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PROJECT PERFORMANCE ASSESSMENT REPORT

WHAT WORKS

MOZAMBIQUE

Southern Africa Regional Gas Project

Report No. 132744
DECEMBER 6, 2018

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MOZAMBIQUE

SOUTHERN AFRICA REGIONAL GAS PROJECT
(P082308)

December 6, 2018

Financial, Private Sector, and Sustainable Development

Independent Evaluation Group

Currency Equivalents (annual averages)

Currency Unit = Metical

2000	$1.00	Mt 15.2
2005	$1.00	Mt 23.1
2010	$1.00	Mt 34.0
2018	$1.00	Mt 60.5

All dollar amounts are U.S. dollars unless otherwise indicated.

Abbreviations

CMG	Companhia Limitada de Gasoduto
CMH	Companhia Moçambicana de Hidrocarbonetos
CPF	Central Processing Facility
DBSA	Development Bank of South Africa
E&S	environmental and social
ECIC	Export Credit Insurance Corporation of South Africa
EITI	Extractive Industries Transparency Initiative
ENH	Empresa Nacional de Hidrocarbonetos
GSA-1	First Gas Sales Agreement
GJ	gigajoule
GSA-2	Second Gas Sales Agreement
ICR	Implementation Completion and Results Report
IEG	Independent Evaluation Group
LNG	liquid natural gas
MGJ/a	million gigajoules per annum
NGO	nongovernmental organization
PAD	Project Appraisal Document
PPA	Petroleum Production Agreement
PRG	partial risk guarantee
PRSC	Poverty Reduction Support Credit
ROMPCO	Republic of Mozambique Pipeline Investments Company
SARGP	Southern Africa Regional Gas Development Project
SPT	Sasol Petroleum Temane Limitada
TCF	trillion cubic feet
UJV	Unincorporated Joint Venture

Fiscal Year

Government: January–December

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Contents

Appendixes

This evaluation report was prepared by Asita De Silva and Nelson Ocuane (consultants). Migara Jayawardena was the Task Team Leader for the report. The report was panel reviewed by Raghavan Narayanan and Stephen Hutton. Abdulaziz R. Faghi was the peer reviewer. Richard Kraus provided administrative support.

Principal Ratings

Indicator	ICR	ICR Review	PPAR
Outcome	Satisfactory	n/a	Satisfactory
Risk to development outcome	Moderate	n/a	Negligible to Low
Bank performance	Satisfactory	n/a	Satisfactory
Borrower performance*:	Satisfactory	n/a	Satisfactory

**: As this assessment is for a guarantee,, the Borrower performance rating is based on the combined performance of the host Government and the implementing party.*

Note: The Implementation Completion and Results Report (s a self-evaluation by the responsible Global Practice. The ICR Review is an intermediate Independent Evaluation Group product that seeks to independently validate the findings of the ICR. An ICR Review was not prepared for this project. PPAR = Project Performance Assessment Report.

Key Staff Responsible

Management	Appraisal	Completion
Project Team Leader	Joel Maweni Marie-Ange Saraka-Yao	Mustafa Zakir Hussain
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IEG Mission: Improving World Bank Group development results through excellence in independent evaluation.

About This Report

The Independent Evaluation Group (IEG) assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the World Bank's self-evaluation process and to verify that the World Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20–25 percent of the World Bank's lending operations through fieldwork. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or World Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, interview World Bank staff and other donor agency staff both at headquarters and in local offices as appropriate, and apply other evaluative methods as needed.

Each PPAR is subject to technical peer review, internal IEG panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible World Bank Country Management Unit. The PPAR is also sent to the borrower for review. IEG incorporates both World Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the World Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the IEG Rating System for Public Sector Evaluations

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: http://ieg.worldbankgroup.org).

Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current World Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, country assistance strategies, sector strategy papers, and operational policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared with alternatives. The efficiency dimension is not applied to development policy operations, which provide general budget support. *Possible ratings for outcome:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, highly unsatisfactory.

Risk to development outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for risk to development outcome:* high, significant, moderate, negligible to low, and not evaluable.

Bank performance: The extent to which services provided by the World Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan or credit closing, toward the achievement of development outcomes). The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, and highly unsatisfactory.

Borrower performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for borrower performance:* highly satisfactory, satisfactory, moderately satisfactory, moderately unsatisfactory, unsatisfactory, and highly unsatisfactory.

Preface

This Project Performance Assessment Report (PPAR) assesses the Mozambique - Southern Africa Regional Gas Project (P082308). The project was approved by the World Bank's Board of Directors on November 20, 2003. The project comprised two International Bank for Reconstruction and Development (IBRD) partial risk guarantees (PRGs) for US$30 million that supported a public-private partnership to develop and export Mozambique's natural gas reserves. The guarantees became effective on August 26, 2004 and expired on June 15, 2015. The development objective of the project was to initiate the development and export of Mozambique's substantial natural gas resources in an environmentally sustainable manner, thereby contributing toward economic growth and poverty reduction. The World Bank's PRGs sought to facilitate mobilization of private capital and commercial debt financing required for the implementation of the project. The project was expected to provide a framework for other private sector projects in Mozambique and facilitate further investment in gas exploration and gas-related industries. Along with the IBRD enclave PRGs, the project was supported by MIGA guarantees and an IFC equity investment. This PPAR evaluates only the World Bank's engagement through the PRGs. A separate Expanded Project Supervision Report and Independent Evaluation Group (IEG) Evaluation Note were prepared for IFC's investment in the project.

Methodology: IEG prepared this evaluation report. This assessment is based on: (i) a desk review of project-related documentation—including the project appraisal document, implementation status and results reports, internal memorandum, the implementation completion report, and the implementation completion report review; and (ii) a review of external documentation—including papers prepared by the government, other development partners, nongovernmental agencies, private sector entities, and academic institutions; and (iii) interviews with key stakeholders including World Bank Group staff, representatives of the government of Mozambique, the project sponsors, nongovernmental organizations, and other stakeholders. As part of the evaluation process, an IEG mission conducted interviews in Mozambique and South Africa from May 19 to June 7, 2018. Following standard IEG procedures, a copy of the draft report was sent to the relevant government officials and the project sponsors; no comments were received.

Summary

When the Southern Africa Regional Gas Project (SARGP) was approved in November 2003, Mozambique had seen strong economic growth since the end of the civil war in 1992 but faced challenges in improving its business environment and attracting foreign investment. Although Mozambique's gas reserves had been discovered in the 1960s, they remained undeveloped. The World Bank had provided advice and technical assistance to help develop the gas fields since 1991. In 2000, the government signed an agreement with the South African petrochemical company, Sasol, under which Sasol would develop the gas reserves in Mozambique and export natural gas to South Africa over a 25-year period.

The stated objective of the SARGP was to help: "*initiate the development and export of Mozambique's substantial natural gas resources in an environmentally sustainable manner, thereby contributing towards economic growth and poverty reduction in Mozambique*." The project was supported by two Multilateral Investment Guarantee Agency (MIGA) guarantees; an International Finance Corporation (IFC) equity investment; and two International Bank for Reconstruction and Development (IBRD) partial risk guarantees (PRGs) for US$30 million, which are the subject of this evaluation. The development and export of gas was expected to lead to several intermediate outcomes, including increased fiscal revenues; positive demonstration effects and increased foreign investment; upstream and downstream linkages with local industries; and capacity development in the gas sector. These outcomes, in turn, were expected to contribute to advancing Mozambique's economic growth and poverty reduction objectives.

The relevance of the project's objectives is rated as "**Substantial.**" A key government strategy was to attract large-scale foreign investment to develop its natural resources and thereby catalyze broader economic growth and poverty reduction. The gas needed to be developed in an environmentally sustainable manner because of potential environmental risks from the export and transport of gas. The objective remained consistent with the World Bank's country strategies for Mozambique throughout its implementation. Although in 2017 the Bank Group indicated that it would no longer support upstream oil and gas projects, this does not bear on the assessment of the relevance of the project. In retrospect, the statement of objectives should also have explicitly included domestic market use of the gas reserves, which was a key intended project intermediate outcome. Per World Bank policies at the time, the project was designed as a single-country project rather than a "regional" project, and the project objectives therefore did not capture outcomes in South Africa.

The relevance of the project's design is rated "**Substantial.**" The World Bank's PRGs provided a unique form of political risk mitigation that was not provided by other

political risk insurers due to: (i) the explicit counter-guarantee provided by the government to the World Bank; (ii) the World Bank's long-standing policy dialogue in the sector; and (iii) its overall relationship with the government. The project was fully consistent with the World Bank's guidelines for use of guarantee instruments. The underlying project's results framework was sound. The project reflected a timely confluence of private sector and government interests and the project design effectively mitigated a range of considerable commercial and political risks. Sasol brought a core market, financial resources, a strong incentive, and a risk-taking culture to help realize the project.

Achievement of the project's development objectives is rated "**Substantial.**" The project successfully initiated the development of Mozambique's natural gas resources in an environmentally sustainable manner. The World Bank's PRGs helped the project achieve a stable financial structure with the project's risks distributed across the private sector sponsor, commercial financers, development financiers, risk mitigation agencies, and the government. The gas export targets were achieved; gas was made available on the domestic market; and the project's government revenue targets were met. The project was implemented in full compliance with the Bank Group's environmental and social safeguards.

Development of the gas reserves led to several intermediate outcomes in Mozambique. Government revenues from the project exceeded projections and the revenues fed into a generally prudent, pro-poor fiscal expenditure framework. A key outcome was stimulation of gas-fired power generation, which has helped increase access to electricity. The project helped demonstrate a conducive environment for large-scale foreign investment and, following the discovery of additional coal and offshore gas reserves, substantial further investment has flowed into Mozambique. The project helped advance the legal and regulatory framework and create a body of expertise in the gas sector, which has important implications for the expanding gas industry. Although initially limited, Sasol's local content purchases gradually increased to more than 50 percent of its annual expenditure. Sasol's local community development projects faced initial weaknesses but subsequently evolved toward more participatory and sustainable initiatives. In South Africa, the project helped introduce natural gas into South Africa's energy mix and add to government revenues, although development of the gas industry has been undermined by lack of competition in the sector.

The intermediate outcomes contributed to the country's growth and poverty reduction objectives, though Mozambique continues to face substantial challenges to further reduce poverty. Since the initiation of the project, Mozambique continued its strong economic growth, with GDP growing an average of 6.7 percent a year in 2007–16, compared to 4.3 percent in the Sub-Saharan Africa region. Poverty has been on a declining

trend, falling from 54 percent in 2002 to 46 percent in 2014. While other multiple factors affected overall growth and poverty reduction in Mozambique, a direct correlation between the project-induced intermediate outcomes and overall progress in economic growth and poverty reduction cannot be drawn.

The efficiency of the project is rated "**Substantial**." The government's return on its investment through tax revenues and royalties, and as a shareholder, exceeded projections. The project's structure enabled an increase in returns to the government once the sponsor and the project's financiers had recovered their investments. The sponsor also realized substantial returns on its investment, commensurate with the risks that it took and its sound management of the project. Physical construction was completed on schedule; pipeline construction costs were below international averages; and the project has operated without interruption since operations commenced. The PRG instrument reflected an efficient use of World Bank resources. The World Bank helped realize a stable financial structure and mitigate risk for the US$1.2 billion investment with a relatively limited guarantee exposure of US$30 million.

The outcome of the project is rated "**Satisfactory**" based on its *substantial* relevance to Mozambique's development objectives; the *substantial* achievement of objectives; and the *substantial* efficiency with which the objectives were achieved.

The risk to development outcome is rated "**Negligible to Low**." The project is currently in its 15th year of operation and is likely to continue to operate successfully through the end of its originally contracted term in 2029. The project proved to be technically and financially sound, and operations have flowed without disruption since first gas in March 2004. The government has a substantial stake in the project's continued financial success. During the project period, the government enhanced the regulatory regime in the oil and gas sector, strengthened institutions, and built capacity in oil and gas sector institutions. Sasol's efforts to develop local suppliers and sustainable local community investments portend continued community support for the project. The long-term sustainability of key intermediate outcomes such as gas-to-power generation plants are substantially enhanced by the new gas discoveries.

Bank quality at entry is rated "**Satisfactory**". The World Bank conducted a detailed appraisal of the project, including review of the project's legal and regulatory agreements; technical, commercial, and financial viability; benefits to Mozambique; and environmental and social (E&S) safeguards. The World Bank's appraisal helped enhance E&S safeguard measures. The PRGs were the World Bank's first use of an "enclave" IBRD PRG in an International Development Association (IDA) country that enabled World Bank support for a private sector–sponsored project without displacing Mozambique's concessionary IDA allocation. The PRG risk coverage was appropriately restricted to only

those risks under government control and did not add to the government's financial obligations. The quality of World Bank supervision is rated as "**Satisfactory.**" The World Bank undertook five supervision missions for the project, from 2004 to 2008, per guidelines for PRG projects. During its supervision missions, the World Bank contributed to improving E&S safeguards and management of the community development programs. These lead to an overall Bank Performance rating of **"Satisfactory"**.

The project provides a good example of Bank Group institutions' synergies. MIGA's guarantees covered Sasol's initial bridge equity investments that enabled Sasol to start construction prior to the finalization of a long-term financing package, substantially enhancing the project's timeframe. The World Bank's PRGs then supplemented MIGA's coverage by providing additional political risk mitigation, given the substantial size and high-risk nature of the project. IFC's advisory support helped secure commercial financing for the government's equity stake in the project. IFC's equity investment then helped reduce the government's initial financial burden and balance the relationship between Sasol and the government in the upstream entity. As an equity investor, IFC did not have leverage to enforce E&S compliance; this role was met by World Bank and MIGA engagement. The three Bank Group institutions therefore had distinct roles but also built on synergies in supporting the project.

