The Shell Petroleum Development Company of Nigeria Limited
Internal Investment Proposal

Summary information

<table>
<tr><td>Business unit and company</td><td>Shell Petroleum Development Company of Nigeria</td></tr>
<tr><td>Group equity interest</td><td>100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.</td></tr>
<tr><td>Other shareholders/partners</td><td>Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV</td></tr>
<tr><td>Business or Function</td><td>P&T</td></tr>
<tr><td>Amount</td><td>US$15.99mln Shell share, MOD, 50/50</td></tr>
<tr><td>Project</td><td>Associated Gas Gathering Facilities Improvement Project (Obigbo & Agbada Scope)</td></tr>
<tr><td>Main commitments</td><td>
<table>
<tr><th>Narration</th><th>Pre-FiD 100%</th><th>Pre-FiD (Shell share US$mln)</th><th>This Proposal (100% JV US$ mln)</th><th>This Proposal (Shell Share US$ mln)</th><th>Total (100% JV US$ mln)</th><th>Total (Shell share US$ mln)</th></tr>
<tr><td>Front End Engineering & Detailed Design</td><td>5</td><td>1.5</td><td>0</td><td>0</td><td>5</td><td>1.5</td></tr>
<tr><td>Procurement & Installation/Construction</td><td></td><td>0</td><td>47</td><td>14.1</td><td>47</td><td>14.1</td></tr>
<tr><td>Total CAPEX</td><td>5</td><td>1.5</td><td>47</td><td>14.1</td><td>52</td><td>15.6</td></tr>
<tr><td>Sustainable Community Development</td><td></td><td></td><td>1.3</td><td>0.39</td><td>1.3</td><td>0.39</td></tr>
<tr><td>Total</td><td>5</td><td>1.5</td><td>48.3</td><td>14.49</td><td>53.3</td><td>15.99</td></tr>
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<tr><td>Source and form of financing</td><td>This investment will be financed with JV funding and Shell share of capital expenditure will be met by SPDC's own cash flow.</td></tr>
<tr><td>Summary cash flow</td><td>Cost Only. Cash Flow Plot Not Applicable.</td></tr>
<tr><td>Summary economics</td><td>
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<tr><th>Summary economics</th><th>NPV (USD mln)</th><th>RTEP (%)</th><th>VIR7%</th></tr>
<tr><td>Base case</td><td>-3.8</td><td>NA</td><td>-0.27</td></tr>
<tr><td>High Capex</td><td>-4.4</td><td>NA</td><td>-0.27</td></tr>
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Detailed information including management summary

Section 1: Management Summary

This investment proposal seeks organizational approval for funding of **US$ 15.99 mln (US$ 53.30 mln 100% JV)** to execute the Obigbo & Agbada scope of the Associated Gas Gathering Upgrade.

The P50 CAPEX cost estimate for the full Obigbo & Agbada scope is US$52mln, US$5mln of this being the estimate for the FEED and Detailed Design. US$6.02 mln has been spent in 2013, while the balance of US$45.98mln will be spent in 2014 through 2016. An OPEX of US$1.3mln is provided for Sustainable Community Development.

This project is an integral part of SPDC's flares down and associated gas utilization campaign. The project will increase associated gas utilization to at least 95% in Obigbo North and Agbada fields, while eliminating oil production deferments and operational gas flaring associated with Associated Gas Gathering issues. In addition to the incremental oil and gas production, the Project will allow the SPDC JV improve the availability of the facilities to meet the Eastern domestic gas supply commitments.

The Obigbo and Agbada projects are part of a wider Associated Gas Gathering upgrade programme which also includes Imo River, Cawthorne Channel, Soku and Belema. Concept studies for the Obigbo & Agbada scope of the project was completed in November 2011 and approval is now requested for proceeding to the define phase.

