravated |

11. The PSCs listed in Table 5.1 are all in their exploration phase. Discoveries of potentially commercial gas



have been made and are under appraisal. Only conceptual development plans are under preparation.¹⁰ During the exploration phase, as usual in the upstream sector, several farm-in agreements were signed with one of the PSC holders by companies willing to enter into awarded blocks and finance the continuation of petroleum activities as more encouraging subsoil data are becoming available.¹¹ As provided for in the Petroleum Code and the PSC, the contract-holders may apply, when justified, for a “retention period” (three years for oil and five years for natural gas) to extend the exploration phase of a potentially commercial discovery.

12. The exploitation phase of a PSC and the award of the exploitation rights regarding a commercial field starts upon approval by the Government of a comprehensive field development plan, including the plan for any related facilities. The approval of the development plan also includes the approval of a mutually agreed “delivery point” (or points). Such selection has an impact on the scope of the activities performed under the PSC and of those activities defined as falling outside the PSC regime framework, which may be subject to a different tax regime from the upstream fiscal regime to encourage midstream infrastructure, in particular, regarding oil and gas processing, FLNG or LNG plants, and transport activities. The determination of the *delivery point* is a key decision for gas development projects to be fully assessed by the country.

Comparison with the Senegal upstream legal, fiscal, and contractual framework

13. The legal framework in Senegal for petroleum activities is mainly governed by Law 98-05 of January 8, 1998, known as the Petroleum Code, and its decrees of application (including Decree No. 98-810 of October 6, 1998). The Petroleum Code deals with upstream activities only (exploration and exploitation, including petroleum processing and pipeline transportation of production) regarding petroleum (oil and natural gas) but not with midstream or downstream matters. The law empowers the Government of Senegal (GoSN) to enter into upstream petroleum agreements of various types, including concession contracts and PSCs. Since the promulgation of the 1998 Code, around 20 PSCs have been signed. They are based on the model PSC issued by Decree. Each PSC must be approved by Presidential Decree and published in the Official Gazette (art. 17 and 34 of the Code). Therefore, all petroleum agreements are now public in Senegal. Table 5.2 summarizes the main terms of the Senegalese PSCs related to the GTA project and its possible extensions.
14. The overall legal, regulatory, fiscal, or contractual structure looks relatively similar on a number of issues between Mauritania and Senegal, including the fact that both countries use PSCs with a profit petroleum determined on a before-CT basis and impose a small participation by their National Oil Company (NOC). However, there are differences between some of the PSCs provisions, as illustrated in Tables 5.1 and 5.2. This is the case on the specific terms of the PSCs with regard to the application of some specific tax rules. Such differences are regularly encountered when comparing the upstream legal, regulatory, contractual,

¹⁰ GTA engineering design work started in 2017. The objective is to complete the detailed engineering as needed for a final investment decision (FID) related to the GTA project expected in 2018.

¹¹ End of 2016, Kosmos farmed-out to BP part of its interest in six PSCs in Mauritania and Senegal. A preceding farm out to Chevron regarding Mauritania only was terminated before the GTA discovery. BP entered into those four PSCs in Mauritania and two PSCs in Senegal under a farm-in arrangement with Kosmos in December 2016, which is being submitted for approval to the two respective countries. The total consideration for the two-country farm-ins consists of three components: (1) a cash payment upfront plus; (2) carry obligations related to exploration and development, amounting to US\$916 million; and (3) a contingent bonus as an overriding production on liquids, which may reach US\$2 billion. Source: BP press release of December 19, 2016.



and fiscal provisions applied in two neighboring countries at a given period, including when dealing with unitized cross-border fields. This tax context may be addressed *inter alia* in the ICA when justified.

Table 5.2: Main terms of selected PSCs in Senegal related to GTA activities

| Term | Saint Louis Block PSC (applicable to the GTA cross-border field), or Cayar Block PSC | Comments |
|---|--|---|
| Signing date | January 17, 2012 | |
| Partners as of January 2017 | BP (operator, development) Kosmos, (operator, exploration) PETROSEN, 10 percent/20 percent | Initial signatory was Petro-Timis. <i>Kosmos farmed in 2014, and farmed out part of its interest to BP end of 2016. BP bought Timis interests in 2017.</i> PETROSEN has an option to increase its paying interest to 20 percent from approval of development plan |
| PETROSEN special participation rights | Carried during Exploration/appraisal | Paying interest from development |
| Current status of Activities | Exploration/appraisal phase Appraisal in progress. Possible 3–5 years retention period | Entering exploitation phase subject to approval of a Field Development Plan |
| Royalty on production | Not applicable, though there is an implicit royalty under the PSC | Government receives its share of Profit Petroleum from start-up of production |
| Cost Petroleum Limit | 75 percent of PSC production | Same terms for oil and gas (or BOE equivalent) Recoverable costs defined in the PSC Depreciation applies to CAPEX recovery |
| Profit Petroleum Split before CT basis (on a sliding daily production scale), Government Share | From 35 percent (0–30,000 BoE/D tier), ... to 58 percent (over 120,000 BoE/D) [5 tiers] | Same terms for oil and gas (in BoE equivalent) Daily production aggregated in the contract area |
| CT rate in PSC & CT tax deductions | 25 percent | Tax deductions under CGI and Accounting Procedure of the PSC are applicable |
| Applicable law and Stability clause | Senegal Law at all times Stability clause applicable | Stability clause may apply if legislation and regulations are aggravated |