Government performance is rated "**Satisfactory.**" At no point was there a risk of the guarantees being called. The project reflected a culmination of more than a decade of persistent government efforts to develop the Pande/Temane gas fields and therefore reflected strong government ownership from its inception. This commitment was sustained throughout the project's 15-year life to date, reinforced by its substantial equity stakes in the upstream and pipeline operations. The government built on the experience gained under the project to further develop the regulatory and investment environment in the oil and gas sector. The government generally pursued a prudent, pro-poor fiscal policy framework during the life of the project.

Implementation agency performance is rated as "**Satisfactory.**" Construction of the pipeline and CPF was completed in a relatively short timeframe between July 2002 and February 2004. Since the project became operational in March 2004, it has operated without interruption and met all its targets. Sasol consistently applied high standards with respect to E&S safeguards. Sasol learned from its experience and over time enhanced it approach toward community development projects and developing local suppliers. A key past weakness for Sasol has been an inadequate communication strategy, which it is endeavoring to address. Sasol showed flexibility in responding to government concerns on the pricing mechanism. These leadto an overall Borrower Performance rating of **"Satisfactory".**

The project's monitoring and evaluation system is rated as "**Substantial.**" The results framework provided an adequate basis for monitoring a private sector–implemented project. The output-level key performance indicators adequately captured progress and were monitorable and verifiable. Monitoring was effective, supported by Sasol's detailed annual reporting. The World Bank's monitoring of the underlying political risks was supported by its close engagement in the extractive industries sector through successive technical assistance projects during the life of the guarantees.

Some lessons from this experience include:

- *The PRG instrument can provide distinct risk mitigation to support a first-of-kind public-private partnership project in an untested policy and regulatory environment.* The World Bank's PRGs helped secure commercial financing for the project to supplement development financing and achieve a stable financial structure. The PRGs provided distinct political risk mitigation that other political risk insurers could not provide, through the World Bank's long-standing policy dialogue in the sector; its relationship with the government; the explicit counter-guarantee from the government; and the World Bank's in-depth technical, financial, and E&S appraisal of the project that gave additional comfort to participants.

- *Even as a late entrant into a project's financing structure, the Bank Group can leverage its presence to enhance E&S safeguards and community development initiatives.* Even though the World Bank's PRG instruments were engaged relatively late in the project's development, the World Bank was able to help improve E&S safeguards and help bring global experience to enhance the sponsor's community development initiatives.

- *Some flexibility in concession agreements to review price mechanism clauses in the event of extreme divergence from initial assumptions can help enhance long-term viability of a public-private partnership project.* The initial project agreements provided for a 10-year gas price cap indexed to crude oil prices. When crude oil prices subsequently averaged more than double the ceiling price, the price cap constrained government revenues during the initial 10-year period. An option to review the initial assumptions and concession clauses in the event of such a sustained substantial divergence from initial assumptions can be in the interest of both the concessionaire and government and enhance the concession's long-term viability.

- *Coordination of corporate local community development initiatives with local government programs can help enhance their sustainability.* The sustainability and effectiveness of Sasol's initial community development projects (building schools

and health centers) were undermined by lack of staff and equipment that were expected to be supplied by local governments. Sasol learned from its experience and re-oriented its community development initiatives toward income-generating activities and working with local governments to help build capacity and generate local government commitment to community development investments.

- *Proactive measures by the sponsor company to develop local suppliers are likely to be needed to ensure upstream linkages in extractive industry projects.* A challenge faced by Sasol in increasing purchases of local goods and services was to ensure adequate quality, timeliness, and costs of goods and services from local suppliers. Key measures that Sasol developed to enhance such upstream linkages included breaking large contracts into smaller components to allow smaller firms to participate; advance communication of procurement schedules; providing local firms with business, technical, and financial support; creating a fund to provide financing to Mozambican-owned enterprises; and encouraging joint ventures between local and international companies. Such proactive initiatives early in a project's operation are likely to enhance the likelihood of upstream linkages in extractive industry projects.

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1. Background and Context

Project Context

1.1 **In the early 2000s, Mozambique faced challenges in improving its business environment and attracting foreign investment.** Since the end of the civil war in 1992, Mozambique's economy had grown by 8 percent a year in 1992–2000. However, a range of challenges constrained Mozambique's ability to attract investment and sustain high levels of growth. These included poor infrastructure; cumbersome regulatory and administrative barriers; an unreliable legal recourse system; stringent labor market regulations; and restrictive property rights.[1] Mozambique's environment for foreign investment remained untested and perceptions of a politically risky investment environment persisted.[2] Mozambique's post-civil conflict period was less than a decade old, with continuing political uncertainties; the country had a history of socialist economic management and the economy remained heavy regulated; and the legal regime in the oil and gas sector comprised a 1981 Law on Petroleum Activities that did not define the regulatory framework.

1.2 **Mozambique's gas reserves were discovered in the 1960s but remained undeveloped largely because of the lack of a feasible market.** In 1961, the Pande gas field in Mozambique's Inhambane Province was discovered by the Gulf Oil Company, which subsequently relinquished its concession because of the lack of a viable market for the gas. In 1981, Mozambique's national oil company, Empresa Nacional de Hidrocarbonetos (ENH) was created and began to actively promote the development of the gas reserve. However, the gas field remained undeveloped because of disruption from the civil war; its limited proven size; the technical and financial resources required to develop it; and lack of a viable market. In the late 1980s, further exploration confirmed the existence of additional gas reserves and in the early 1990s, ENH received expressions of interest from several international oil companies to develop the reserves, including the South African petrochemical company, Sasol.[3]

1.3 **The World Bank had begun providing assistance to develop the Pande gas field in 1991.** The World Bank first engaged in the extractive industry and energy sector in Mozambique in 1987 to help improve the supply and distribution of electricity and petroleum products.[4] In 1991, the government asked the World Bank for assistance to determine the best use of the Pande gas resources. A prefeasibility study in 1992 suggested that the best use of the gas was to transport it by high-pressure pipeline to buyers in the industrial heartland of South Africa, with a branch line to Maputo. Alternative options such as producing ammonia for fertilizer or transporting gas to Maputo only were considered unrealistic because of their limited financial viability and investors' lack of

interest. The World Bank subsequently approved the FY95–03 Gas Engineering Project to support development of the Pande gas reserves. Under the project, the World Bank helped delineate the Pande field and prove the adequacy of its reserves for commercialization and helped strengthen Mozambique's gas sector institutions.

1.4 **A six-year period in which Enron owned the rights to the gas fields in 1994–2000 failed to result in development of the resource.** In 1994, the United States–based oil company Enron was granted exclusive rights to the gas field and began to explore options to develop the reserves. In 1998, it proposed establishing an iron ore treatment plant in Maputo that would use iron ore from South Africa and gas from Pande. This proposal was subsequently withdrawn in 1999, however, following a downturn in the iron ore industry, and in June 2000, Enron relinquished its rights to the gas field. The six-year experience with Enron had resulted in no progress in developing the gas reserves.[5] In September 2000, the government signed an agreement with Sasol to develop the gas fields, construct a pipeline, and export gas to South Africa over a 25-year period that formed the basis for the World Bank–supported FY04 Southern Africa Regional Gas Project (SARGP) that is the subject of this evaluation.

2. Relevance of the Objectives and Design

Objectives

2.1 **The Southern Africa Regional Gas Project (SARGP) sought to help initiate development of Mozambique's natural gas resources.** The project objective that was approved by the Board on November 20, 2003 was to "*initiate the development and export of Mozambique's substantial natural gas resources in an environmentally sustainable manner, thereby contributing towards economic growth and poverty reduction in Mozambique.*" The project comprised extraction and export of natural gas from Mozambique to South Africa over a 25-year period in a public-private partnership.[6] As the first privately-financed extractive industry project in Mozambique, the project also sought to help establish a framework for other private sector projects and facilitate further investments in oil and gas exploration and downstream gas-related industries. The World Bank supported the project through two partial risk guarantees (PRGs) for US$30 million. The project was also supported by two Multilateral Investment Guarantee Agency (MIGA) guarantees and an International Finance Corporation (IFC) equity investment.[7]

2.2 **A range of intermediate outcomes was expected from the project.** The World Bank's appraisal document and results framework identified several intermediate outcomes that were expected to result from the project that would in turn contribute toward economic growth and poverty reduction objectives in Mozambique. These included increased tax and export revenues; development of domestic gas markets,

including industrial and commercial gas applications and gas-to-electricity schemes; local capacity development for management of gas resources; additional investments in gas exploration; generation of new jobs; investment in a poor region of Mozambique; and mobilization of private capital and commercial financing. The appraisal report identified two key performance indicators: (i) Gas Exports: Export of about 72 MGJ of gas in 2004, ramping up to a plateau of 120 MGJ of gas per annum in 2009 and remaining at that level for the duration of the project; and (ii) Fiscal Benefits: Mozambique would derive revenues from gas royalties and taxes amounting to about US$498 million (or US$l05 million in net present value terms at a discount rate of 10 percent). In addition, Mozambique would receive returns on its equity participation in the project.[8]

Relevance of the Objectives

2.3 **The project's objectives were appropriate to Mozambique's development needs at the time, although the statement of objectives should have included the use of gas in Mozambique.** A key government strategy at the time was to attract large-scale foreign investment to develop its natural resources and thereby catalyze broader economic growth and poverty reduction. The gas needed to be developed in an environmentally sustainable manner because of potential environmental risks from the export and transport of gas. The project offered the opportunity to both export natural gas to South Africa as the anchor market and use some gas in the domestic market. In retrospect, the statement of objectives should have explicitly included domestic market use of gas as well as exports. Availability of gas on the domestic market was identified as an intermediate objective but given its importance in the project's results framework and to the overall poverty reduction and growth objectives, it should have been included in the statement of project development objectives as well. Per World Bank policies at the time, the project was designed as a single-country project rather than a "regional" project; the objectives therefore did not include outcomes in South Africa.

2.4 **The project was consistent with the World Bank's country strategies for Mozambique, which sought to help attract private sector investment to develop its natural resources.** The FY96 World Bank country strategy for Mozambique identified the Pande gas project as an "*important vehicle for increasing private sector participation in the economy*."[9] Under the FY00 strategy, the World Bank sought to help attract large investments that exported energy or energy-intensive manufactured products to catalyze broader growth and poverty reduction.[10] The FY04 strategy reiterated the project's role as a strategic entry point for the World Bank's support for private sector development and improvements in the investment climate.[11] In the FY07 strategy, the World Bank sought to help Mozambique develop its natural energy resources to enable increased pro-poor spending and access to electricity in Mozambique and the region.[12] The FY12 strategy

sought to help the government manage its expected gas boom and integrate mineral revenues into Mozambique's broader development strategy. In FY13, the World Bank approved the Mining and Gas Technical Assistance Project to support reforms and capacity building in the mining and hydrocarbon sectors. The FY17 strategy emphasized World Bank support to help manage the large expected revenues from new natural gas discoveries.[13]

2.5 **The Bank Group's announcement in 2017 that it would no longer support upstream oil and gas projects does not affect the project's relevance.** In December 2017, the World Bank announced that it would no longer finance upstream oil and gas projects after 2019. The rationale was that technological and market shifts offered countries a range of low-cost options (such as solar and wind power) to increase access to energy. In addition, commercial financing was usually available for oil and gas development.[14] In exceptional circumstances, the Bank Group would consider financing upstream natural gas projects in the poorest countries, where there was a clear benefit in terms of energy access for the poor. This decision does not affect the relevance of the SARGP for several reasons: (i) the World Bank did not finance the project but supported commercial financing of the project; (ii) the policy does not take effect until 2019 and was not in effect at the time the World Bank guarantees expired in 2015; and (iii) a strong case can be made that Mozambique would in any event qualify as an "exceptional circumstance" as the eighth poorest country in the world and the importance of gas resources for energy access in the country. Based on the above, the relevance of the project's objectives is rated as **"Substantial."**

Design

Underlying Project Design

2.6 **The gas development project comprised an upstream component and a transmission component.** The upstream component comprised development of gas wells at Temane and Pande and construction of a Central Processing Facility (CPF) to treat the gas prior to transport. The transmission component comprised construction of an 865-kilometer pipeline from Mozambique to South Africa with five off-take points in Mozambique. Under a 25-year agreement, the gas would be supplied to Sasol's petrochemical processing facilities and gas distribution network in South Africa as the "anchor" market, with a portion of the gas to be made available in Mozambique. The upstream component would be owned by a unincorporated joint venture (UJV) comprising Sasol Petroleum Temane (SPT), a subsidiary of Sasol (70 percent); the Mozambique state-owned Companhia Moçambicana De Hidrocarbenetos (CMH) (25 percent); and IFC (5 percent). The pipeline component would be owned by the Republic of Mozambique Pipeline Company (ROMPCO) which would be owned by Sasol

Gas Holdings, a subsidiary of Sasol (50 percent); the South African state-owned Gas Development Company (25 percent); and the Mozambican state-owned Companhia Moçambicana de Gasoduto (CMG) (25 percent).

2.7 **The private sector sponsor of the project was a well-established South African petrochemicals company with adequate financial resources and an existing market for gas.** By 2000, when it entered into the agreement to develop Mozambique's gas reserves, Sasol had established itself as a global petrochemical company and an innovator in coal-mining, coal-to-fuels, and fuels-to-chemicals technology.[15] In 2001, it had a turnover of US$4.8 billion and a pre-tax profit of US$1.2 billion, and employed more than 31,000 people.[16] As part of the Mozambique project, Sasol planned to adapt its production processes to both use natural gas and supply natural gas to its industrial customers. Sasol therefore had a strong track record, adequate financial resources, and an existing market for natural gas. At the time, however, it did not have experience in oil or gas extraction, and the Mozambique project would be its first venture into the upstream oil and gas business.