Project Scope

SPDC installed Associated Gas Gathering facilities with a total capacity of about 900MMscf/d in the 1990's and early 2000's in order to convert the hitherto flared associated gas to value. In the period between when the facilities were installed and now, a number of technical and operational issues (including asset integrity, obsolescence, unavoidable abandonment, changes in operating envelop and reservoir depletion) have materialized, resulting in suboptimal performance of the Associated Gas Gathering systems over time.

A dedicated Associated Gas Gathering & Flare Improvement Concept Team was set up in August 2011 to identify and assess the Associated Gas Gathering issues and develop sustainable solutions.

The Project involves upgrade of existing Associated Gas Gathering facilities, together with their associated flow stations to achieve optimum performance. The work scope has been developed to address all the identified Associated Gas Gathering performance issues. A summary of the scope of work planned to be executed under this proposal is as follows:

Low Volume of Produced Associated Gas

1. Design and installation of gas recycle loop at Obigbo and Agbada Associated Gas compressor stations

High Liquid Carryover

2. Design, procurement and installation of two 2MMscf/d, 1.15m dia x 4.5m scrubbers for high pressure and low pressure duty at Obigbo North, Agbada-1 and Agbada-2 flow stations, respectively.

Low Fuel Gas Quality

3. Design, procurement and installation of one fuel gas scrubber each at Obigbo North, Agbada 1 and Agbada 2 flow stations, respectively.

Instrument Air/Gas

4. Replacement of instrument gas systems with instrument air systems
5. Upgrade of existing instrument air systems from 70Nm3/h to 220Nm3/h, to meet instrument air requirements in the various facilities (flow stations and Associated Gas Gathering plants in Obigbo and Agbada).

Pumping Capacity

6. Procurement and installation of 10Mbpd electric-driven crude export centrifugal pumps with remote operation capability (4no. in Agbada-1, 6no. in Agbada-2 and 5no. in Obigbo North)
7. Integration of new export pumps to existing control system in Obigbo and Agbada Associated Gas Gathering Plants.

Power System Inadequacy

8. Procurement and installation of one 550kVA gas engine generator each at Obigbo and Agbada Associated Gas Gathering facilities.

Non-Functional Auto Drain

9. Rerouting of process condensate disposal line in Obigbo Associated Gas Gathering plant to the LP header in Obigbo North flow station.
10. Rerouting of process condensate disposal line in Agbada Associated Gas Gathering plant to the LP header in Agbada 2 flow station.

Availability of Lift Gas

11. Piping and instrument modification to preferentially route high pressure gas to gas lift wells.

Collection of surge vessel gas

12. A pilot project on surge vessel gas collection is being undertaken in Imo River facilities. This solution, if successful, will be deployed to other locations.

The expenditure phasing is shown in table 1 below:

Table 1: Expenditure Phasing (US$mln MOD 50/50, 100% JV)

Year	2013	2014	2015	2016	Total
CAPEX	6.02	9.75	20.48	15.76	52.00
OPEX	0.15	0.25	0.53	0.37	1.30
Total	6.17	10.00	21.00	16.13	53.30

Section 2: Value proposition and strategic and financial context

The expenditures in 2013 were required to execute Front End Engineering and Detailed Design and execution of identified quick wins. Procurement of long lead items were initiated early in the design, as soon as the specifications were out. To realize the project schedule, purchase orders for the Long lead items (i.e. pressure vessels, transmitters, control valves, shutdown valves, etc) were initiated in Q3 2013 with expected delivery in Q3 2014. An LDL of $5mln was approved by GM Onshore & Shallow Offshore Projects to kick off FEED and detailed design.

The project will allow the JV to improve gas supply volumes and availability particularly as the Alaoji Power Plant comes into full operation. The project will contribute to SPDC drive in reducing routine gas flaring and improving gas utilization in the order of 95%. An additional benefit of this project is an opportunity to reduce oil production deferment in the Obigbo North and the Agbada fields by about 10% and 8% of the Integrated Production System Capacity, respectively.