ANNEX 6: APPROACH AND PRINCIPLES FOR PETROLEUM REVENUE MANAGEMENT ADAPTED TO MAURITANIA

1. The primary channel through which oil and gas production will impact the economy consists of government revenue received from the oil and gas producers, mainly: (i) the Government's share in the Profit Petroleum under the PSC; (ii) corporation tax (CT) on profits paid by all PSC holders, including SMHPM; and (iii) SMHPM's net revenue after CT payments and payments of its eligible expenses and investments. A variety of issues may influence the way national and local governments manage petroleum resources and the reasons why they may fail to produce the expected economic results. Generally speaking, factors preventing an efficient management of petroleum revenues include: (i) weak institutions; (ii) limited capacity to manage windfall resources; (iii) lack of political commitment; (iv) historical ethnic differences; and (v) political or economic considerations, including breakdowns in or malfunctioning fiscal, institutional, or political decentralization processes (among others). However, each country is different, and in particular, each producing region has its own specific cultural, ethnic, political, economic, and environmental dynamics, which play a key role in the way oil or gas revenues are managed and invested.
2. An adverse effect has been observed for countries that make large petroleum discoveries, namely the "Dutch disease" effect, whereby the extra wealth generated leads to an increase in the price of non-tradables (e.g., services) and higher real wages in this sector (plus exchange rate appreciation). The resulting reallocation of labor and capital toward this sector and away from the tradables sector (e.g., manufacturing or agriculture) leads to a decline in output and employment in these sectors. The magnitude of this effect depends on the size of the petroleum resources from commercial discoveries relative to the rest of the economy. Mauritania does not have a large manufacturing sector, and present indications of the size of the petroleum resources are such that it is unlikely that such sectoral shifts will be significant.
3. A second effect from large petroleum discoveries, usually named the "resource curse," occurs where the petroleum rents lead to poor economic performance through rent-seeking behavior and corruption. Governments with strong institutions, civil society participation/oversight, and revenue transparency are more likely to avoid the negative aspects of natural resource development.
4. In this context and in view of the experience and difficulties encountered by many developing countries that are oil and gas producers and exporters, Mauritania should develop an efficient petroleum revenue management strategy and plan, integrating the latest international best practices to ensure maximum benefits to the nation. The GoM will have a number of options on how to use the additional petroleum revenues, ranging from saving part of the revenue in one (or several) petroleum funds, spending some or all of the revenue, or distributing part of the revenue through tax reductions or welfare payments. The uncertainty over the magnitude of the future revenue stream combined with the likelihood that it will vary substantially over time because of changing government revenue under PSCs at different stages of production and annually, variation in production over time, and variation in international oil and gas prices means that the GoM will have to make an outline plan and then gradually adjust it over time as circumstances change. The country's needs for infrastructure investment to raise productivity and for social investment in health and education suggest that these will be priority areas for the first years of petroleum revenue.
5. Since 2006, Mauritania has had some experience in the revenue management of petroleum payments under a producing PSC. All the payments from the contractor and subcontractors to the Government have been made to the National Hydrocarbons Revenue Fund (le *Fonds National de Revenus des Hydrocarbures* (FNRH). It was established in 2006 to collect the revenues generated by Chinguetti. The principle of having a central



account for all petroleum revenues was confirmed in Art. 97 of the 2010 Petroleum Code of Mauritania. The public Treasury is the main body responsible for collecting and managing taxes and other revenues paid to the central government. It reports monthly the FNRH collected petroleum revenues from a producing PSC, per source of revenue, and the balance of the FNRH remaining at the end of the month.¹² The national oil, gas and mining company, SMHPM, receives the participation State's share in the production.

6. The functioning of the existing revenue management in place since 2006 will have to be reviewed to decide on any adaptations justified by the larger magnitude of the expected petroleum revenues to be generated by GTA, including on the creation of one or several petroleum funds, each one with its specific objectives. Several challenges will have to be addressed by the GoM to ensure that the planned gas development project contribute to inclusive economic growth. Such challenges not only include those that all petroleum producing countries face, but also the specific challenges resulting from the nature of gas discoveries to be exploited in Mauritania and the country's own circumstances:

- **Technical:** Mauritania's gas finds are located in deep waters, require LNG facilities to export gas production and, therefore, costly investments, which in turn result in lower revenues, especially during the first decade of production, when the large capital expenditures are recovered under the PSCs and depreciated for tax purposes.
- **Managing expectations:** The recent experience in a range of countries, in particular, in Ghana (a new deep offshore producer since December 2010) and in Mozambique (where very large deep offshore gas fields have been discovered from 2010 and the first planned FID related to that discovery initially announced by 2013 is still pending)¹³ shows that revenues expectations can be exaggerated both in terms of schedule and annual amounts. The frequent consequences of unrealistic expectations are hardening of state budget deficits and committing too early for higher state debt regarding non-petroleum sectors, awarding unaffordable raises in public wages and fostering booms in public infrastructure projects and subsidies, as recently observed for example in Ghana.
- **Separation from the Annual Budget:** The priority will remain that all government petroleum revenues, including those from SMHPM¹⁴, continue to be directly paid into a central bank or Treasury account and not transferred when received to the annual budget. The annual Finance Budget Law will determine annually the portion of the total petroleum revenues to be allocated to the budget and to SMHPM to cover its approved requirements. The fund (or funds) may have several purposes and priorities, as is now recognized under best practices worldwide: (i) medium-term stabilization to mitigate the impact of fluctuating oil, condensate, gas and LNG prices and anticipate the hard realities of not receiving steady annual upstream petroleum revenues for a number of reasons; (ii) prioritized investments in infrastructure, education, and health and in programs designed to promote economic diversification into non-petroleum tradable activities; and (iii) long-term saving purposes.
- **Transparency:** Mauritania joined the EITI initiative in 2005 and its extractive revenues are public in

¹² A detailed monthly report is published by the *Direction Générale du Trésor et de la Comptabilité Publique, Direction des Etudes et de Système d'Information, Service des Etudes et des Statistiques* on the MOF website, usually three months after the concerned month of production. For example, the December 2016 report was available on April 4, 2017. It displays among others the petroleum monthly production (per day), the allocation of the production (in bbls, to Cost Petroleum, Profit Petroleum, the respective GoM share and Contractor share per entity in the Petroleum Profit), the oil price, the liftings and sales, the exports, the monthly payments to the FNRH including CT, the monthly withdrawals from the FNRH per destination, the balance of the FNRH amounting to US\$52.6 million at December 31, 2016.

¹³ The FID regarding another gas discovery named Coral in another PSC has been just announced in June 2017.