2.8 **Several key agreements defined the operating framework for the project.** The project's legal operating framework was established in the *Petroleum Production Agreement* (PPA) between the government of Mozambique and Sasol that was signed in October 2000. The agreement granted the UJV exclusive rights to the Pande and Temane fields for 30 years. At the end of the contract period, full ownership of the gas fields, CPF, and pipeline would be transferred to the government. The *Pipeline Agreement* between the government and Sasol signed in October 2000 authorized ROMPCO to construct, own, and operate the gas pipeline for 30 years. The first *Gas Sales Agreement* (GSA-1) signed in December 2002 committed the UJV to sell, and Sasol Gas to buy, 120 MGJ of natural gas a year for 25 years. In addition, a Regulatory Agreement between the government of South Africa and Sasol, signed in September 2001, granted Sasol exclusive rights to the gas market and pipeline infrastructure in South Africa for a period of 10 years and protected Sasol from regulatory changes in South Africa.

2.9 **Under the project agreements, the government would obtain revenue from three sources.** The government would derive revenues from: (i) a Petroleum Production Tax or "royalty" of 5 percent of the wellhead value of gas produced each year that could be taken in kind or cash; (ii) tax revenues on the operating profit of the UJV and ROMPCO; and (iii) profits from its 25 percent shares in both the UJV and ROMPCO. The agreed tax provisions did not involve any exceptions from existing regulations for investments in the oil and gas sector. The formula for the gas sales price comprised (i) a wellhead price indexed to Dubai crude oil, gas oil, and fuel oil prices; and (ii) a CPF processing fee indexed to U.S. and South Africa inflation, the US$/rand exchange rate, and Dubai crude oil, gas oil, and fuel oil prices. A price band linked to the crude oil price was set for the

first 10 years of operation, comprising a ceiling price of US$34 a barrel and a floor price of US$16 a barrel.

2.10 **The project's environmental and social (E&S) impact assessments and risk mitigation measures were of generally high standards prior to the World Bank's engagement.** E&S impact assessments were conducted as part of the formal Mozambican and South African environmental impact assessment approval processes in 1999-2002. Seven impact assessments and eight management plans were prepared. A 2002 MIGA/IFC review found the project's E&S impact assessments and risk management measures and public consultation and disclosure processes to be of "high quality."[17] The pipeline component had undergone a sound methodology for corridor selection based on stringent criteria for habitat protection and avoidance of social impacts; similar considerations had determined the siting of the CPF and flowlines. A 2002 assessment by the African Development Bank found that the E&S assessments provided a clear understanding of the project's expected impacts; that the construction elements were in accordance with international and local standards; and that E&S risks could be cost-effectively mitigated.[18]

2.11 **The World Bank helped further enhance E&S risk mitigation measures with some additional provisions.** It classified the project as an Environmental Category "A" project. During its appraisal, it asked Sasol to submit some additional documentation including: (i) a Regional Environmental and Social Assessment to address issues that were regional, indirect, or too broad to have been included in the specific activity assessments; (ii) a formal Resettlement Planning and Implementation Program that set out safeguards with respect to any resettlement; and (iii) a consolidated executive summary of all E&S assessments and public consultation processes. Sasol also agreed to commission independent audit reports and submit an integrated annual disclosure report to the World Bank and other lenders that would attest to the project's E&S compliance. Sasol would also apply the World Bank's safeguards to any future expansion of the project. With these additional measures, the World Bank found the project to be fully in compliance with its E&S standards and policies.

Partial Risk Guarantee Design

2.12 **To avoid start-up delays, Sasol initiated construction with bridge financing from the Development Bank of South Africa (DBSA) pending long-term financing arrangements.** Following signing of the PPA and Pipeline Agreement in October 2000, Sasol took the final investment decision in September 2001. Because of weather considerations and to avoid construction delays, Sasol commenced physical construction in June 2002 using bridge loan financing covered by a corporate guarantee from DBSA, pending finalization of the project's long-term financing structure. At the time of Board approval of the PRGs in November 2003, the project's physical components were therefore

substantially advanced: more than 80 percent of the pipeline on the Mozambican side of the border; 60 percent of the pipeline in South Africa; and 80 percent of the CPF were complete. Construction risk had therefore been absorbed by Sasol and could be excluded from the pricing of the long-term financing being arranged. The project reached financial closure on March 15, 2004.

2.13 **Sasol took commercial risk through corporate guarantees but was unwilling to take Mozambique political risk.** At Board presentation, the total project cost was estimated at US$1.1 billion, comprising US$244 million for development of the gas fields, US$296 million for the CPF, and US$612 million for the pipeline. The DBSA was the lead arranger for the financing that was sourced from several lenders along with DBSA: Standard Bank of South Africa; the European Investment Bank, African Development Bank, and bilateral lenders from France, Germany, and the Netherlands. To reduce funding costs and enhance the timeliness of the transaction, Sasol provided a corporate guarantee to each lender that guaranteed debt service for loans to the project entities. Sasol therefore assumed all commercial and operational risks of the project. It also assumed political risk in South Africa. However, given the project's large investment amount; long timeframe; dependence on agreements with the government of Mozambique; and the untested regulatory environment in Mozambique, Sasol was unwilling to take Mozambique political risk. This was therefore carved out of its corporate guarantee to lenders.

2.14 **Sasol employed a multi-pronged political risk mitigation strategy.** Sasol's strategy to mitigate Mozambique political risk comprised three elements: (i) engaging the government as a major partner, through the government's shares in the UJV and ROMPCO; (ii) engaging bilateral and multilateral lenders due to their implied political risk cover; (iii) and obtaining formal political risk cover. The financing comprised separate 12-year loans to SPT and ROMPCO that were divided into three tranches. The second and third tranches were financed by the multilateral development banks and bilateral lenders who took Mozambique political risk on their loans. The first tranche was financed by Standard Bank, the only commercial financier in the project. As Standard Bank was unwilling to take Mozambique political risk, political risk cover was taken from the Export Credit Insurance Corporation of South Africa (ECIC), MIGA, export credit agencies from Australia and Italy (through MIGA's reinsurance program), and the World Bank.

2.15 **The World Bank provided political risk insurance through two PRGs.** These were: (i) a $20 million PRG covering part of Standard Bank's loan to SPT; and (ii) a $10 million PRG covering part of Standard Bank's loan to ROMPCO. The PRGs guaranteed debt service on the project loans in the event of a default arising from covered political risks. As the risk coverage for SPT and ROMPCO involved government obligations under different contractual agreements (the PPA and the Pipeline

Agreement), two separate Guarantee Agreements were signed with Standard Bank that defined the coverage and trigger mechanisms for each guarantee. The World Bank also signed Project Agreements with SPT and ROMPCO that set out various covenants, including compliance with the World Bank's fiduciary and environmental guidelines. Per standard PRG practice, the World Bank's exposure was covered by an Indemnity Agreement with the government of Mozambique under which the government agreed to reimburse the World Bank for any payments made under the guarantees.

2.16 **The PRGs covered the government of Mozambique's breach of its obligations under the project agreements.** The PRGs could be triggered by Mozambique government actions that breached its obligations under the PPA and the Pipeline Agreement. These included: (i) changes in laws and regulations that would make the project agreements unenforceable or have material adverse effect; (ii) modification of the project agreements in a manner inconsistent with the terms of the original agreements; (iii) failure by the government to expeditiously award and enforce licenses, permits, approvals and other obligations needed to finance, develop, and transport the gas; (iv) expropriation; and (v) currency transferability. The PRGs would be triggered by an arbitral award that found that a loan covered by the PRG was in default as a direct result of the government's breach of a covered obligation. As the PPA and the Pipeline Agreement did not include any government obligations with respect to war and civil disturbance, these risks were not covered in the PRGs. The guarantees only covered Mozambique political risk and not South African political risk; did not cover any commercial risks related to the project; and did not cover any government payment obligations because the project agreements did not require any payments by the government.

2.17 **The World Bank used an IBRD enclave guarantee rather than an International Development Association (IDA) guarantee to preserve Mozambique's IDA allocation.** As Mozambique was (and remains) an IDA-eligible country, it received financing from the World Bank under concessionary IDA terms. To preserve Mozambique's concessional IDA allocation, the World Bank issued IBRD guarantees as "enclave" IBRD instruments in an IDA country rather than IDA guarantees, which would have reduced Mozambique's IDA allocation. The World Bank's guidelines enabled the use of IBRD PRGs in IDA countries if (i) the country was expected to be able to meet its payment obligations under the indemnity agreement; and (ii) the project earned foreign exchange revenues.[19] The project met all the World Bank's requirements for enclave guarantees: it would generate revenues outside Mozambique in U.S. dollars and South African rand and the World Bank determined that Mozambique would have adequate international reserves to cover the indemnity agreement. Although the IBRD PRG would be more expensive for the client than an IDA guarantee, the benefit of the IBRD enclave guarantee was that it would not affect Mozambique's IDA allocation.

Relevance of the Design

2.18 **The project's underlying results framework was clear.** The project appraisal document contained a clear statement of objectives and established links between the PRG instruments; the financial closure of the project; outputs from the gas project; realization of a set of intermediate outcomes in Mozambique; and the eventual contribution of the project toward the country's growth and poverty reduction objectives. The PRGs were important to helping secure commercial financing and a stable project financial structure with distributed risks. In turn, the extraction and export of gas would lead to increased fiscal revenues; an improved investment environment and demonstration effects; upstream and downstream linkages including stimulation of gas-based industries; and capacity development in the sector. These factors would in turn contribute to advancing the country's economic growth and poverty reduction objectives. The results framework depended on some assumptions, such as effective government public expenditure management, that were outside the control of the project but supported by the World Bank through other interventions within its country assistance strategies.

2.19 **The project embodied considerable commercial and political risks.** The project design effectively anticipated and mitigated a range of risks and potential exogenous factors that could affect its outcome. When the project was developed, it carried significant commercial, technical, and political risks. Commercial risks arose from uncertainties in both the supply of gas and the market in South Africa. The project agreements required purchase of 120 MGJ a year over a 25-year period, which was considered necessary to make the US$1 billion-dollar initial investment viable. When GSA-1 was signed in 2002, however, the gas fields had proven reserves to supply 120 MGJ/a for just 17 years. In the early 2000s, the market for natural gas in South Africa also remained undeveloped, accounting for less than 2 percent of its energy market.[20] There were also uncertainties in the gas-to-liquids industry that Sasol planned to use the natural gas for.[21] Although Sasol was a well-established company, it had no prior experience in upstream oil and gas development. There was also considerable political risk arising from Mozambique's untested legal and regulatory framework; its lack of a track record with large-scale foreign investment in extractive industries; its relatively recent emergence from conflict; and its legacy of socialist economic policies.

2.20 **The commercial risks were to a large extent mitigated by Sasol's distinct set of attributes at the time**. The project's commercial risks were substantially mitigated by several of Sasol's attributes, including its existing and potential market for gas in South Africa; its solid balance sheet; its established innovative ability; its appetite for risk; and its strong motivation driven by its long-term strategy to diversify the raw material base for its petrochemical plant away from coal and to adapt its synthetic gas-to-liquids technology to use natural gas. Sasol's own demand for natural gas, along with its

distribution network for its synthetic gas, placed it in a unique position to develop the South African gas market.[22] Sasol's market position was also enhanced by the 2001 Regulatory Agreement with the South Africa energy regulator that protected it against competition for a 10-year period.[23] Despite uncertainties as to the volume of gas in the fields, Sasol took the risk that additional recoverable quantities could be secured.[24] Sasol's lack of experience in upstream development was effectively mitigated by sub-contracting qualified external operators.[25] In the end, Sasol brought an "anchor" market, financial resources, a strong incentive, and a risk-taking culture to help realize the project that had proved elusive since the gas was discovered in the 1960s.

2.21 **The project conformed to the World Bank's past and present guidelines for the use of guarantee instruments.** The World Bank's guidelines for guarantees at the time indicated that PRGs could be used for: (i) transactions in sectors at early stages of reform where the risk of policy reversal was high and the World Bank's involvement in sector dialogue was seen as central to ensuring project viability and to attracting private financing; (ii) riskier and larger operations; and (iii) operations highly dependent on government undertakings and where the counter-guarantee was seen as critical to enhancing the value of government obligations.[26] Current World Bank guidelines indicate that PRGs can be deployed if a project (i) promotes broad-based economic growth, contributes to E&S sustainability, or enhances the effectiveness of the public or private sector; (ii) requires mobilization of private investment; (iii) has the express commitment of the host government; and (iv) is technically and financially viable and meets World Bank E&S and anti-corruption guidelines.[27] All these conditions were met in the project. The guarantees covered 2.7 percent of the project cost, compared to the 25 percent maximum that IBRD enclave PRGs were authorized to cover.

2.22 **The World Bank's PRGs provided a unique form of political risk mitigation because of the explicit counter-guarantee and the World Bank's long-standing policy dialogue in the sector.** Along with the World Bank, ECIC, MIGA, and Export Credit Agencies from Australia and Italy provided political risk insurance. The multiple political risk insurers reflected Sasol's multi-pronged strategy to mitigate political risk. Among the political risk insurance providers, the risk coverage generally overlapped, though some variations in coverage also existed. For example, both the World Bank's PRGs and MIGA's PRI covered expropriation, currency inconvertibility and transfer restriction, and breach of contract. However, the PRGs did not cover war and civil disturbance because these risks were not covered under the underlying project agreements, whereas MIGA's coverage did. The World Bank's PRGs were unique in that they were the only political risk insurance that involved an explicit counter-guarantee from the government; and the World Bank was the only provider with a long-standing policy dialogue in the sector. The multiple PRI providers also reflected the project loan size, which was too large to have

been covered by a single provider. MIGA's maximum coverage per project, for example, was US$220 million. Per industry practice, the presence of multiple political risk insurance providers also formed a "club" that enhanced their capacity to discourage an adverse political risk event.