The remaining recoverable volume in Obigbo North is 212.2MMstb of oil and 259.1Bscf of Associated Gas while the remaining recoverable volumes in Agbada Field are 266.3MMb of oil and 670.8Bscf of Associated Gas. Associated Gas Gathering Improvement Project will, therefore, eliminate this deferment, thereby boosting oil production and Associated Gas utilization accordingly.

Furthermore, growth projects such as Agbada Further Oil Development 1-3 and Obigbo Node Integrated Oil and Gas Development 1-4, which are currently in the maturation phase will benefit from the Associated Gas Gathering Upgrade Project.

Summary Economics

The AGG Improvement IP for Agbada and Obigbo Nodes was evaluated as a cost only using the 50/50 Level III cost estimates. The P50 CAPEX estimate for the full Project scope is US$52.0 mln MOD JV 100% (US$15.6 mln Shell Share) while the sum of US$1.30 mln MOD 100% JV (US$0.39 mln Shell Share) was provided for Sustainable Community Development (SCD).

Sensitivities carried out on the base case these include:

- High Capex.
- Low Capex.
- 1 Year schedule delay.
- 1.5 % cost mark-up due to Benched Marked Verified and Approved (BVA) issues due to NAPIMS cost dispute.
- Project Cost + NFA Production (Oil and AG) to see the impact of the Project on the value of the NFA.
- The proposed PIB (Petroleum Industry Bill).

The detailed results are shown in table 2 below.

Table 2: Economics Grid (Shell Share)

PV Reference Date: 1/7/2013	**NPV (S/S $ mln)**		**VIR**	**RTEP**	**UTC (RT $/boe)**		**Payout-Time (RT)**	**Maximum Exposure (RT)**
Cash flow forward from: 1/1/2013	**0%**	**7%**	**7%**	**%**	**0%**	**7%**	**yyyy**	**mln**
Base Case								
RV-RT ($90/bbl RT13)*	-2.7	**-3.8**	**-0.27**	NA	NA	NA	NA	US$ 12.3 (2015)
Sensitivities (on base case)								
High Capex (P90)		-4.4	-0.27				NA	US$ 14.1 (2015)
Low Capex (P10)		-3.6	-0.27				NA	US$ 11.6 (2015)
1 Year schedule delay		-3.5	-0.27				NA	US$ 12.3 (2016)
1.5% cost mark up due to BVA		-4.5	-0.28				NA	
Cost + NFA Production (Oil and AG)		159.3	11.43				2013	US$ 2.5 (2013)
PIB		-11.0	-0.76				NA	

*Note: SV-RT and HV-RT not applicable as there is no revenue stream.

Key Project Parameters Data ranges (Shell Share)

	Unit	**Bus Plan BP12**	**Low**	**Mid**	**High**	**Comments**
Capex (MOD)	US$ mln	15.6	14.7	15.6	18.0	
Opex (MOD)	US$ mln	0.39	0.37	0.39	0.45	SCD Opex
Production volume	Mmboe	NA	NA	NA	NA	
Project Start-up Date	mm/yyyy	May-15	Oct-14	May-15	Oct-15	

Economics Assumptions

Base Case (Cost Only):

- SCD cost of 2.5% of MOD CAPEX.
- 10% RT CAPEX assumed as abandonment cost.

- NDDC levy 3% of total expenditure.

Sensitivity (Project Cost + NFA Production):

- Oil PSV of $90/bbl RV-RT13 with Bonny offsets.
- NGMP Domestic gas aggregate price profile RT13.
- 31/12/2012 ARPR Variable OPEX of $2.57/boe for Agbada1, $2.16/boe for Agbada2, and $2.63/boe for Obigbo were used.
- SPDC fixed generic Opex was used for new facilities.
  - 3.0% of Cumulative Oil Capex.
  - 3.5% of Cumulative Gas Capex.
- Gas was taxed under CITA with Associated Gas Framework Agreement (AGFA) incentive.
- Flare Fee of US $3.5/mscf non-tax deductible.
- GHV of 1000Btu/scf for gas supply to Domgas.
- SCD cost of 2.5% of MOD CAPEX.
- 10% RT CAPEX assumed as abandonment cost.
- NDDC levy 3% of total expenditure.
- Education tax of 2% assessable profit.