¹⁴ SMHPM free cash flows should be timely paid during the year to the central Treasury/FNRH account, not waiting for the distribution of its annual dividends.



conformity with the EITI rules and standards since 2012¹⁵. In addition, most of the PSCs have been disclosed. The challenge will be to continue supporting these efforts and go a step beyond, such as continuing to monthly publish the detailed government petroleum revenues, per source of revenues, and any related information in a timely manner as currently done regarding the FNRH.

7. It is expected that Mauritania will have sufficient time to address the aforementioned challenges since the ramping up of petroleum revenues is not expected before 2022–2025, assuming that the operator will make a final development decision (FID) vis-à-vis GTA around 2018. The GoM can prepare a petroleum revenue management law, develop strong fiscal regulations, plan a fiscal path, and design updated petroleum funds in lieu of the current FNRH, based on international good practices.

¹⁵ The last EITI report on Mauritania was issued in June 2016 and concerns the year 2014.



ANNEX 7: SUCCESSFUL EXPERIENCES AND LESSONS FROM LNG PROJECTS WORLDWIDE

Key phases in execution of gas and LNG projects

1. There are three key phases in the execution of gas and LNG projects: (i) appraisal of reserves and possible resource development methods; (ii) conceptualization and organization of the project with a view to adoption of an FID; and (iii) execution of works and phased production launch.
2. Appraisal of reserves and possible resource development methods is a key phase during which operators develop and implement an optimal delineation program to collect all necessary information on the quality and quantity of the resource and develop it at the lowest cost. During this phase, the resources in place are assessed and sharing arrangements between the parties (the State(s) and license holders) are determined. During this phase, it is critical for the Governments to define a vision for the industries they wish to develop locally to effectively determine the volumes that should be delivered over the long term to the domestic, regional, and international export markets. Lastly, this phase includes the formulation of a long-term production strategy based on resources and related development costs. This strategy must clearly indicate the duration of the planned production plateau(s) for the domestic market and regional and international export.
3. **Conceptualization and organization of the project** is a demanding and complex phase that seeks to support the final investment decision-making process. This phase involves several parallel activities, including the following:
 - a. **Studies phase**, beginning with preliminary studies of the field and liquefaction options, for which the calibration of costs is based on orders of magnitude and statistical benchmarks taken from other projects for an assessment of the development costs with a theoretical reliability of +/-30 percent. This initial studies phase is followed by concept studies that compare various development concepts, traditionally referred to as “preliminary design studies,” as well as screening or pre-FEED studies. Once the development concepts have been compared and a preferred concept has been selected, a pre-project study is conducted, based on assessments and market analyses (known as FEED studies). These studies are then followed by a basic engineering study based on detailed assessments of quotations for the major aspects of the project. Lastly, a detailed engineering study is prepared to provide a more accurate estimate of development costs (+/-10 percent in theory), which will be reviewed for final decision making.
 - b. **Agreements between companies and the host State(s)**. To enable companies to make an investment decision about a LNG project, the Government must work with them to validate a plan for the optimal development of the resource, agreements on contractual and fiscal terms, provisions added to the PSCs, agreements on support facilities for the project (port, airport, roads, etc.), agreements on the allocation of positions of responsibility among the stakeholders (national and international operators), the manner in which decisions will be made, technical service and support agreements for development operations, and other agreements (professional training, land acquisition, local content, etc.).
 - c. **Agreements on project execution and operations**. The parties must also reach agreements on project execution and operating methods, that is, on the selection of a contractual strategy for construction or execution (Engineer Procure and Construct- EPC, EPIC- Engineer Procure Install and Construct-, Engineer



Procure Commission and Construct-EPCC, etc.) or a set of project execution subcontracts. Furthermore, agreements must be concluded with the engineering and construction company/companies, process licensors, and civil engineering and port facility companies. Lastly, the adoption of agreements on the development phase is also necessary.

- d. **LNG commercialization agreements.** Given the size of the investments required for the development of LNG projects, a number of commercial commitments must be in place before a FID can be made. A business strategy ensuring the financial viability of the project must therefore be developed. This strategy must specify the guaranteed exploitation quantities and the flexibility clauses in exploitation agreements as well as the quantities retained for spot purchases. Commercial agreements between partners must also be concluded with a view to specifying the exploitation rights and obligations of each partner, including those for the national oil corporation. Long-term purchasing agreements must also be concluded, as is customary, and maritime transport agreements may have to be signed if the purchase of vessels or long-term freight agreements are required to execute the business strategy. Lastly, certification of the reserves is also generally required for the commercialization of LNG.
 - e. **Financing agreements.** The negotiation and conclusion of project financing agreements is the last crucial step prior to final decision making. During negotiation of the financing agreements, the parties will be expected to clarify and agree on the obligations of the participants in the various project phases. This will be especially important, for example, if banks pull out or partners default. Specific financing from the national oil corporation(s) must be secured prior to any investment decision.
4. Once the entire studies phase has been completed and all aforementioned agreements have been negotiated and initialed (agreements between operators and the host State(s), agreements on project execution and operations, LNG commercialization agreements, and financing agreements), an FID can then be made. All of these agreements are often signed simultaneously, having been previously initialed.
 5. **Execution of works and launch of production.** Once an investment decision has been made, works may begin. There is a start-up phase, followed by a production ramp-up phase.
 - a. **Execution of works.** The development of the field will involve parallel infrastructure construction (port facilities, power plant or grids, airport, etc.), as well as offshore or onshore production, processing, liquefaction, and export facilities, based on the selected concepts.
 - b. **Production launch phase.** The start-up phase is critical as it involves the selection and formation of the project's start-up and operating crews. The responsibility for operations is then transferred on a phased basis from the construction crews to the operating crews. Strictly speaking, the start-up phase will be carried out with support from licensors and from companies specializing in providing support services.
 - c. **Production ramp-up phase.** Production is ramped up at a gradual rate (for each of the planned trains) in accordance with the adopted production plateau (between 30 to 40 years, for example). An inventory of resources dedicated to the initial project for the reserves being developed is drawn up during production of the initial trains to assist with any potential decision to have one or more additional trains that are either a FLNG train or a conventional, land-based train.