2.23 **From Standard Bank's perspective, the PRGs provided the strongest form of political risk cover.** A Standard Bank retrospective on the project indicated that political risk insurance was sought from the World Bank through a PRG structure because of its explicit counter-indemnity from the government. Moreover, the World Bank's long-standing role as an advisor to the government in the gas sector was seen as an important factor in reducing the risk of potential adverse government actions. According to Standard Bank, the World Bank's PRG was the "*strongest form of political risk cover and […] guarantee products such as the PRG program can ultimately end up providing the key that unlocks commercial bank participation in these projects.*"[28] The World Bank's PRGs were important in securing Standard Bank's participation, without which there would have been no private commercial financing in the project.

2.24 **From Sasol's perspective the PRGs helped engage a commercial financier and establish a stable financial structure.** To reduce delays and costs, Sasol had begun construction with a bridge loan from DBSA and its own financing, pending a long-term financing package that met the targeted debt-to-equity ratio, distributed risk, and mitigated the likelihood of a political risk event. As Standard Bank was unable to take Mozambique political risk, its participation depended on formal political risk cover. The PRGs helped engage Standard Bank as well as improve the commercial loan terms. According to *Euromoney* magazine, which identified the transaction as a "deal of the year" in 2004, the political risk insurance increased the tenor of Standard Bank's loans to 12 years, compared to the 5–7-year tenors on Sasol corporate debt. The PRG's also formed a key part of Sasol's risk mitigation strategy of engaging multilateral banks and formal political risk insurance providers. To a large extent, the World Bank's PRGs were engaged less for their compensation value and more for its capacity to deter the likelihood of a political risk event because of its relationship with the government and long-standing advisory role in the sector.

2.25 **From the government's perspective, the PRGs helped enable the development of its gas resources that had proved elusive to date.** Prior to the project, the government had unsuccessfully endeavored to develop the Pande gas resources for over a decade. Given Sasol and Standard Bank's unwillingness to absorb Mozambique political risk, the PRG's helped the project reach a long-term stable financial structure with the participation of a commercial financier. By helping diversify financing sources away from development finance institutions, the PRGs helped the government establish a track record for commercial financing of extractive industry projects, with demonstration effects for other

commercial financiers. The World Bank had also been a long-standing partner in developing the gas resources; its engagement, including its appraisal and E&S safeguard review, helped provide additional comfort to the government as to the sponsor's performance in preparing and implementing the project. The government did not incur any fees with respect to the PRGs. Though the indemnity agreement created a contingent liability for the government, this did not affect the government's external debt position. According to International Monetary Fund (IMF) guidelines, contingent liabilities are not included in the debt of the guarantor; only when a guarantee is called does the guarantor assume the debt.[29]

2.26 **The government's use of revenues was addressed by other instruments in the World Bank's assistance strategy.** According to the government's letter of development policy that was included in the PAD document to the Board, the government indicated that the revenues generated by the project would be integrated into the budget and spent in a manner consistent with the government's medium-term expenditure framework, which emphasized poverty reduction. Under the 2000 Country Assistance Strategy (CAS), the World Bank provided support to help improve fiscal management and strengthen the poverty focus of government's expenditure. In FY04–16 a series of Poverty Reduction Support Credit (PRSC) operations were implemented that supported a range of public finance reforms.[30] This approach of integrating project revenues into the government's central budget system rather than creating new structures to manage project revenues was appropriate to Mozambique's circumstances at the time. The government's generally prudent fiscal framework at the time; the relatively small size of revenues from the project; the World Bank's close engagement in fiscal management through other instruments; and the fungibility of funds and difficulties in earmarking resources for specific uses all warranted integration of the project's revenues into the central budget. Based on the above, the relevance of the project's design is rated **a**s **"Substantial."**

3. Implementation

Implementation Experience

3.1 **The physical components of the project were completed on time and the project was expanded following new gas discoveries.** Construction of the CPF and pipeline began in June 2002 and was completed without any major disruptions or incidents. The project became commercially operational on March 26, 2004 and has operated without interruption to date. In 2007 additional gas reserves were discovered in the Pande/Temane area. An additional US$227 million investment in 2009–11 increased the capacity of the CPF by 50 percent from 120 MGJ/a to 183 MGJ/a. A second Gas Sales Agreement (GSA-2) increased both government royalties and the volume of gas allocated to the local market.[31]

Subsequent "debottlenecking" begun in 2017 further increased the capacity of the CPF to 197 MGJ/a. The capacity of the transmission pipeline was also expanded several times. The additional expansions raised the total investment from the initial US$1.1 billion to more than US$2 billion by 2017. A key external factor that affected the project was the sharp rise in crude oil prices after 2005. Whereas initial projections were based on prices around $25 a barrel, crude oil prices averaged US$72 dollars a barrel in 2004–17 (see appendix B).

3.2 **In addition, discoveries of extensive offshore natural gas reserves portend substantial further growth in the gas sector.** In 2009, significant offshore natural gas reserves were discovered in the Rovuma basin off Mozambique's northern coast. Proven reserves are estimated at 130 trillion cubic feet, which make them among the largest in the world. The discoveries have significant implications for Mozambique's future. Although technical and market challenges still exist, the first extraction and processing into liquified natural gas (LNG) projects are expected to become operational in the next decade. A World Bank study found that the size of the gas reserves allows for multiple simultaneous uses, including LNG exports to global markets via ship; pipeline exports to regional markets; domestic gas-to-power generation; domestic petrochemical processing; and use in other domestic industries.[32] According to one observer, "*Mozambique's natural gas has the potential to be a true game changer, not just for the nation itself, but also for meeting Africa's regional energy needs.*"[33]

Safeguards Compliance

3.3 **The project was implemented in full compliance with Bank Group environmental and social safeguards.** Throughout the World Bank's supervision of the project, it found each component to be in full compliance with the Bank Group's E&S standards and policies. Each of the World Bank's supervision reports from 2004 to 2012 and the World Bank's 2013 Implementation, Completion, and Results (ICR) review mission rated E&S compliance as satisfactory. Sasol provided an Annual Integrated Disclosure Report that provided a review of E&S issues across the project's components; findings from external E&S audit reports; corrective actions being taken; and the project's overall compliance with E&S safeguards. Supervision missions found Sasol to have committed substantial resources to the E&S components of the project, and had effectively implemented a "*concerted, long-term effort to improve environmental management in all aspects of the project*." The quality of Sasol's stakeholder engagement processes was also considered adequate and IFC included Sasol's community engagement related to an offshore seismic assessment in its 2007 good-practice manual on stakeholder engagement.

Financial Management and Procurement

3.4 **Sasol was compliant with World Bank fiduciary reporting requirements.** As a public listed company on the Johannesburg and New York Stock Exchanges, Sasol maintained international accepted fiduciary practices. As part of the PRG agreements, SPT and ROMPCO were to maintain adequate project accounts and prepare financial statements in accordance with accepted petroleum operation standards. The companies' audited financial statements were submitted to the World Bank at the end of each financial year. During implementation, there were no issues with respect to Sasol's obligations under the financial management covenants. Sasol also provided regular operations and maintenance reports and annual E&S compliance reports. Sasol followed competitive procurement procedures for its major contracts, including the pipeline construction and the design and construction of the CPF. The World Bank found Sasol's procurement procedures during the project to be in accordance with the World Bank's procurement standards of "economy and efficiency" in private sector projects.

4. Achievement of the Objectives

Outputs

4.1 **The PRGs achieved their objective of helping realize financial closure and mitigate political risk**. The World Bank helped achieve financial closure by assuming the political risks that neither Sasol nor Standard Bank were willing to take. The primary difference the PRGs made was to enable participation of a commercial financier in the project, thereby helping diversify the financing sources away from development finance institutions and establish a stable financial structure with broadly distributed risks. The PRGs contributed to a "club" or "political risk umbrella" of political risk insurers that provided effective political risk mitigation. The World Bank's engagement through the PRGs added unique properties: first, the World Bank continued its policy dialogue in the sector through two successive technical assistance projects (approved in FY04 and FY13), and second, the explicit counter-guarantee provided by the government to the World Bank gave comfort to other participants. Throughout the project, the government fully abided by its obligations and at no point was there a risk of adverse government interference in the project or a call on the guarantees. The outstanding values of the guarantee were reduced according to the loan repayment schedules, and the guarantees were fully cancelled in 2015.

4.2 **Gas export targets have been achieved to date and are on track to be fully met at the end of the 25-year project agreement**. A primary output target was to achieve a gas export volume of 72 MGJ/a in year 2004, increasing to a plateau of 120 MGJ/a from 2009 until the end of the 25-year project agreement. This target was achieved. In 2004–09, an

average of 83 MGJ/a of gas was exported; and in 2010–18, an average of 141 MGJ/a of gas was exported. In addition, in 2004–18, an average of 23 MGJ/a was supplied to the domestic market through direct sales and in-kind royalty. Gas volumes are expected to further increase with the expansion of processing capacity in 2018, and the project will therefore substantially exceed its original volume targets by the project.[34] In addition to the natural gas, the project also produced an average of 40,000 barrels of condensate a year that was sold to the state-owned fuel distributor, Petromoc, and then exported to markets in the Middle East.

4.3 **The gas resources were developed and exported in an environmentally sustainable manner.** Based on Bank Group monitoring and IEG interviews, the project did not have significant adverse environmental effects throughout its operation to date. There were no significant environmental incidents during construction or operation. The project had a small footprint with respect to physical displacement and the need for resettlement was minimal. By 2006, the right of way of the main gas pipeline had been largely naturally re-vegetated. The limited amount of land permanently converted by the project did not disrupt critical natural habitats or endanger rare and endangered species. The project met pollution prevention and ambient air quality standards. The CPF achieved and maintained International Organization for Standardization (ISO) accreditations for Environmental Management (ISO14001); Quality Management Systems (ISO9001); and Occupational Health and Safety Management (ISO18001). In 2008, Sasol ceased seismic exploration activities in the shallow waters off the coast because of potential disruption to dugongs, coral reefs, fisheries, and tourism. The environmental, health, and safety practices used by Sasol were also applied to third parties, including contractors. A 2008 IFC assessment found that the project had "set an example" for other firms in Mozambique and established a benchmark for E&S standards in the gas industry.

Intermediate Outcomes

4.4 **Development of Mozambique's natural gas resources in an environmentally sustainable manner was expected to contribute to economic growth and poverty reduction through achievement of several intermediate outcomes.** The project was implemented in an environmentally sustainable manner and its gas production and export targets were met. These achievements were expected to contribute to economic growth and poverty reduction in Mozambique through realization of several intermediate objectives: (a) increased revenues available to the government; (b) upstream and downstream linkages with local industries (c) some employment generation; (d) demonstration effects; (e) capacity development and learning effects in the gas sector; and (f) local community development in the project areas.

a) Government Revenues and Management

4.5 **The project made substantial contributions to government revenues.** Under the project, the government was expected to derive revenues from royalties and taxes amounting to about US$498 million (US$105 million in net present value) over its 25-year operation. In addition, Mozambique was to receive returns on its equity participation in the upstream and pipeline components. During the 14 years of operation to date from 2004–18, the government received US$395 million in tax and royalty revenues from the UJV. In addition, in 2004–18, CMH's net profit was US$439 million, of which the government received US$106 million in dividends.[35] Total income to the government and state-owned companies from the project (excluding net profit and revenues from ROMPCO, which were not made available) has therefore been approximately US$834 million (or US$678 million in 2004 dollars) during the first 14 years of the project. According to Sasol estimates, by 2029, total income to the government and state-owned companies from the project will have exceeded US$3 billion, thereby substantially exceeding initial project expectations.

4.6 **Fiscal management was generally prudent, except for a sharp deterioration in 2014–16.** Fiscal management and use of revenues from the project were supported by the World Bank through other instruments in its assistance strategy and not directly under the project. However, because they form a critical part of the project's underlying results framework and have a strong bearing on the achievement of the overall objective, they are considered in this evaluation. Prior to 2014, fiscal policy in Mozambique was generally well managed. In 2005–13, the fiscal deficit averaged 3.2 percent of GDP; real spending grew less than revenue growth; and Mozambique scored well on the World Bank's ratings for fiscal management (see appendix A).[36] In 2014–16 there was a period of macroeconomic instability following an increase in expenditure in late 2015, loosened monetary policy, and lower commodity prices.[37] Several undisclosed loans also led to a rise in the debt-to-GDP ratio, and in October 2016, the government defaulted on a debt payment.[38] After 2017, the government implemented a range of measures to restore fiscal discipline.

4.7 **The government generally maintained a pro-poor fiscal policy stance to which the revenues from the project contributed.** The broad composition of government expenditure also has an important bearing on the achievement of the project's objectives and is therefore considered in this evaluation. Since 2007, supported by a World Bank PRSC series, the government maintained an allocation of 65 percent of its annual budget to six priority sectors: education, health, agriculture, rural water supply, infrastructure, and governance.[39] Spending on priority social and economic sectors averaged 19 percent of GDP in 2010–16, with more than half spent on the education and health sectors.[40] However, following the fiscal crisis in 2016, expenditure on health and education

contracted by 10 percent in 2017. In social protection, since 2013 the government has expanded its social protection system with support from the PRSC series, although the social protection system still reaches just 14 percent of the poor and there are considerable regional disparities in social transfers.[41]

4.8 **Mozambique has been EITI compliant since 2012.** In May 2009, Mozambique became an Extractive Industries Transparency Initiative (EITI) candidate country. It received support from multiple donors, including the World Bank, to support its initiative and in 2012, it was recognized as EITI compliant. As part of its transparency measures, the government made most mining and gas contracts public. The 2018 EITI report found "clear evidence of the high level of Mozambique's commitment to the EITI."[42]

b) <u>Upstream and Downstream Linkages with Local Industries</u>

4.9 **The availability of gas helped gradually develop a market for gas in Mozambique.** Under the project agreements, the government had the option to take royalty gas in cash or in-kind. After 2006, the government increasingly took the royalty gas in kind, with the proportion of its royalty taken in kind increasing from 20 percent in 2005 to 76 percent in 2017. The royalty gas enabled Mozambique to gradually develop a market for gas and subsequent capacity expansions and sales agreements allocated an increasingly larger share of the gas for sale on the local market. In 2004, the Matola Gas Company was granted a concession to market gas in an industrial area near Maputo. Since then, it has developed a market of some 30 companies that are supplied with piped gas. The introduction of compressed, containerized natural gas has helped develop a market in the automobile industry. In 2014, ENH, in partnership with a Korean gas company, developed a 62-km pipeline transmission and distribution system to supply gas to commercial customers in Maputo. The availability of large quantities of gas from the Rovuma Basin is likely to further such growth in the domestic use of gas.