PIB Assumptions:

- Nigeria Hydrocarbon Tax for onshore of 50%.
- Company Income Tax of 30%.
- Capital allowance for NHT over 5 years of 4x20% plus 1x19% at On-stream date.
- Capital allowance for CIT over 5 years of 4x20% plus 1x19% at Construction start date.
- Education tax of 2% of assessable profit deductible for NHT, but not CIT.
- NDDC levy of 3% of Capex and Opex deductible for NHT and CIT.

Section 3: Risks, opportunities and alternatives

Risks	Mitigation Measures
HSE	AGG facilities Improvement Project will be executed consistent with HSSE CF requirements in order to achieve SPDC's HSE targets and aspirations. Since the project will be executed under challenging circumstances mainly on land locations, one of the major exposures to the workforce will be during land transportation of personnel and equipment. All land transport activities shall comply with the procedures and standards set out in The Shell Transport Management system (LT-MS) Manual Doc. No SPDC 2000-082. Stringent HSE rules would apply, as regards medical fitness of personnel and utilization of fit-for-purpose equipment. The project will ensure that all persons employed directly or by the executing contractor, comply with all relevant SPDC policies. The work force shall be made to imbibe the 12 Life saving Rules during construction activities at all times. A HAZID workshop has been carried out to outline key HSSE risks that could impact on the project. Resulting from this, a Project HSE Plan (which will be supported by an ALARP demonstration) will be developed and embedded in the execution plan. In addition to this, an HSE Adviser will be assigned to support its execution. Furthermore, prior to commencement of construction activities, the contractor executing the work will be required to produce a site specific HSE plan and JHA, highlighting all the key risks and adequate measures to be taken to reduce these identified risks to ALARP. The contracts for the execution of the project shall make adequate provisions for HSE associated costs.
Funding	JV partners have approved funding for this project as 'JV base capex' in 2014. JV partners have proactively been engaged and had participated at key project events.
NAPIMS Approval	There have been several engagements with NAPIMS, including technical workshops on AGG Performance & Flare Improvement that were organized for the SPDC JV Partners (NAPIMS, Total and ENI). Though NAPIMS have supported the project in principle, further engagement will continue until work completion. NAPIMS approved funding for the project in 2013 during the last DEVCOM Budget proposal exercise. The installation works at Agbada and Obigbo will be executed using Asset Engineering Land Mechanical modification call-off contracts which are already NAPIMS approved.
Construction In Live Facilities	The risk posed by carrying out works in live Oil & Gas facilities is recognized and this has been mitigated by ensuring that contractors who will be considered to execute the works have the requisite proven brown field construction experience.
Limited Capacity of In-country Equipment Vendors	Recent experience with the known Nigerian vendors for some of the project works, especially pressure vessel fabrication, has highlighted a limited number of capable local contractors who are capable of fabricating pressure vessels to ASME U standard. In order to mitigate this risk, local fabricators will be encouraged to partner with foreign fabricators who possess ASME U certification. Furthermore local fabricators who are not registered with SPDC but possess ASME U certification will be encouraged to participate to increase competition.
Prolonged Plant Downtime	Some construction activities, especially tie-ins, may require plant shutdown. Thus, there is a risk of prolonged plant downtime that may significantly impact production. To mitigate this risk, shutdown plans for all affected assets shall be

	developed for the project activities and these shall be incorporated in the project schedule and the tender package for the construction contracts. These plans shall ensure that all activities requiring plant shutdown are aligned with planned maintenance activities within the framework of the Integrated Activity Plan.
Security	SPDC operates under a hostile environment. Baseline threats include violent crimes, organized crime, militant activism, community unrest, theft of information, terrorism etc. If not properly mitigated, the resultant effect is derailment in anticipated completion target dates of projects. Consequently, contractors managing projects across SPDC locations are compulsorily required to put in place a realistic security plan to cover a wide range of risks. The purpose of the plan is to ensure the Security of all personnel (staff and contractors) both during movement to and from the worksite and during the task, in line with SPDC Convoy movement Standard Operating Procedures (SOP's) and best practice to reduce security risks to As Low As Reasonably Practicable (ALARP).