Lessons learned from 50 years of LNG projects execution

6. Time frames for implementing LNG projects vary greatly. The timelines observed from discovery of gas reserves to delivery of the first LNG shipment range from five to seven years (examples: Bontang LNG, Indonesia: five years; Camel LNG, Algeria: six years; Arun LNG, Indonesia: seven years) to 35–36 years (examples: Gorgon LNG, Australia: 35 years; NLNG, Nigeria: 36 years). A review of the projects implemented to date shows that the factors that underpin the different implementation timelines are extremely diverse. Some factors are simply beyond the control of producing countries (LNG price trends that are weak and therefore unfavorable to project development). Other factors are endogenous and can therefore be influenced by the countries themselves (putting in place the legal, fiscal, and regulatory conditions necessary for the development of mega projects, capacity to negotiate effectively the full range of agreements between operators and the State, capacity of the national company to finance its share, etc.).
7. **CAMEL LNG, Arzew - Algeria:** In 1958, Elf and Total made the first gas discoveries in Algeria at Hassi R'Mel. The group then proceeded to study the world's first LNG chain, involving gas deliveries earmarked for the United Kingdom and France. The Algerian Liquid Methane Corporation (CAMEL) was established in 1961 to put in train the first LNG export project. In 1962, Algeria became independent. The LNG export project continued to grow with the signing in the same year of LNG purchase agreements with British Gas and Gaz de France. The first shipment of Algerian methane was delivered in September 1964.
8. **Bontang LNG – Indonesia:** Discovered by Huffco in 1972, the field could only be economically viable if large quantities of gas could be liquefied and exported for sale abroad. Given the cost of constructing a liquefaction plant, it was vital to have in place the guarantees that long-term purchase agreements would provide. These agreements were signed in 1973 with Japanese electricity companies. The first trains were commissioned in 1977.
9. **Gorgon LNG – Australia:** Discovered in 1981 by Chevron, the Gorgon field posed a number of significant challenges because of the difficulty in accessing the field, which is located more than 60 kilometers from an island off the coast of Australia. Exploitation of the resource required technology that did not exist at the time of the discovery, and it was extremely difficult for the company to mobilize the specialized workforce required. Nevertheless, the project afforded a number of concrete and substantial benefits even before it was commissioned in 2016, including: expenditure of US\$34 billion on local goods and services, 700 contracts executed by Australian companies, and 10,000 direct jobs.
10. **NLNG – Nigeria:** While non-associated gas resources were discovered in 1963, it was not until 1989 that a decision was made to finance their development. NLNG went on to deliver its first LNG shipment in 1999. The LNG project has encountered a number of major problems that have led to significant delays between discovery and commissioning, including the difficulties faced by the Government in defining and adopting a gas utilization strategy, long and difficult negotiations over the adoption of agreements required for the development of the LNG project, inability to finance the contribution of the national oil corporation during the project development phases, and changes in the choice of concept and technologies throughout the execution of the project. Finally, the project was the subject of serious corruption allegations, and a number of engineering and construction companies were effectively penalized by the judicial systems of their countries for paying bribes to win contracts.
11. Any new LNG project will have to be competitive in terms of unit costs (gas production cost plus liquefaction



cost) with the other LNG projects under consideration worldwide. Three types of factors have an impact on the competitiveness and therefore the completion time of an LNG project. These are: (i) purely technical considerations; (ii) the quality of the legal, fiscal, and regulatory framework; and (iii) the LNG commercialization strategy and the project financing strategy.

12. Technical factors include, in the first instance, the specific characteristics of the fields and reserves. The most decisive factors include well productivity, which is problematic when well output is low (e.g., Gladstone LNG in Australia); gas composition, which can make treatment both complex and costly (e.g., mercury content of Hassi R'Mel in Algeria); and complexity of the gas reservoirs (e.g., East Kalimantan in Indonesia). Secondly, it should be noted that the location of the reserves has a direct impact on ease of access to the resource. Onshore reserves are generally easier to access than deep sea or ultra-deep-sea resources. A reservoir that straddles the concessions of two operators in the same country can introduce a degree of complexity. This is even greater when the reservoir straddles two countries. In addition, the topography of the coastline and its bathymetric profile can have a profound impact on the technical and economic feasibility of a concept. For example, if the coast is extremely shallow, the cost of developing a port for gas tankers may be particularly high. Finally, the quality of the gas—in other words its composition (dry or liquid rich gas) and the stability of the composition—as well as the volumes of gas available over the long term are all factors that determine the technical difficulty of exploiting a discovery and, consequently, the time required for its development.
13. The fiscal, legal, and regulatory framework should make it possible for operators to carry out their activities profitably while guaranteeing that the interests of the State are safeguarded. The most important factors that affect the speed of execution of LNG projects include: (i) capacity of host countries to provide for an acceptable level of progressivity in relation to the revenue and production sharing provisions contained in production sharing agreements; (ii) gas clauses outlined in the Petroleum Law; (iii) oil contracts and other implementing decrees (for the production of both raw gas and LNG); (iv) fiscal structuring of the production project and liquefaction plant, which can influence the concept choices depending on whether or not the upstream or downstream tax regimes are similar; (v) sharing of costs and financing among different partners and the portage requirements that the national oil corporation may decide to impose; (vi) gas production sharing, which may involve multiple sources and require specific commitments by each party; (vii) sharing of revenue from gas sales, which may be de-linked from physical gas deliveries and revenue in, for example, a unitization plan; and (viii) quality of relations among partners, including the national oil corporation, in relation to decision-making processes on annual budgets, award of contracts, recruitment, composition of organizational charts, local content development strategy and other strategies, as well as the quality of the relations between stakeholders and the host country (tax disputes, political risks) and the line Ministries (Ministry of Energy and Oil, Ministry of Finance, Ministry of Environment, etc.).
14. Conditions for commercialization and financing are also decisive factors that influence the timeframe for implementing LNG projects. The capacity of a project to benefit from contractual guarantees for LNG exploitation and the formulas that will determine the prices at which the sales will be completed to make the project bankable, are other factors that influence project execution rates. Relatively low capital costs (CAPEX) and exploitation costs (OPEX) will facilitate rapid project execution and enhance the capacity of project operators to win the confidence of financiers (banks and others) in the partners and the host country or countries. Finally, the chances of the project being executed promptly are enhanced when the technical and financial capacity of partners is strong and when they are able to provide a sufficient share of the required financing. In any event, it must be noted that LNG project financing involves the creation of ad hoc companies to help shift some of the risks to banks after start-up. Indeed, as is the case for all mega projects, LNG projects



have specific financing structures that do not allow creditors recourse vis-à-vis stakeholder companies in the project once implementation has begun, except in specific circumstances or where collateral undertakings exist.