4.10 **A significant downstream linkage has been investment in gas-fired power generation.** In 2014, Sasol, in partnership with the state-owned electricity utility, invested US$246 million in the 175MW Central Termica Ressano Garcia gas-fired electricity generation plant near the South African border. The project was the first permanent, gas-fired power generation plant in Mozambique and in mid-2018 was supplying electricity to more than 2 million people. In 2013, South African and Mozambican private companies invested US$110 million in a 40MW gas-fired electricity plant that became operational in July 2017 and now supplies the main southern Mozambique grid. In 2016, Gigawatt Mozambique inaugurated a US$235 million 100MW gas-fired power plant. Other gas-fired power projects are also being developed, including a 110MW Somitomo plant; and the 400MW Temane power plant sponsored by Sasol that will include a transmission line from Temane to Maputo. Access to electricity in Mozambique increased from 7 percent in

2005 to 26 percent in 2016, partly driven by increased electricity supply from power plants supplied with gas from the project.[43] With the new gas resources from the Rovuma basin, further potential exists for Mozambique to generate electricity from gas for its own consumption as well as export to regional countries.

4.11 **Although initially limited, Sasol's upstream linkages increased over time, and it has become increasingly proactive in developing local suppliers.** According to the PPA, Sasol was to "give preference" to the purchase of goods and services in Mozambique subject to their being available in sufficient quantity, of adequate quality and timeliness, and at competitive cost.[44] Sasol's operational spending on local content increased from an average of 29 percent in FY07-11 to 49 percent in FY12-17 and in FY17 accounted for 56 percent of its total operational expenditure. Local content procurement now forms a significant factor in Sasol's bid evaluation criteria. In 2015, recognizing some of the challenges faced by Mozambican suppliers, Sasol initiated an Enterprise and Supplier Development program to provide technical assistance to local suppliers to increase their participation in Sasol's value chain. The program spent some US$600,000 to build capacity in 17 local suppliers that then supplied Sasol with US$2.7 million in goods and services. It has also unbundled some of the goods and services it procures to enable participation of smaller suppliers. Sasol is also providing business, technical, and financial support to local firms, including creation of a fund to provide financing support to Mozambican-owned small and medium-sized suppliers.

4.12 **Listing of CMH shares on the Mozambique stock exchange has broadened ownership of Mozambique's gas resources.** In June 2008, 10 percent of ENH's stake in the UJV was sold to the general public in Mozambique; these shares were subsequently listed on the Mozambique stock exchange. Since 2009, the 10 percent listed shares have generated more than US$11.5 million in dividends. The public listing enabled some 1,300 Mozambicans to become shareholders of the Pande/Temane gas resources. Building on this experience, at present all oil and gas companies are required to list on the Mozambique stock exchange, opening the possibility of broad ownership and participation in the returns from Mozambique's gas resources.

c) <u>Employment Generation</u>

4.13 **As expected, the project generated short-term employment but did not generate significant direct long-term employment in Mozambique.** During construction, the project created about 3,200 temporary jobs, of which about half were filled by Mozambican nationals. During the CPF expansion in 2010, a further 600 Mozambicans were temporarily employed, mostly from the local area. At present, Sasol employs about 200 permanent staff across its business interests in Mozambique. The industry does not generate high employment, however and in 2016, total employment in the oil and gas

sector accounted for just 0.3 percent of industrial employment. Remuneration was relatively higher than in other industries; the oil and gas sector accounted for 4.2 percent of industrial wage income in 2016.[45] There are no reliable data on indirect employment catalyzed by the project. Indirect effects may include the employment created in the gas-to-electricity industry, transport companies, gas distribution companies, and small-scale businesses such as bakeries that rely on gas as a principal input.

d) Demonstration Effects

4.14 **The project helped establish a favorable track record for foreign investment in Mozambique's natural resources.** The project was the first large-scale, privately financed extractive industries project in Mozambique and the first greenfield cross-border infrastructure project of significant size in southern Africa. The project has operated without interruption since inception; has been a technical and commercial success; has not involved any adverse government actions; and did not create any negative reputational risks for the sponsor. It helped establish a framework for public-private partnerships that facilitated further foreign investment in gas exploration and other industries. With subsequent legislation in the oil and gas sector, including the 2014 Petroleum Law, a more stable legal and regulatory regime has been established, reducing the need for project-by-project frameworks. Foreign direct investment increased substantially in Mozambique during the past decade, rising from an annual average of 4.2 percent of GDP in 1997–2006 to 22.3 percent 2007–16. Since the project, several other megaprojects have been realized, including, the Kenmare heavy sands project; the Rio Tinto coal mining project; the Vale coal-mining project; and gas exploration and initial LNG development projects by international oil companies.

e) Capacity Development/Learning Effects in the Gas Sector

4.15 The project helped develop a body of local expertise in the gas sector and advance the legal and regulatory framework in the oil and gas sector. The PPA required Sasol to employ Mozambican nationals with appropriate qualifications to the "maximum extent possible" and to undertake a training program in each phase and level of operations. The proportion of local staff in Sasol's Mozambique operations rose from 50 percent in 2008 to 92 percent in 2017, and since 2015 the CPF has been managed by Mozambican nationals. In 2004, the oil and gas regulatory function was separated from ENH and the National Petroleum Institute (INP) was created as the independent regulatory authority responsible for upstream petroleum operations. In 2013, with World Bank support, the government formulated a Gas Master Plan, which drew on the project's experience and defined the government's strategic objectives and approach in the gas sector. The 2014 Petroleum Law and 2015 Petroleum Operations Regulation introduced new provisions for gas concessions, many of them based on the project's experience.[46]

f) Local Community Development in the Inhambane Region

4.16 **Sasol's initial approach to local community development projects embodied several weaknesses.** During project preparations, Sasol agreed to establish a US$5 million social development fund that would invest in community development projects in the areas around the gas fields. As of 2017, Sasol had invested US$33 million in 150 projects that had reached some 500,000 beneficiaries in three provinces. During the initial years, the focus was largely on physical infrastructure projects in the education, health, and water supply sectors. However, concerns subsequently arose as to the sustainability and effectiveness of the infrastructure created. For example, the schools and health centers were unable to operate due to lack of teachers, health workers, supplies, or equipment. An assumption underlying Sasol's approach at the time was that municipal governments would supply staffing and equipment for the facilities, which proved not to be the case. World Bank supervision missions recommended actively engaging with relevant local government bodies and incorporating local government responsiveness into future investment planning.

4.17 **Sasol's approach gradually evolved toward more participatory and sustainable investments.** Over time, Sasol increased provision of materials for the facilities it created, such as computer equipment, books, and materials for classrooms. In 2008, it introduced a community participation management approach, including discussion forums and participatory project appraisal to improve community and local government ownership of projects. A key outcome over the years has been provision of clean water to local communities that substantially reduced time spent collecting water. Sasol also faced increasing community demand for employment and income-generating opportunities. Several income-generation initiatives have been implemented in recent years, including an entrepreneurship training center; assistance to about 50 local families to establish poultry and egg production businesses; and programs to build local government urban planning and management capacity.

4.18 **The government has also been implementing community development programs with revenues from the project.** CMH, the government-owned partner in the UJV, has also implemented its own social development programs, focused on science education, culture and sports, and worker well-being. ENH has also supplied piped natural gas in local areas that has led to household use of gas as well as development of local businesses such as bakeries that use gas as a primary input. In 2013 the government began allocating 2.75 percent of production taxes generated by extractive industries to finance local public investment projects in resource-rich provinces. Projects include schools, health centers, irrigation systems, reforestation, public markets, roads, and water and sanitation systems. An assessment of the experience conducted jointly by the

government and the World Bank in 2015, found significant benefits from the programs in local communities but also found short-falls in actual versus allocated spending.[47]

Overall Outcome

4.19 **Based on the above, achievement of the project's development objectives is rated as "Substantial."** The intermediate outcomes contributed to the country's growth and poverty reduction objectives, though Mozambique has substantial continuing challenges in reducing poverty. Since the start of the project, Mozambique continued its strong economic growth, with GDP growing an average of 6.7 percent a year in 2007–16, compared to 4.3 percent in the SSA region. Extractive industries grew by 25 percent a year and in 2017 accounted for 10 percent of GDP. Poverty fell from 54 percent in 2002 to 46 percent in 2014. International comparison data, using the US$1.9/day 2011 PPP poverty line also shows poverty falling from 78 percent to 63 percent during the same period.[48] As a multitude of other factors affect overall growth and poverty reduction in Mozambique, a direct correlation between the project-induced intermediate outcomes and the overall progress in economic growth and poverty reduction cannot be drawn.

5. Efficiency

5.1 **The government's return on the project from limited public investment has been substantial.** With relatively limited public investment the government achieved a range of intermediate development outcomes, including increased revenues, creation of the gas-to-power industry, demonstration of an improved business environment, and enhancing Mozambique's ability to manage the coming expansion in the gas sector. Total revenues to the government and state-owned companies over the 25-year life of the project from 2004–29 are estimated at over US$3 billion. Although the initial agreement was less than generous to Mozambique in royalties and tax revenues, subsequent agreements increased the financial returns to the government. Both the upstream and pipeline components have operated profitably from inception and provided substantial returns on the government's initial investments. The project's structure enabled government financial returns from its initial investment to increase once the sponsor and the project's financiers had recovered their investments.

5.2 **Sasol made substantial returns on its investment, reflecting the risks that it took as well as its sound technical and financial management of the project**. A 2017 study estimated that Sasol's operating margin from the project ranged between 38 percent and 52 percent of turnover in 2005–14.[49] As reported in the ICR, the pipeline component of the project had a construction cost of US$404 million; for comparison, the estimated cost for a similar pipeline in the United States, built at the same time, was US$625 million.[50] A substantial portion of the gas was used by Sasol's chemical and gas-to-liquids plants,

helping generate additional growth and returns to these industries, including investment in a first-of-its-kind gas-to-liquids plant in Qatar. Though Sasol thereby realized substantial returns, this was not assured at the time the project was initiated. The returns reflected its sound financial and technical management of the project, the unanticipated escalation of crude oil prices in the late2000s, and its monopolistic market position in South Africa.

5.3 **The PRG instrument reflected an efficient use of World Bank resources.** The World Bank made an important contribution to helping realize a stable financial structure for the $1.1 billion project with a relatively limited guarantee exposure of $30 million. Its coverage also helped reduced project costs by increasing the tenor of the project loans. The World Bank's PRGs were appraised relatively efficiently. The processing time from concept review to approval was 11 months compared to an average of 18.8 months for IBRD PRGs and 20 months for IDA PRGs.[51] The World Bank charged guarantee fees for its PRGs that were paid by SPT and ROMPCO and received US$3.9 million in guarantee fees in 2004–15. World Bank staff costs for the project (Bank Budget) amounted to US$0.65 million in appraisal costs in 2003–04 and US$0.31 million in supervision costs in 2005–13, resulting in a nominal net gain of US$2.9 million over the 2004–15 guarantee period (excluding any costs of capital). Based on the above, the efficiency of the project is rated as **"Substantial."**

6. Ratings

Outcome

6.1 **The outcome of the project is rated as "Satisfactory."** Development of Mozambique's gas resources was a relevant objective and the project well mitigated a high level of risks at the time. The project was effective in developing the natural gas resource in an environmentally sustainable manner, which in turn led to several intermediate outcomes in Mozambique that contributed toward Mozambique's growth and poverty reduction objectives. Development of the gas resource was achieved efficiently. Based on the project's *substantial* relevance to Mozambique's development objectives; the *substantial* achievement of objectives; and the *substantial* efficiency with which its objectives were achieved, the project's outcome is rated as ***"Satisfactory."***

Risk to Development Outcome

6.2 **The project is likely to continue to operate successfully through the end of its originally contracted term in 2029.** The project proved to be technically sound and has operated without major disruption since first gas in March 2004. It has been profitable to the sponsor and helped it secure a long-term alternative raw material to coal. Sasol has

consistently demonstrated high environmental standards and the project has not had any adverse environmental effects. Although social expenditure programs have had their weaknesses in the past, Sasol has learned from its experience and improved its approach, upholding the likelihood of continued local community support for the project. Sasol's approach to date has avoided confrontation with local communities and discouraged broad expectations from the project that would normally be expected from local governments. There is a likelihood that Sasol will expand its activities in Mozambique, given the discovery of additional gas resources, and its corporate strategy emphasizes its continued presence in Mozambique.