Alternatives: SPDC needs to utilize produced Associated Gas and eliminate routine flaring in order to meet the federal government's "flares out" directive. In addition, SPDC needs to meet her domestic gas supply commitments, which is partly from the Associated Gas Gathering facilities. These objectives can be realised if the existing Associated Gas Gathering facilities are performing optimally. Though the gas flaring objective may also be met by shutting in production, this is really not a viable alternative because of the impact on production and revenue.

Section 4: Carbon management

There will be no incremental potential greenhouse gas emissions resulting from this proposal.

Section 5: Corporate structure, and governance

The existing corporate structure and governance arrangements of SPDC-JV, with SPDC as operator still subsist for this investment.

Section 6: Functional Support and consistency with Group and Business Standards

This proposal complies with Group Business Principles, Policies and Standards. Functional support for this proposal will be provided by Finance, Social Performance, Contracting and Procurement, HSE, Operations, Legal, Treasury and Tax functions.

Section 7: Project management, monitoring and review

This project is being matured in line with established process and shall undergo all necessary Value Assurance Reviews, aligned to the risks, size and complexity of the project. There is an identified SPDC Decision Executive, Business Opportunity Manager, Project Manager and various Operations Managers, as per the respective assets.

Several scope alignment engagements/workshops have been held with other teams across the company in order to ensure that all relevant scopes are captured and that scopes are not duplicated in other teams.

Section 8: Budget provision

There is provision in 2014 JV base budget to cater for these proposed expenditures. FEED and detailed design activities commenced in 2013 under an approved LDL of $5 mln.
Budget Cost object: C.NG.PAE.DG.12.005.

Section 9: Group financial reporting impact

There are no unusual accounting issues related to this GIP. Expenditure related to the project will be accounted for in line with Group Policy. The financial impact of this proposal on Shell Group Financials is as indicated in the table below

US$ mln	2013	2014	2015	2016	Post 2016
Total Commitment	1.66	7.96	6.37		
SCD Expenditure	0.13	0.13	0.13		
Pre-FID Expenditure					
Capital Expenditure	1.53	7.83	6.24		
Cash Flow					
Operating Expenditure	0.05	0.24	0.19		
Cash flow From Operations	0.29	1.81	2.83	2.65	5.72
Cash Surplus/(Deficit)	-1.24	-6.02	-3.41	2.65	5.72
Profit and Loss					
NIBIAT +/-	0.29	1.81	2.83	2.65	7.43
Balance Sheet					
Avg Capital Employed	0.77	5.44	12.48	15.60	32.84

Section 10: Disclosure

Materials disclosures, if any, will be done in line with the Shell Group and SPDC Disclosure policies and guidelines.

Section 11: Financing

This investment will be financed with JV funding and Shell Share capital expenditure will be met by SPDC's own cash flow.

Section 12: Taxation

There are no unusual taxation features at this stage.

Section 13: Key Parameters

This Investment Proposal seeks approval for funding of $15.99 mln (Shell Share, 50/50) Capital expenditure and SCD Opex, within specified allowable limit of 20% increase recommended (Shell Investment Proposal manual) for same authority level.

Section 14: Signatures

For Business Approval:

……. .....

Markus Droll **Guy Janssens**

SEPA-UIO/G **SEPA-FUI/OG**

Date ..../..../.... **Date ..../..../....**

Initiator: _____

Ejiogu, Emmanuel O.

(PTP/O/NM)

Date …/…./….