15. A period of several years is needed to assess the technical, economic, and financial performance of an LNG project before it can be deemed a success. Projects such as Arzew 1 (CAMEL) and Skikda 1 and 2 in Algeria, Kenai in Alaska, Bintulu in Malaysia, Brunei in Brunei, Bontang and Arun LNG in Indonesia, Qatargas and Rasgas in Qatar, and Sakhalin in Russia are projects of proven profitability and may all be classified as indisputably successful. For projects such as Sabine Pass and Corpus Christi in the United States, Gorgon, Gladstone, Ichty, and Prelude in Australia, Satu FLNG in Malaysia, or even Yamal in Russia, a waiting period of at least 10 years will be necessary before they may or may not be deemed successful.
16. A number of lessons may be drawn from projects that have not fulfilled expectations. For example, protracted negotiations and major concept changes have in some cases resulted in failure (example: NLNG in Nigeria, developed by NNPC, Shell, Total, and Eni, as well as Arzew GL3Z in Algeria, developed by Sonatrach). Some failures were undoubtedly due to poor technical choices and technological error (example: Libya LNG, developed by Exxon, and Snovit LNG, developed by Statoil). In some cases, failure was due to the insufficiency of the resource (example: Egypt LNG, developed by EGPC). Finally, a number of projects have had to be suspended as a result of extreme technical, economic, or political circumstances (examples: Stokman, developed by Gazprom, and Abadi in Indonesia, developed by Shell and INPEX). The lessons learned from implementation of these projects show that it is crucially important that governments secure the expertise necessary for building an optimal legal, fiscal, and regulatory framework and that they conduct systematic and detailed negotiations on all the agreements required for LNG development. Special attention must be paid to the choice of development concepts that will be put to tender and the criteria to be followed in selecting an ideal development concept. The expertise of technical, commercial, financial, and legal consultants is vital to this process as many countries experience difficulty in choosing the best candidates and providing the guidance necessary for them to resolve the problems that arise.



ANNEX 8: MAIN RESULTS FROM THE PRELIMINARY ECONOMIC AND FISCAL MODELLING FOR THE GTA GAS FIELD CASE

(Initial development phase only under Option 1, Mauritania portion of the GTA field)

Objective of the economic and fiscal modeling

1. The main objective of this preliminary economic and fiscal modeling is to provide a tentative broad range of the annual petroleum revenues profile that could be generated for the GoM by the exploitation of the potentially commercial GTA gas field. The approach is to simulate the estimated annual petroleum revenues for the GoM and the profits of the PSC contractor, considering a representative field case for GTA discovery and sensitivity to oil/condensate and gas prices, assumed constant in real US\$ 2017 terms over the field production life, varying from US\$30 to US\$90 per barrel for oil/condensate and from US\$3 to US\$9 per MMBtu for gas and LNG, on a Free On Board basis (FOB) Mauritania. Results are expressed in US\$ 2017 unless otherwise stated. All fiscal, debt and interest calculations are made in nominal terms, in line with the relevant PSC and tax rules, and then converted into US\$ 2017. To determine representative GoM revenues, tentative assumptions on financing of development and FLNG CAPEX are selected, because eligible interest is recoverable under the PSC and deductible for CT calculations under the rules of the applicable PSCs. Only the direct revenues of the GTA project are determined below.¹⁶

Economic results for the stylized cross-border GTA gas field case (Mauritania share only, Option 1 case)

2. Economic and fiscal modeling of GoM revenues was undertaken on a stylized GTA gas field case, assuming the *GTA limited development and FLNG Option 1* described in the PAD. This case, corresponding to the current preferred option of the operator for the initial phase of the GTA development, only exploits for LNG exports a small portion of the GTA resources, at a constant annual plateau of 4.6 Million Tons Per Annum (Mtpa) for 26 years after a quick ramping up—corresponding to a cumulative production of near 7 Tcf over that period—of which 2.3 Mtpa are apportioned to Mauritania on the assumption that initially the production and costs of the GTA cross-border field are allocated to Mauritania and Senegal on a 50/50 basis, subject to further possible adjustments.
3. Under Option 1, development capital expenditures allocated to Mauritania are assumed to be US\$4 billion (in US\$ 2017), consisting of US\$2 billion for upstream CAPEX and US\$2 billion for one converted FLNG unit designed for sales of 2.3 Mtpa. Estimated exploration and appraisal costs, and decommissioning costs are also considered in the modeling. Costs and production are very tentative at this stage, because no investment or operating costs or production profile estimates are currently available from the operator as no FID has been taken and no field development plan and no LNG plan are available. Therefore, best tentative guesses can only be done at this stage and are subject to revision when more information becomes available.
4. The determination of the estimated GoM petroleum revenues is modelled considering the specific terms of

¹⁶ Some simplified assumptions were made at this stage for modeling purposes but not having a material impact on the range of results. The impact of stylized financing on government revenues was modeled (assuming 70 percent financing of development CAPEX at Libor+3 percent in real terms). The modeling only considers the direct GoM revenues derived from the PSC and taxation of profit from the project, and therefore indirect taxes and withholding taxes are not modeled. They may be payable under the Mauritanian tax regime, subject to further tax advice after a detailed review of the applicable Mauritanian PSCs and tax legislation.



the 2012 PSC related to the C8 block applicable to the GTA project regarding the portion of production and costs allocated to Mauritania. Details on the PSC terms and the applicable tax regime are provided in Annex 5. The modeled sources of revenues for GTA consist of the following:

- The GoM share in the “Profit Petroleum¹⁷” related to Mauritania (equal to the difference between the value of gas and condensate production and the “Cost Petroleum” allocated to the contractor for cost recovery purposes of the eligible PSC costs) as provided for under the PSC. This share is progressive in relation with the tiers of an economic criterion named the “R factor” (a ratio between the net cumulative revenues and the cumulative exploration and development investments, as determined at the end of the quarter preceding the period of sharing of the Petroleum Profit), starting at 31 percent for R lesser than 1. No royalty is payable under the PSC terms.
 - The CT paid by the contractor (including SMHPM) on its profits derived from the GTA PSC activities related to Mauritania, at the contractual and stabilized rate of 27 percent stipulated in the PSC.
 - The net revenues resulting from the participation of SMHPM in the field development and production apportioned to Mauritania. A rate of participation of 10 percent is assumed in the base case. SMHPM has the right under the applicable PSC to increase its participation to a maximum rate of 14 percent. A sensitivity study to that maximum rate is presented below.
 - Due to the use of a FLNG unit under the field case, additional fiscal assumptions have to be made for the economic modeling in order to define the possible fiscal regime applicable in Mauritania to the FLNG unit, which is not yet defined under the Petroleum Code and will have to be mutually agreed prior to FID. The PAD describes the two possible fiscal options that could be considered, subject to further negotiations between the parties involved, including the GoM¹⁸:
 - (A) The *segmented* fiscal system where the PSC regime applies to upstream activities while a standard tax regime (with a CT rate of 25 percent, which is the standard general CT rate in Mauritania since 2015) to the FLNG activities related to Mauritania.
 - (B) The *integrated* fiscal system where both the upstream and FLNG activities related to Mauritania are consolidated and treated for fiscal purposes under the applicable PSC rules.
 - For simplification, only the results of the segmented fiscal approach are presented below. Under the segmented option, the tolling tariff payable by the PSC holder to the FLNG owner and its operator for using the FLNG unit is assumed to be determined on the basis of a 10-percent after-CT rate of return on the equity related to the FLNG. It is assumed for preliminary modeling purposes only that the FLNG unit is funded by equity and debt, with a hypothesis of a 30 percent equity and 70 percent debt at an assumed annual interest rate of Libor+3 percent, such eligible interest being deductible for CT purposes.
5. The economic and fiscal modeling also determines the average total “government take” in the undiscounted rent from the assumed field case, and the customary economic criteria such as the internal rate of return (IRR) of the project, on a pre- or post-tax basis, on a full cycle basis (including exploration and appraisal, development, production and decommissioning) or on a post-FID forward basis (excluding exploration and appraisal), and the IRR of the IOC.

¹⁷ In the Figures displayed below, for model simplification, the term of « profit oil » is used. It also includes “profit gas” for GTA.

¹⁸ The same fiscal options may apply if an onshore LNG plant scheme is selected.



6. Under the low US\$5/MMBtu LNG price scenario, the cumulative total GoM revenues from the Mauritania share in the GTA field case amount to US\$3.5 billion (US\$ 2017) spread over the assumed 26-year production life, as displayed in Figure 8.1 per source of direct revenues. While the government share in Profit Petroleum starts from the commencement of production, effective payments of CT commences several years later, due to the deductibility of eligible depreciation allowances and interest. Results in the following figures and tables correspond to a SMHPM participation of 10 percent. GoM revenues slightly increase if SMHPM elects to participate at the maximum rate of 14 percent as stated below.
7. Figure 8.2 shows the annual variations of estimated total GoM revenues for each of the four price scenarios of US\$3, US\$5, US\$7 and US\$9/MMBtu respectively. Total estimated GoM revenues for the Option 1 GTA field case over its life vary from US\$3.5 billion (at US\$5/MMBtu) to US\$7.3 billion (at US\$7/MMBtu) and US\$11.1 billion (at US\$9/MMBtu), as stated in Table 8.1. GoM revenues and IRR become low for gas prices lesser than US\$5/MMBtu.
8. Table 8.1 displays the estimated amounts of cumulative government revenues generated for the GTA assumed case under each LNG price scenario and the average annual GoM revenues for specific periods, showing that the annual revenues are not steady. Thus, for example the estimated average annual revenues during the first five years of production, excluding the US\$3/MMBtu price scenario, range from US\$34 million to US\$193 million per year when constant gas prices over the project are US\$5 or US\$9/MMBtu, all values being undiscounted and expressed in US\$ 2017. The average annual revenues are also displayed for the next five and 10 years, where average annual GoM revenues significantly increase after the recovery of the CAPEX, depreciation and deduction of interest. The estimated average undiscounted government take ranges from 43 percent to 54 percent in relation to the US\$5-9/MMBtu price scenarios. In Table 8.1, IOC means PSC contractor excluding SMHPM.
9. Table 8.2 summarizes the main results of a sensitivity study to the GTA Option 1 field development and FLNG CAPEX, assuming they are increased by +30 percent or decreased by 30 percent versus the GTA field base case CAPEX, for a gas and LNG price scenario of US\$5/MMBtu, indicating the variations of the IRR (pre- and post-tax), the government revenues (cumulative, and per specific periods), and the government take in the rent. The impact of the cost overruns is relatively fairly shared between the respective GoM and the IOC revenues through the PSC and CT mechanisms. Thus, estimated GoM revenues rise from US\$3.5 billion to US\$4.7 billion when CAPEX is reduced by 30 percent. In parallel, the government take improves from 43 percent to 49 percent, benefiting from the automatic fiscal progressivity under the use of a Profit Petroleum split based on the R factor economic criterion. Table 8.2 also shows the estimated break-even price for the selected GTA Option 1 field case, corresponding to around US\$5/ MMBtu for achieving a 10 percent IOC post-tax IRR.
10. An additional sensitivity study to the impact of increasing the SMHPM participation rate from 10 percent to the maximum contractual 14 percentage rate was made. Table 8.2 displays that under a US\$5/MMBtu price, the estimated total GoM revenues of the GTA field base case over the assumed 26-year production life are increased from US\$3.55 billion to US\$3.7 billion, while the undiscounted government take is slightly increased from 43 percent to 45 percent when the participation rises from 10 percent to 14 percent, both for upstream and FLNG activities.