6.3 **The government also has strong commitment to the project and to further development of Mozambique's gas resources.** During the project period, the government enhanced the regulatory regime, strengthened institutions, and built capacity in the gas sector, and is now preparing for an economy that is likely to be dominated by the gas sector for the next decade. The project's successful unimpeded operation over 14 years has conveyed important signals to investors and helped demonstrate the government's commitment to welcoming foreign investment. As a large-scale, high-profile project, the possibility of a change in approach by a new government cannot be ruled out and the dominance of a single party since independence adds a degree of uncertainty in the event of a change in government. However, Mozambique's market-oriented policies and commitment to foreign investment have been increasingly entrenched during the past 15 years. The project design also provided for substantial government financial stakes in the project; increasing financial returns along with broader effects such as gas-fired power generation strongly favor sustained government commitment to the project. The need to attract investors for development of natural gas in the Rovuma basin is also likely to inhibit any action that might undermine the project.

6.4 **The discovery of substantial additional gas reserves strongly supports the sustainability of the outcomes realized under the project.** A key outcome of the project was the stimulation of industries that use gas, particularly electricity generation. If the total supply of gas in Mozambique had been limited to the original reserves of the Pande/Temane fields, the sustainability of these downstream activities would have been questionable. However, if the new natural gas projects are implemented as planned when the project's original agreements expire in 2029, Mozambique's gas resources from the Rovuma basin should be fully onstream. With the availability of substantial quantities of gas, domestic gas-based industries are likely to thrive, with consequent implications for access to electricity, economic activity, and employment generation. The core body of local expertise in the gas sector that resulted from the SARGP is also likely to be fully used and further expanded as the gas industry develops. Based on the above, the Risk to Development Outcome of the project is rated as "**Negligible to Low.**"

World Bank Performance

Quality at Entry

6.5 **The World Bank conducted a detailed appraisal of the project.** Although it was engaged in the project through a request for political risk insurance, per the World Bank's practice with guarantee operations, it conducted a complete appraisal of all aspects of the project that went far beyond an assessment of political risk. The appraisal involved review of the project's legal and regulatory agreements; technical feasibility; commercial viability; financial structure; benefits to the government and country; and E&S safeguards. As the Bank was engaged relatively late in the process, its appraisal would have been too late to influence the main technical and commercial aspects of the project. Nevertheless, it enabled identification of any "fatal" flaws that might have substantially undermined the project. The World Bank was also able to introduce some additional measures to further strengthen the overall E&S risk mitigation framework. The World Bank's appraisal drew on its long-standing experience in the energy sector in Mozambique; factored in lessons from the its experience in extractive industries in other counties; and gave comfort to other project participants. There was overlap in staff between the FY95–04 Gas Engineering Project and the SARGP, with the team leader for the ICR of the Gas Engineering Project also leading the appraisal of the SARGP. Per World Bank practice, the SARGP was co-led by staff from the Project Finance and Guarantees unit and the Africa Region.

6.6 **The project provides a good example of World Bank Group synergies.** MIGA's guarantees covered Sasol's initial equity investments that enabled Sasol to start construction prior to the finalization of a long-term financing package, substantially enhancing the project's timeframe. The World Bank's PRGs then supplemented MIGA's coverage with additional political risk mitigation, given the substantial size and high risks of the project: a substantial investment in a first-of-kind project in an untested regulatory environment in a low-income, post-conflict country. IFC advisory support helped the government secure commercial financing for its equity stakes, which were a critical risk mitigation element. IFC's equity investment helped reduce the government's initial financial burden and balance the relationship between Sasol and the government in the UJV.[52] As an equity investor, IFC did not have leverage to enforce specific E&S measures and this role was met by World Bank and MIGA participation. The World Bank and MIGA coordinated to ensure consistency and simplify the terminology in their respective guarantee instruments. The World Bank's PRGs and IFC's equity investment were presented to the Board in a joint project appraisal document. The three Bank Group institutions therefore had distinct roles but also built on synergies in supporting the project. Based on the above, Bank Quality at Entry is rated as "**Satisfactory.**"

Quality of Supervision

6.7 **The World Bank undertook in-depth supervision missions during the first five years of the project.** Supervision was initially conducted annually. After 2007, the gap between supervision missions was extended to 18 months because of the project's satisfactory status. The supervision missions monitored operational, financial, and E&S aspects of the project. No major shortcomings were found by any of the missions and no issues that could lead to a call on the guarantee were identified. Project monitoring was enhanced by Sasol's detailed Annual Integrated Disclosure Report that covered operational and E&S issues. The last supervision mission was conducted in October 2008 and an ICR was commenced in 2009, but not completed. As part of a renewed effort to clarify the ICR process for guarantees, five ICRs for guarantee projects were completed in 2013, including the ICR for the SARGP.

6.8 **The World Bank made some substantive contributions during supervision on E&S safeguards and on management of the community development programs.** Given the sponsor's strong overall operational and financial management of the project, the World Bank's supervision missions focused on the project's environmental and community development aspects. Supervision missions in 2004–08 provided detailed recommendations on specific aspects of E&S safeguards compliance, which were implemented by Sasol. The World Bank also helped improve Sasol's community development programs. Based on inputs from the World Bank, Sasol broadened its approach from an initial focus on building physical infrastructure to include activities such as capacity building in communities, skills development, community health training, and income-generating opportunities. The World Bank also recommended working with municipal councils and enhancing local participation in decision making, both of which were implemented by Sasol

6.9 **The World Bank's 2013 completion report provided a detailed assessment of the project, although a local nongovernmental organization (NGO) criticized the World Bank's lack of treatment of some issues.** The Implementation Completion Report (ICR) for the project provided a thorough review of the project's experience and results to date when it was prepared in 2013, including a detailed assessment of environmental and social issues. A 2014 report by a local NGO questioned why the World Bank had not assessed the project's economic benefits and outcomes in South Africa to gauge the relative benefits to South Africa versus those to Mozambique. As stated in the ICR, the SARGP was prepared as a single-country project following World Bank guidelines at the time and the ICR therefore assessed the project's outcomes against its stated objectives, as per the World Bank's practice. The NGO report also suggested that the World Bank should have provided a clearer assessment of the fairness of the project's underlying agreements that were signed by Sasol and the government in 2000 and 2002. The ICR

concluded that the benefits to Mozambique from the project were substantial. It suggested that the underlying agreements were appropriate for Mozambique given the investment climate in Mozambique at the time, the limited number of realistic alternative investors, and the risks/uncertainties that Sasol was facing at the time. Based on the above, Quality of Supervision is rated as "**Satisfactory**."

6.10 These lead to an overall Bank Performance rating of **"Satisfactory"**.

Government Performance

6.11 **The government consistently supported the project, and at no point was there a risk of the guarantee being called**. The project reflected culmination of more than a decade of government efforts to develop the Pande/Temane gas fields. Prior to finalizing the project agreements, the government had pursued a range options to develop the gas field. The project therefore reflected strong government ownership from its inception. This commitment was sustained throughout the project's 14-year life to date. The government's substantial equity stakes have reinforced its strong commitment to ensuring unimpeded operation of the project. The government built on the experience under the project to further develop the regulatory and investment environment in the oil and gas sector. The government has also strengthened key institutions and built capacity in the sector, including in the regulator and ENH. Except for the deterioration in macroeconomic management in 2014–16, the government generally pursued a prudent, pro-poor fiscal policy framework that supported achievement of the project's objectives. Based on the above, government performance is rated **"Satisfactory."**

Implementing Agency/Sponsor Performance

6.12 **Implementation of the project from a technical, financial, and E&S perspective has been of a high standard.** The project was Sasol's first venture into upstream gas production and reflected a relatively high degree of commercial and political risk. Sasol's distinct attributes at the time and the project design effectively mitigated the major risks. Construction of the pipeline and CPF was completed in a relatively short timeframe between July 2002 and February 2004. Since the project became operational in March 2004, it has operated without interruption and met all its production targets. Sasol consistently applied high standards with respect to E&S safeguards during construction and operation of the project. In 2008, the World Bank removed the project from its internal "Corporate Risk List" largely because of Sasol's "excellent job" in E&S management. Sasol also became more proactive in developing local supplier opportunities through business, technical, and financial support to local suppliers and unbundling goods and services contracts. Establishment of a coordination committee comprising representatives of Sasol, the project entities, and the government helped address operational issues as they arose.

6.13 **Sasol showed flexibility in responding to government concerns on the pricing mechanism.** In 2012, the government requested an early release from the pricing formula under the PPA that included a ceiling on the price of gas linked to a crude oil price of US$34 a barrel. Based on this request, rather than modify the PPA, Sasol agreed to establish a Development Fund up to a maximum amount of US$40 million in lieu of additional income that the government would have received in the absence of the price cap. This fund has been earmarked for funding downstream and upstream projects.

6.14 **Inadequate communication has been a weakness in the past.** A weakness of Sasol's in the past has been an inadequate communication strategy, which it has recognized and is endeavoring to address. Perceptions both within Sasol and other stakeholders suggest that Sasol's limited effectiveness in communicating the benefits to Mozambique from the project has to some degree undermined perceptions of Sasol and the project in the country. Sasol's practice of protecting market information and its internal processes led to perceptions of lack of transparency among its partners in early years. A 2007 World Bank supervision mission, for example, reported that according to both CMH and IFC, Sasol had "not been forthcoming with sharing of information on field and CPF operations in terms of both daily and yearly decision-making processes." Based on the above, overall Implementing Agency/Sponsor performance is rated as **"Satisfactory."**

6.15 These lead to an overall Borrower performance rating of "**Satisfactory"**.

Monitoring and Evaluation

Design

6.16 **The results framework provided an adequate basis for monitoring a private sector–implemented project.** The output-level performance indicators identified in the PAD were adequate to monitor progress and were monitorable and verifiable. These included physical completion of the CPF and pipeline; gas export volumes; government revenues; and compliance with E&S measures. Some of the indicators for broader sector outcomes were more difficult to track and did not identify sources of information. For example, to measure an improved investment climate, the results framework suggested monitoring "increased investment to infrastructure and social facilities"; and "increased employment growth of local contracting industries" but did not identify baseline information or sources of data for these indicators. As the development objective did not incorporate domestic market use of gas, the key performance indicator comprising the volume of gas exports did not capture the potential growth of the domestic market for gas. Per World Bank policies at the time, despite its name, the project was designed as a

single country project in Mozambique rather than a "regional" project and the results framework therefore did not capture outcomes in South Africa.

Implementation

6.17 **Monitoring was effective, supported by Sasol's detailed annual reporting.** Sasol provided an Annual Integrated Disclosure Report from 2006 to 2012 that provided a detailed review of (i) operational issues at the CPF, the gas fields, and pipeline; (ii) the Resettlement Planning and Implementation Program; (iii) the Regional Environmental and Social Assessment; (iv) and Sasol's social development initiatives. As the project's physical components were largely complete when the guarantees became effective, the World Bank's monitoring focused on issues related to E&S compliance and Sasol's social development programs. The World Bank's monitoring of the underlying political risks was supported by its close engagement in the extractive industries and energy sectors through successive technical assistance projects. To some extent, monitoring and evaluation of the project has been encumbered by the confidential nature of the project financials.

6.18 On this basis, the quality of the monitoring and evaluation system is rated as "**Substantial**."

7. Lessons

7.1 Some lessons from this experience include:

- **The PRG instrument can provide a unique form of political risk insurance to support a large, high-risk private sector project.** The SARGP embodied a high degree of political and commercial risks. The World Bank's PRGs helped secure commercial financing to supplement development financing and achieve a stable financial structure for the public-private partnership. The PRGs provided a unique form of political risk mitigation that other political risk insurance providers could not provide because of the explicit counter-guarantee from the government; the World Bank's long-standing policy dialogue in the sector; its relationship with the government; and its capacity for in-depth technical, financial, and E&S appraisal that gave additional comfort to participants.

- **Even as a late entrant into a project's financing structure, the World Bank can leverage its presence to enhance E&S safeguards and community development initiatives**. Even though the World Bank's PRG instruments were engaged relatively late in the project's development, it was able to make substantive contributions toward enhancing E&S safeguards and help bring global experience to enhance the sponsor's community development initiatives.

- **Some flexibility in concession agreements to review clauses in the event of extreme divergence from initial assumptions can help enhance long-term viability of a project.** In the SARGP, the initial project agreements provided for a 10-year gas price cap indexed to crude oil prices. When crude oil prices subsequently averaged more than double the ceiling price, the price cap constrained government revenues during the initial 10-year period. An option to review the initial assumptions and concession clauses in the event of such a sustained substantial divergence from initial assumptions can be in the interest of both the concessionaire and government and enhance the concession's long-term viability.

- **Coordination of sponsor-financed local community development initiatives with local government programs can help enhance their sustainability.** The sustainability and effectiveness of Sasol's initial community development projects (building schools and health centers) were undermined by lack of staff and equipment that were expected to be supplied by local governments. Sasol learned from its experience to re-orient its community development initiatives toward income-generating activities and working with local governments to help build capacity and generate local government commitment to and support of community development initiatives.

- **Proactive measures by the sponsor company are likely to be needed to ensure upstream linkages with local suppliers.** A challenge faced by Sasol in increasing the upstream supply of local goods and services into its operations was to ensure adequate quality, timeliness, and costs of goods and services from local suppliers. Key measures that Sasol developed to enhance upstream linkages included breaking large goods and services contracts into smaller components to allow smaller firms to participate; clear advance communication of procurement schedules; providing local firms with business, technical, and financial support; creating a fund to provide financing to Mozambican-owned enterprises; and encouraging joint ventures between local and international companies. Such initiatives early in a project's operation are likely to enhance the likelihood of linkages with local suppliers.

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6 World Bank, *Project Appraisal Report - Southern Africa Regional Gas Project*, 2003. The objectives are as stated in the Project Appraisal Report. As this was a guarantee operation, there was no loan agreement with the government. The guarantee and project agreements with the commercial lender and the project company and the indemnity agreement with the government do not specify project objectives.