Figure 8.1: GTA Option 1 field case and segmented fiscal option. Mauritania Government profile per source of revenues at US\$5 per MMBtu (US\$2017)

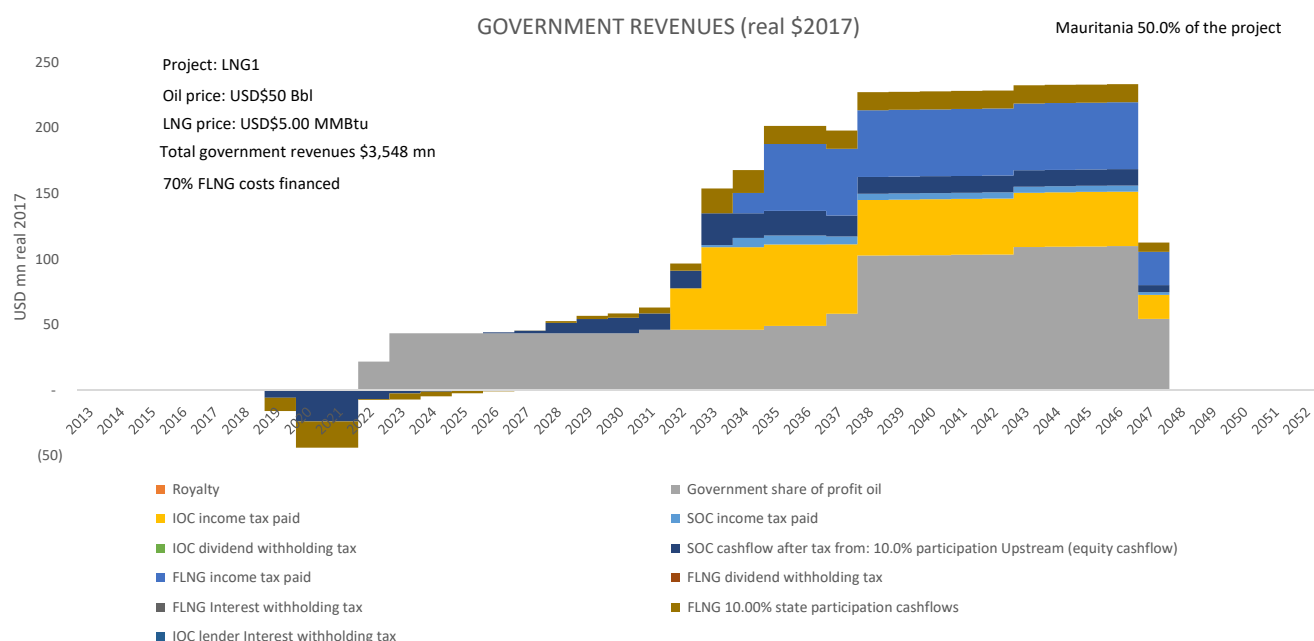


Figure 8.2: GTA Option 1 field case and segmented fiscal option. Mauritania government revenues profile at US\$3, US\$5, US\$7 and US\$9 per MMBtu (US\$ 2017)

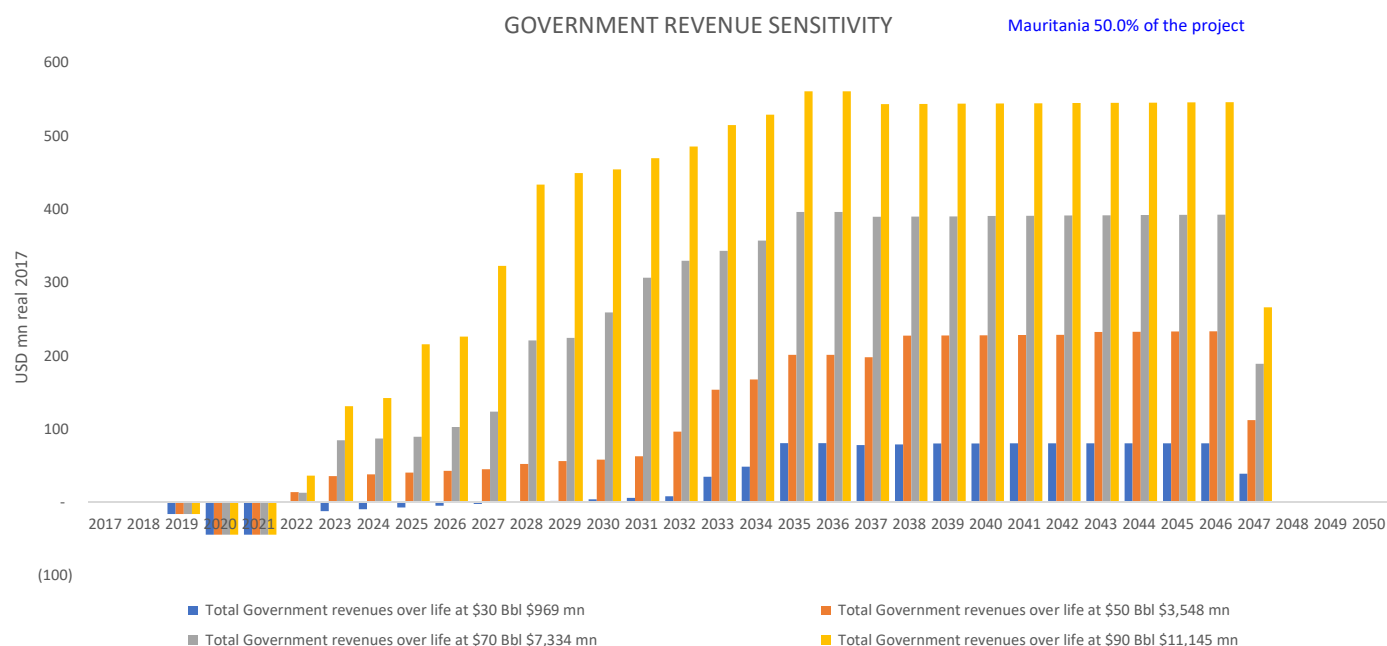




Table 8.1: GTA Option 1 field case and segmented fiscal option. Mauritania Government revenues, IRR (pre-tax and post-tax) and GT, at US\$3, US\$5, US\$7 and US\$9 per MMBtu (US\$ 2017)

| Government revenues across a range of oil prices USD mn \$2017 unless stated otherwise | | Mauritania 50.0% of the project FLNG structure: Segmented | | | |
|---|----------------|--|--------------|--------------|---------------|
| Oil price \$ Bbl | USD bbl | 30 | 50 | 70 | 90 |
| LNG price | USD MMBtu | 3.00 | 5.00 | 7.00 | 9.00 |
| Total production (mn BOE) | Mn BOE | 547 | 547 | 547 | 547 |
| Years of production | years | 26 | 26 | 26 | 26 |
| Aggregate project pre-tax IRR (upstr.+FLNG) | % nominal | 5.1% | 12.3% | 17.8% | 22.6% |
| Aggregate project pre-tax (incl. decomm. provn) IRR | % nominal | 5.1% | 12.3% | 17.8% | 22.6% |
| IOC upstream equity IRR/ROE | % nominal | -10.3% | 16.1% | 30.9% | 45.7% |
| Upstream lender IRR | % nominal | 6.4% | 6.4% | 6.6% | 6.6% |
| Upstream IOC equity plus lender IRR | % nominal | -4.3% | 11.3% | 18.6% | 24.5% |
| FLNG equity IRR/ROE | % nominal | 10.0% | 10.0% | 10.0% | 10.0% |
| FLNG Project financing lender IRR | % nominal | 6.4% | 6.4% | 6.4% | 6.4% |
| Aggregated Upstream & FLNG equity IRR/ROE | % nominal | 2.1% | 12.9% | 20.5% | 28.3% |
| Aggregate equity plus lenders IRR (upstr.+FLNG) | % nominal | 3.8% | 9.8% | 13.5% | 16.6% |
| Total government revenue over project life (upstr.+FLNG) | USD mn \$2017 | 969 | 3,548 | 7,334 | 11,145 |
| Average Govt. revenue production year 1 - 5 | USD mn \$2017 | (7) | 34 | 76 | 151 |
| Average Govt. revenue production year 6 - 10 | USD mn \$2017 | 2 | 55 | 227 | 426 |
| Average Govt. revenue production year 11 - 20 | USD mn \$2017 | 65 | 193 | 378 | 537 |
| Government share in aggregate project (undiscounted) | % undiscounted | 40% | 43% | 51% | 54% |



Table 8.2: GTA Option 1 field case and segmented fiscal option. Sensitivities of Mauritania Government revenues, IRR (pre-tax and post-tax) and GT at US\$5 per MMBtu (US\$2017) to CAPEX and SMHPM participation rate

| Government revenues across a range of Development costs USD mn \$2017 unless stated otherwise | | Mauritania 50.0% of the project FLNG structure: Segmented | | | | |
|--|-----------------|--|-----------------------|--------------|--------------|--------------|
| | | Base | Dev. Cost Sensitivity | | State Part. | BreakEven |
| Oil price \$ Bbl | USD bbl | 50 | 50 | 50 | 50 | 50.800 |
| LNG price | USD Mmbtu unesc | 5.0000 | 5.0000 | 5.0000 | 5.0000 | 5.0800 |
| State participation | % | 10% | 10% | 10% | 14% | 10% |
| Development cost sensitivity | % nominal | 100% | 130% | 70% | 100% | 100% |
| Upstream development costs | USD mn \$2017 | 2,000 | 2,600 | 1,400 | 2,000 | 2,000 |
| FLNG development costs | USD mn \$2017 | 2,000 | 2,600 | 1,400 | 2,000 | 2,000 |
| Total unit FLNG tariff | USD / Mscf 2022 | 2.2390 | 2.7451 | 1.7329 | 2.2390 | 2.2390 |
| Aggregate project pre-tax IRR (upstr.+FLNG) | % nominal | 12.3% | 9.4% | 17.1% | 12.3% | 12.6% |
| Aggregate project pre-tax (incl. decomm. provn) IRR | % nominal | 12.3% | 9.3% | 17.0% | 12.3% | 12.5% |
| IOC upstream equity IRR/ROE | % nominal | 16.1% | 7.3% | 28.9% | 16.4% | 16.9% |
| Upstream lender IRR | % nominal | 6.4% | 6.4% | 6.6% | 6.4% | 6.4% |
| Upstream IOC equity plus lender IRR | % nominal | 11.3% | 6.9% | 17.8% | 11.3% | 11.7% |
| FLNG equity IRR/ROE | % nominal | 10.0% | 10.0% | 10.0% | 10.0% | 10.0% |
| FLNG Project financing lender IRR | % nominal | 6.4% | 6.4% | 6.4% | 6.4% | 6.4% |
| Aggregated Upstream & FLNG equity IRR/ROE | % nominal | 12.9% | 8.7% | 19.6% | 13.0% | 13.3% |
| Aggregate equity plus lenders IRR (upstr.+FLNG) | % nominal | 9.8% | 7.7% | 13.1% | 9.8% | 10.0% |
| Government revenues upstream | USD mn \$2017 | 2,730 | 1,514 | 4,109 | 2,815 | 2,875 |
| Government revenues FLNG | USD mn \$2017 | 818 | 1,063 | 573 | 884 | 818 |
| Total government revenues (upstream+FLNG) | USD mn \$2017 | 3,548 | 2,577 | 4,682 | 3,698 | 3,693 |
| Average Govt. revenue production year 1 - 5 | USD mn \$2017 | 34 | 19 | 48 | 33 | 36 |
| Average Govt. revenue production year 6 - 10 | USD mn \$2017 | 55 | 38 | 126 | 60 | 57 |
| Average Govt. revenue production year 11 - 20 | USD mn \$2017 | 193 | 141 | 247 | 205 | 202 |
| Government share in aggregated project | undiscounted | 43% | 35% | 49% | 45% | 43% |