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24 Government of Mozambique, "*Implementation Completion Report of the Beneficiary*", Mozambique Gas Engineering Project (Cr. 2629-MOZ), 2004
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28 Standard Bank, "Sasol Natural Gas Project Case Study", Seminário Reformas e Politicas Económicas Futuras presentation, 2010.
29 IMF, *Public Sector Debt Statistics: Guide for Compilers and Users*, 2013. However, for purposes of vulnerability analysis, the potential impact of contingent liabilities on public sector units matters. Therefore, while contingencies are excluded from the definition of debt of the guarantor, the value of specific contingent liabilities may be shown as a memorandum item in public sector debt statistics.
30 Measures included an integrated electronic financial management system, budget comprehensiveness, improved accounting, strengthened internal controls, reform of procurement process, and improved linkages between budgeting, planning and the delivery of services.
31 Of the additional 63 MGJ/a, 27 MGJ/a was allocated for export to the South African market; 27 MGJ/a was allocated for sale on the Mozambican market; and 9 MGJ/a was allocated as royalty gas to the government.
32 World Bank, *Harnessing African Natural Gas - A New Opportunity for Africa's Energy Agenda?* 2014

33 Pedro Uetela and Franklin Obeng-Odoom, "Natural Gas and Socio-Economic Transformation in Mozambique: Some Preliminary Evidence", in The Journal of Energy and Development, Vol. 41, Nos. 1 and 2, 2016

34 Excluding the expansion of the plant in 2011, the project produced an average of 89 MGJ a year in 2004-2009 and 120 MGJ a year from 2010-2017 (under the original GSA-1), thereby meeting its original volume target even in the absence of new gas discoveries.
35 By 2017, CMH had fully serviced and paid off its initial loans of US$40 million from DBSA; US$12 million from EIB; and US$24 million from AFD.
36 IMF, "Mozambique's Growth Experience, Macroeconomic Policy Mix and Institutions" in *Mozambique Rising—Building a New Tomorrow*, IMF, 2015
37 The fiscal deficit rose to 7.4 percent of GDP in 2014-17; the exchange rate depreciated sharply in 2016; and inflation rose to 26 percent in October 2016.
38 In 2016 it was revealed that the country had contracted substantial non-concessional external debt in 2013-14 that had been undisclosed to the IMF. The IMF's Policy Support Instrument and Standby Credit Facility programs that were on-going at the time were both suspended and a freeze on donor support to Mozambique ensued. As of April 2018, the IMF programs remained suspended.

39 IEG, *Poverty Reduction Support Credit PPAR*, 2016
40 World Bank, *Mozambique Economic Update – Making the Most of Demographic Change,* December 2017
41 World Bank, *Implementation Completion and Results Report*, PRSC Series 2017
42 Deloitte, *Final Report, Independent Administrator of EITI in Mozambique*, 12 February 2018
43 World Bank, *Temane Project Concept Note*, 2017
44 The 2014 "Petroleum Law set out mandatory local content requirements (and also required oil and gas companies to register on the Mozambican Stock Exchange.) Local content is regulated under Decree No. 2/2014.".
45 Instituto Nacional de Estatística, *Estatísticas Industriais* 2016, 2017
46 These included: (i) a royalty tax of 6 percent of the production volume; (ii) a profit share clause based on a ratio of revenues and expenses accrued in a year; (iii) payments for institutional support; (iv) support for training of nationals; (v) social development support; (vi) a minimum of 10 percent state participation; (vii) an annual cap on cost-recovery of 65 percent of production; (viii) a corporate tax of 32 percent of gross income; (xi) at least 25 percent of gas to be allocated to the domestic market; and (x) third party access to infrastructure created subject to commercial terms.
47 World Bank, *Implementation Completion and Results Report, PRSC-9-10-11*, 2017
48 World Bank, *Mozambique – Recent Developments, Poverty & Equity and Macroeconomics*.
49 Pamela Mondliwa and Simon Roberts, *Economic Benefits of Mozambique Gas for Sasol and South African Government*, *Centre for Competition, Regulation and Economic Development, University of Johannesburg, December 2017, Sasol stopped reporting separate returns on its gas-related businesses in its published annual reports after 2014.*
50 World Bank, Implementation Completion and Results Report, Southern Africa Regional Gas Project, 2013
51 World Bank, "Modernizing the Bank's Operational Policy on Guarantees", 2012. The ISA average excludes the Lao PDR Nam Theun 2 Power Project which cost more than US$5 million.
52 Independent Evaluation Group, "Southern Africa Regional Gas - IFC UJV Project, Final XPSR Evaluative Note", 2008

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Appendix A. Basic Data Sheet

Southern Africa Regional Gas Project (P082308)

Table A.1. Key Project Data

Financing	Appraisal Estimate ($, millions)	Actual or Current Estimate ($, millions)	Actual as Percent of Appraisal Estimate
Total project costs	1,150		
IDA/IBRD Guarantee	30.0	30.0	100
Cancellation	na	na	

Table A.2. Project Dates

Event	Original	Actual
Concept review		12/12/2002
Negotiations		08/06/2003
Board approval	05/22/2003	11/20/2003
Guarantee Effectiveness	11/30/2003	08/26/2004
Guarantee Expiry	12/31/2017	06/15/2015

Table A.3. Staff Time and Cost

	World Bank Budget Only	
Stage of Project Cycle	Staff time (no. weeks)	Cost[a] ($, thousands)
Lending		
FY03	67.35	368.51
FY04	56.79	283.98
Total	124.14	652.49
Supervision or ICR		
FY05	13.76	90.65
FY06	11.11	58.63
FY07	9.59	51.27
FY08	2.19	7.23
FY09	4.74	24.56
FY10	0.50	1.32
FY11	0	0
FY12	0	0
FY13	3.30	73.42
Total	45.19	307.08

Note: ICR = Implementation Completion and Results Report.
a. Including travel and consultant costs.

Table A.4. Task Team Members

Name	Title[a]	Unit	Responsibility or Specialty
Lending			
Joel J. Maweni	Lead Energy Specialist	AFTEG	Team Leader
Marie-Ange Saraka-Yao	Senior Financial Officer	PPF	Team Leader
Elizabeth C. Wang	Senior Financial Officer	PPF	Financial Analyst
Cally Jordan	Senior Counsel	LEGCF	Legal
Suman Babbar	Advisor	PPF	PRG Advisor
Robert A. Robelus	Senior Environmental Specialist	AFTES	Environmental Specialist
Marc L. Heitner	Lead Financial Analyst	COPCO	Financial Analyst
Supervision or ICR			
Mustafa Zakir Hussain	Senior Energy Specialist	AFTG1	ICR TTL
Robert A. Robelus	Consultant	AFTES	Environmental Specialist
Ada Karina Izaguirre	Infrastructure Specialist	TWIFS	
Scott Sinclair	Lead Financial Officer	AFTEG	
Wendy Hughes	Lead Energy Economist	AFTEG	
Justin Pooley	Senior Environmental Specialist	IFC	Environmental Specialist

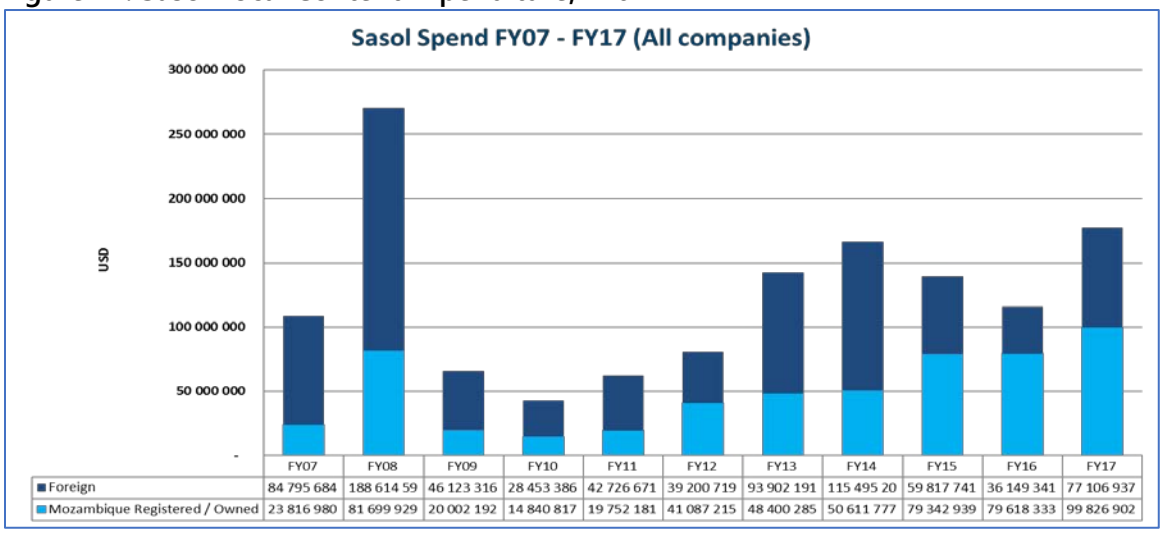
Note: ICR = Implementation Completion and Results Report.
a. At time of appraisal and closure, respectively.

Table A.5. World Bank Fiscal Policy Ratings for Mozambique

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fiscal Policy Rating (1=low to 6=high) CPIA													
Mozambique	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.0	4.0	4	3.0	2.5
Sub-Saharan Africa Average	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.2	3.1	3.0	
Quality of Budgetary and Financial Management Rating (1=low to 6=high) CPIA													
Mozambique	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4	4.0	3.5
Sub-Saharan Africa Average	3.1	3.0	3.1	3.0	3.1	3.1	3.1	3.1	3.0	3.1	3.1	3.1	
Equity of Public Resource Use Rating (1=low to 6=high) CPIA													
Mozambique	3.5	3.5	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sub-Saharan Africa Average	3.2	3.2	3.2	3.2	3.2	3.3	3.4	3.3	3.3	3.3	3.3	3.3	..

Source: Country Policy and Institutional Assessment ratings. World Bank data.

Figure A1. Sasol Local Content Expenditure, FY07–17



	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
Foreign	84 795 684	188 614 59	46 123 316	28 453 386	42 726 671	39 200 719	93 902 191	115 495 20	59 817 741	36 149 341	77 106 937
Mozambique Registered / Owned	23 816 980	81 699 929	20 002 192	14 840 817	19 752 181	41 087 215	48 400 285	50 611 777	79 342 939	79 618 333	99 826 902

Source: Sasol. Local content is defined as "companies registered in Mozambique and/or owned by Mozambicans". The spike in expenditure in FY08 is due to the expansion of the facility.

Appendix B. Additional Issues

B1. Additional Issues on the Relevance of the Underlying Gas Development Project Design

This Project Performance Assessment Report (PPAR) focused on the evaluation of the partial risk guarantee (PRG) instrument used by the World Bank to support the project. The relevance section of the report therefore focuses on the relevance of the PRG instrument in supporting the project. At the same time, during IEG's evaluation of the project, several issues related to the relevance of the design of the underlying project arose. These issues and IEG's findings are presented below.

There are some concerns that the project should have exported less and allocated more gas for the local market. The World Bank's 2013 Implementation Completion Report (ICR) raised a concern that reflected the views of some stakeholders that Mozambique should have retained more gas for domestic use.[53] The initial project agreements provided for 5 percent of the value of the gas produced to be allocated to the government as a royalty payment that could be taken in kind or in cash. While the government initially took most of the royalty in cash, in later years, as the domestic market developed, more than 75 percent of the allocation was taken in kind. As discussed below, the availability of gas helped catalyze investment in industries using gas, including in electricity generation, with consequent implications for further economic activity and employment generation. In retrospect, therefore, it would have been in Mozambique's interest to have received a larger share of gas. This raises two questions on the relevance of the project's design: (i) whether an alternative gas development project could have been developed for the local market rather than export; and (ii) whether more gas could have been allocated to Mozambique under the project that was developed.

The gas export option emerged as the most viable option of several alternatives that were considered at the time. Prior to finalizing the project agreements, with Bank support, the government had assessed a range of options to develop the gas resource. The option of commercialization by public agencies was eliminated due to lack of resources, technical capacity, and access to markets. In 1998, the government commissioned an assessment of several possible options: (i) the Enron iron smelting plant; (ii) sales on the domestic market; (iii) leaving the gas in the ground until an alternative presented itself; and (iv) pipeline exports to South Africa.[54] The most attractive option emerged as the iron smelting plant due to its higher direct local expenditure and government revenues. However, this option was precluded when Enron withdrew. The domestic sales option was considered unviable due to the lack of an "anchor" buyer that would purchase sufficient gas to make the investment viable. The estimated plateau demand of 54 MGJ/a

in 2009 was considered insufficient to and the prospects of attracting commercial financing was considered "extremely unlikely." If the gas was left in the ground, the most likely future use was a gas-to-power plant that would not be viable until about 2010 due to excess generation capacity in the region. High commercial risks to this option arose from potential competition from alternative energy sources and uncertainty as to whether a sufficient volume could be ensured to justify the investment.[55] The local market options were therefore not "bankable" largely because of an inadequate guaranteed market. Export of gas to South Africa, on the other hand, offered the opportunity to both export gas to an anchor market and utilize some gas in the domestic market.

The limited local market discouraged greater allocations of gas at the time, although an option might have been included for greater local market sales. During negotiations of the project agreements, a primary risk to be mitigated was insufficient sales of gas to recover the initial investment. This had been the primary obstacle to monetizing the resource to date and the government's priority was therefore to ensure a guaranteed market for the gas. There were also limited expectations for the domestic market and it would not have been practical for the government to give up guaranteed export revenue for an uncertain domestic market. According to World Bank estimates, not all the royalty gas was expected to be used and initial estimates were that demand would be limited to 2 MGJ/a.[56] Given the limited expectations of local market growth, the Petroleum Production Agreement (PPA) prohibited Sasol from selling gas in the domestic market in Mozambique that would compete with the royalty gas for ten years. There was also an expectation that increased gas would be available and that under future agreements, more gas would be made available in Mozambique. In retrospect, however, the project design might have included a clause for increased domestic sales at market prices at the option of the government. This option would have been particularly important if the gas reserves has proved to be limited to the original estimates and no new gas had been discovered.

The sharp subsequent rise in oil prices has raised questions as to the gas price formula that was established in the project agreements. Under the first gas sales agreement (GSA-1), the price that gas would be sold by the Unincorporated Joint Venture (UJV) to Sasol Gas Limited was contained within a floor linked to a Dubai Fateh crude oil price of US$16 a barrel and a cap of US$34 a barrel for the first 10 years of operation. However, in July 2004, a few months after first gas, the Dubai crude oil price rose above the ceiling US$34 a barrel. It remained above the ceiling for the duration of the ten-year period when the price cap was in effect, peaking at US$131 a barrel in July 2008 and averaging $77 a barrel in 2004–14.[57] The existence of the price band raised concerns that Mozambique had not received a fair price for the sale of its gas. For example, a 2013 report by a local non-governmental organization, Centro de Integridade Publica (CIP) suggested

that the government was receiving inadequate revenues from the project, in part as a result of the government's acceptance of an "abusive" price formula for the gas.[58]

The price band was a legitimate risk mitigation instrument at the time. Due to the price cap in effect from 2004–14, the wellhead price did not substantially benefit from the sharp rise in oil prices over the initial 10-year period. As the government's royalty payments were linked to the wellhead price, this suppressed the value of the royalty payments as well as constrained the UJV's returns and consequent tax payments. However, the price band was a legitimate risk mitigation instrument at the time. The band was designed to give financial stability to the project over the initial ten-year period and protect both the buyer and seller from major price variations. The price band values were also reasonable at the time. In October 2000 when the PPA was signed, the crude oil price per barrel was US$23. The sharp subsequent increase was not anticipated at the time. The World Bank's June 2003 projection for the price of crude oil in 2015 was US$22 per barrel. Multiple other market analysts also projected 2015 crude oil prices to range from US$17 to US$33 per barrel.[59] Following expiry of the cap in 2014, the border price of gas (ex-CPF plus transport costs) paralleled the US natural gas price.

However, there were several weaknesses in the price formula. As the processing costs were not contained by a price cap, basing the royalty payments on the ex-CPF price rather than wellhead price would have allowed the government greater benefit from the rise in prices in the initial ten years. According to EITI, best practice is to use wholesale commercial prices to establish the monetary value of government royalties rather than wellhead or cost prices.[60] Some flexibility may have also been built into the sales price agreement in the event of extreme divergence from the upper or lower price band. At its peak, the crude oil price was 385 percent higher than the ceiling price contained in the price formula. Given the need by both parties to ensure fair returns to both parties in a PPP of this nature, there would probably have been no objection from either party for a clause to renegotiate a price if there was a substantial sustained divergence from initial price expectations. The price formula was also unnecessarily complicated by including prices of crude oil derivatives when the crude oil price was already included. The processing fee also might have also been simplified to a cost-plus basis, proportional to the volume (or value, or both) of gas.

The lack of a gross profit-sharing provision lowered potential government revenues, although its inclusion was not considered feasible at the time. Under the project, the government derived its revenues from corporate taxes, dividends, and royalties. The agreements did not provide the government with a share of the gross operating profit (or "ratio factor") but only returns to its investments in the UJV and ROMPCO. The 2013 CIP report referred to above highlighted the lack of a profit-sharing clause, as a key design weakness in the project.[61] The national oil company, ENH, has also

recognized this as a weakness and the profit-sharing provision has been mandated in subsequent oil and gas concessions.[62] Inclusion of the clause would have substantially increased the returns to the government. However, according to government and Sasol officials who were familiar with the original project negotiations, a profit-sharing clause was not included due to the project's already high risks. Inclusion of an additional tax based on gross operating profit would have undermined the viability of the UJV at the time. The appraisals of alternative projects at the time, including the Enron iron ore project, also did not include profit-sharing provisions.[63] The World Bank did not raise this issue in its project appraisal report, although some explanation as to why a gross operating profit clause was not included in the project agreements would have been warranted.

The project structure created a vertically integrated Sasol monopoly that had both positive and negative implications for the project. Under the agreement Sasol was the primary producer, transporter, and buyer of the natural gas. The project design endeavored to mitigate adverse implications of this vertical integration by establishing mechanisms for the negotiation of commercial contracts between the project entities: (i) ENH represented the UJV in negotiating GSA-1 and the Gas Transportation Agreement with Sasol Gas; (ii) a management committee chaired by the Mozambique energy sector regulator oversaw field operations; (iii) all decisions regarding upstream development needed to be approved by the regulator; and (iv) an independent auditor/expert could be called in to verify any aspect of operation. On the positive side, the vertical integration helped ensure both adequate supply and demand for the gas as well as seamless operation of the project over its 14-year life to date. Sasol considered this approach to be essential to achieving economies of scale and ensuring project viability.[64] At the same time, Sasol's overall strategy was to develop its gas-to-liquids businesses and its underlying incentive was therefore to ensure as low a price as possible at the point of delivery rather than to maximize returns on the Mozambique side of the border. Sasol's control of all the project's components also allowed for a lower degree of transparency than may have been desired. As noted in the ICR, World Bank supervision reports occasionally reported inadequate disclosure of information as an issue.

B2. Project Implications in South Africa

As the project was designed under the Bank's guidelines in the early 2000s, it was designed as a single country project and did not capture the effects of the project in South Africa. During IEG's evaluation of the project, several issues on the implications of the project in South Africa arose that are discussed below:

A 2001 agreement between Sasol and the South African energy regulator set the regulatory framework and enabled exclusive gas distribution rights for Sasol in South

Africa. In September 2001, the National Energy Regulator of South Africa (NERSA) and Sasol signed a Regulatory Agreement that set the legal framework to regulate Sasol's piped gas activities for a period of 10 years. The Agreement supported the Mozambique natural gas project by granting Sasol exclusive rights with respect to transmission, distribution and trading of gas in the South African market for 10 years. From Sasol's perspective, the agreement helped ensure the financial viability of the project by protecting its domestic market position and ensured regulatory consistency in South Africa. From the government's perspective the agreement helped enable the project; promote development of the piped gas industry; and introduce natural gas into the economy "at the lowest cost and as fast as possible"[65].

The project helped South Africa introduce natural gas into its energy mix and increase government revenues. In 2004, as a result of the project, South Africa imported natural gas for the first time, helping diversify its energy mix. The availability of natural gas led to investment in the gas industry: Sasol expanded its distribution pipeline by 1,356 km; seven new gas traders entered the market; and new technologies were introduced, including compressed natural gas fuel for the automobile industry.[66] A 2017 study estimated that the government's tax revenues from the natural gas sector—comprising Sasol Gas, a proportion of Sasol Synfuels, and i-Gas—in FY05–15 was about US$1.6 billion.[67] In addition, in FY08-16, the government received approximately US$85 million in dividends from its 25 percent stake in ROMPCO. From Sasol's perspective, it was able to secure an alternative raw material source for its petrochemical operations; introduce natural gas into its gas-to-liquids operation, which helped it expand its GTL operations globally; and develop its piped gas distribution business. Sasol's conversion of its Sasolburg plant from coal to gas reduced its carbon dioxide emission by 40 percent.[68]

However, a range of shortcomings in the expected benefits to South Africa are also apparent. Notwithstanding the increase in natural gas supply, in 2016 natural gas accounted for just 3.7 percent of South Africa's energy mix, compared to a world average of 24 percent.[69] There was no significant employment generated by the gas industry, with employment in the sector rising from 253 in 2003 to 475 in 2014.[70] Moreover, several assessments by NERSA since 2011 concluded that there was inadequate competition in the gas industry. Sasol Gas was the only supplier of gas to the market; it owned the only pipeline distribution network; and it controlled one of two transmission pipelines in the country. As of 2015, the new gas traders in the market had gained only a 6 percent market share, with Sasol holding the remaining 94 percent. In FY05-15, Sasol denied 45 percent of the requests for supply of gas (89 of 200 requests) due to unavailability of gas or inadequate "project economics."[71] Barriers to entry into the industry included lack of independent gas supply sources; lack of access to the ROMPCO pipeline due to minimum

volume requirements; and conditions under the Regulatory Agreement that discouraged entry into the industry.

The South African Supreme Court of Appeals recently found gas pricing to have been unreasonably high since 2014. The gas price mechanism under the 2001 agreement gave Sasol Gas substantial latitude in setting prices, subject to a maximum price benchmarked against relatively high European gas prices. According to a 2017 study, in 2007–14, Sasol Gas sold gas 166 percent to 370 percent higher than its import price (excluding the transmission cost from Mozambique).[72] Sixty percent of sales were to internal Sasol companies and prices to external customers were 57 percent higher than its internal sales. NERSA received a range of complaints from gas customers alleging excessive pricing, price discrimination, refusals to supply, and the use of incorrect alternative fuel energy to calculate gas prices.[73] In 2014, after the expiry of the Regulatory Agreement, NERSA set new a price mechanism and sought to enforce non-discrimination. However, complaints of high gas prices continued and in 2014, several industrial customers launched a legal challenge alleging unfair gas pricing. In May 2018, the Supreme Court of Appeal of South Africa found that the pricing mechanism, established for 2014–17 was "wholly irrational and unreasonable" and ruled that a new price mechanism be established and retroactively applied to 2014.[74]

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53 The ICR states, "*Mozambique and South Africa have both gone from being countries with excess power to countries looking for new sources of power. This dramatic shift has made gas exports a less attractive activity for Mozambique when the gas could be being used to generate power at lower cost than the cost at which [the Mozambique gas utility] is currently able to purchase power.*"
54 World Bank internal document, "Pande Gas Cost-Benefit Analysis" prepared by London Economics, 1998.
55 A 1000 mw plant, for example, would require 54 million GJ of gas per annum.
56 IFC internal document (IRM)
57 Price data from Indexmundi.com
58 CIP report, 2013
59 EIA, *International Energy Outlook*, 2003. Projections in 2001 dollars; World Bank, Global Commodity Price Prospects, June 2003
60 EITI
61 CIP report, 2013
62 The R-Factor is the ratio of revenue earned from oil divided by the costs of bringing the oil to the market in order to determine profit.
63 London Consulting note 1998
64 World Bank, "*Project Appraisal Document, SARGP*, 2003
65 National Energy Regulator of South Africa (NERSA), "Final Ex-Post Regulatory Impact Assessment of the Agreement Concerning the Mozambican Gas Pipeline Between the Government of the Republic of South Africa and Sasol Limited", February 2016.
66 Pamela Mondliwa and Simon Roberts, *Economic Benefits of Mozambique Gas for Sasol and South African Government,* Centre for Competition, Regulation and Economic Development, University of Johannesburg, December 2017
67 The study estimates government revenue based on Sasol annual reports. The calculation assumes that 9.75 percent of Synfuels profit is attributed to natural gas. The calculation overestimates the tax as it is calculated before taking into account interest payments. (Mondliwa and Roberts, 2017)

68 NERSA, *Final Ex-Post Regulatory Impact Assessment of the Agreement Concerning the Mozambican Gas Pipeline Between the Government of the Republic of South Africa and Sasol Limited*, February 2016; Sasol, "Unlocking the Potential of Southern Africa's Gas Resources", Sasol Annual Integrated Report 2014
69 BP, *BP Statistical Review of World Energy*, June 2017
70 NERSA 2017
71 Pamela Mondliwa and Simon Roberts, *Economic Benefits of Mozambique Gas for Sasol and South African Government,* Centre for Competition, Regulation and Economic Development, University of Johannesburg, December 2017
72 Development Bank of South Africa, *Natural Gas Briefing Paper*, September 2016
73 NERSA, *Final Ex-Post Regulatory Impact Assessment of the Agreement Concerning the Mozambican Gas Pipeline Between the Government of the Republic of South Africa and Sasol Limited*, February 2016.
74 The Supreme Court of Appeal of South Africa *Judgment, Reportable Case No: 150/2017*, May 10th, 2018. The appellants in the case were PG Group, South African Breweries, Consol Glass, Nampak, Mondi, DAWN, and Illovo Sugar.

Appendix C. List of Persons Met

Government of Mozambique

John Kachamila, former Minister of Mineral Resources and Energy
Castigo Langa, former Minister of Mineral Resources and Energy
Carlos Zacarias, Chairman, National Petroleum Institute
Jorgina Manhengane, VP Project and Development, National Petroleum Institute
Celia Correia, Project and Development Director, National Petroleum Institute
Nazario J. Bangalane, Supervision and Safety Director, National Petroleum Institute
Claudio Dimande, MAGTAP PMU Coordinator, Ministry of Mineral Resources and Energy

Mozambique State-Owned Oil and Gas Companies

Omar Mitha, Chairman and CEO, Empresa Nacional de Hidrocarbonetos (ENH)
Issufo Abdulla, former Chairman, Empresa Nacional de Hidrocarbonetos (ENH)
Mayisha Mangueira, Head of CEO Office, Empresa Nacional de Hidrocarbonetos (ENH)
Mussa Tembe, Director Corporate Strategy & Portfolio Management, Empresa Nacional de Hidrocarbonetos (ENH)
Benjamin Chilenge, Board Member, Empresa Nacional de Hidrocarbonetos (ENH)
Paulino Gregorio, President, Companhia Mocambicana de Gasoduto, SA (CMG)

Project Sponsor

Peter Manoogian, Executive Director, Sasol Project Mozambique, Sasol
Christiaan Viljoen, Senior Manager Finance Mozambique, Sasol
JP Meintjes, Vice President Legal Energy, Legal, IP and Regulatory Services, Sasol
Celso Mandlate, SHE Manager, Sasol Petroleum Temane LTD
Dr Jaap Smit, Business Integration Manager, Sasol Energy
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