

# The Shell Petroleum Development Company of Nigeria Limited

## Internal Investment Proposal

### Summary Information

Directorate	Technical Directorate			
Group equity interest	100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.			
Other shareholders / partners	Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV			
Amount	US\$8.08 mln Shell share, MOD, 50/50 (US\$26.93 mln 100% JV).			
Project	Soku Liquids and AG Pipelines Package			
Main commitments		(US\$ Mln)		
		Shell Share	100% JV	
	FEED	0.60	2.00	
	Survey	0.20	0.67	
	Land Acquisition	0.50	1.67	
	ESHIA	0.15	0.50	
	Pre FID SDCR Engagement	0.10	0.33	
	Line pipe procurement	5.98	19.93	
	Project Management	0.55	1.83	
	Total	8.08	26.93	
Source and form of financing	This investment will be financed with JV funding and Shell share capital expenditure will be met by SPDC’s own cash flow. Formal JV partners’ approval will therefore be obtained.			
Summary cash flow	Pre-FID evaluated as a cost only. Cash flow chart not applicable.			
Summary economics	Summary economics	NPV (USD mln)	RTEP (%)	VIR7%
	Pre-FID	-2.4	NA	NA
	Full Project Scope	-11.8	NA	-0.15

### ***Section 1: The proposal (management summary)***

This Pre-FID Investment Proposal requests approval for funding of US\$ 8.08 mln Shell Share to progress the Front-end Engineering Design, Route Survey, Land Acquisition, Environmental, Social and Health Impact Assessment studies, Sustainable Development and Community Relations Engagement as well as procurement of line pipes for Soku node pipelines related to security of gas supply from Soku gas plant to NLNG.

The Soku node pipelines are described below:

- **Pipeline Number 1:** 14-inch x 22 km liquids export pipeline from Soku gas plant to Nembe Creek Trunk Line junction manifold at San Barth.
- **Pipeline Number 2:** 10-inch x 4.5 km oil pipeline from Soku flow station to Soku gas plant.
- **Pipeline Number 3:** 12-inch x 16.25 km associated gas pipeline from Ekulama 2 to Soku gas plant.
- **Pipeline Number 4:** 12-inch x 1.5 km AG spur line from Soku flow station to the Ekulama 2 pipeline Number 3 above.

Pipeline Number 1 is required to evacuate current and future liquids (mostly condensate) production from the Soku gas plant following extensive damage to the condensate export pipeline by condensate thieves. At present, condensate is exported from the Soku gas plant by injecting it into the EGGS-1 gas pipeline at Soku and receiving it at NLNG facilities. This mode of condensate evacuation takes up gas export capacity from EGGS-1 and is putting a strain on NLNG liquid handling facilities. When the Kolo Creek to Soku development and the Soku NAG compression system are operational, there will be an additional 28,000 bbl/d going into Soku gas plant. If this volume of liquids is injected into EGGS-1, it will take up even more gas capacity from EGGS-1 and the liquid handling facilities at NLNG will be unable to process this additional liquid production. In addition to the gas capacity issues, the agreement with the Department of Petroleum Resources prior to their approval of the condensate spiking into EGGS-1 is that a permanent condensate disposal means will be installed by 2014. It is therefore required to find an alternative export route for the condensate from Soku to free EGGS-1 capacity and to comply with the agreements with the regulator.

Pipeline Number 2 is required to convey crude oil from Soku flow station to mix with the condensate to make it less attractive to condensate thieves. Pure condensate is very attractive to thieves and condensate mixed with crude is less so. This is part of a series of planned measures to provide security for liquid evacuation from Soku and hence security of gas supply.

Pipeline Number 3 is required to transport about 13 MMscf/d of associated gas from the Ekulama field to Soku gas plant to be processed and added to the supply to NLNG.

Pipeline Number 4 is required to transport associated gas from the Soku flowstation to the Soku gas plant for addition to the sales stream to NLNG. This line secures crude production from the Soku flow station for use in mixing with the condensate as described under Pipeline Number 2 above. It is linked to security of condensate export from Soku and hence gas supply security.

The overall project expenditure phasing is summarised in the table below:

**Table 1: Project Expenditure Phasing (US\$ Mln MOD 50/50)**

Description	Pre-FID 2010	Pre-FID 2011	2012	2013	2014	2015	Total
Pipeline No. 1	1.00	13.00	37.20	71.50	65.00	5.31	193.01
Pipeline No. 3	0.70	6.00	26.00	52.50	31.00	1.00	117.20
Pipeline No. 2	0.30	4.00	5.01	5.00	2.00	0.00	16.31
Pipeline No. 4	0.10	1.83	2.00	2.25	2.00	0.00	8.18
Project Costs 100%	2.10	24.83	70.21	131.25	100.00	6.31	334.70
Project Costs Shell Share	0.63	7.45	21.06	39.38	30.00	1.89	100.41

## ***Section 2: Value proposition and strategic and financial context***

Survey, EIA, land acquisition, SDCR engagement and FEED are required to progress the project up to inviting tenders. NAPIMS approval for the bidders list and the bid evaluation strategy is already in place. Furthermore procurement of line pipes in 2011, when the scope and risks are fully defined will help to accelerate the project delivery schedule rather than opting for the EPC contractor to procure the line pipes post contract award/FID, which will delay project completion schedule. The line pipes can easily be deployed on another project were this project not to proceed, which is unlikely.

The strategic benefits and value proposition from executing the project are as follows:

- Pipeline 1 is the permanent means of evacuating condensate production from Soku gas plant before the temporary solution (condensate spiking) permit from DPR expires by 2014. Hence this pipeline supports reliable operation of the gas plant. This pipeline also permits restarting of Soku flowstation, which is currently shut-in due to lack of export route. This pipeline in addition allows condensate production in excess of the spiking limit of 20 kbbl/day to be evacuated from the gas plant from new projects like Kolo Creek field development and Soku NAG compression.
- Pipeline 2 enables re-starting of Soku flowstation, currently shut-in, with production of ca. 8 kbopd by 2014 and in addition permits fouling the condensate at the gas plant and hence making it less attractive for bunkerers when exported through Pipeline 1.
- Pipeline 3 provides means of evacuating Ekulama 1 & 2 associated gas (total of ca. 13 MMscf/d) that would otherwise be flared to Soku gas plant for sales and protecting average of 35 kbopd from the field. A second role for this pipeline is to act as a backup for Pipeline Number 1 to secure export of condensate and hence gas export from Soku gas plant when Pipeline Number 1 is out.
- Pipeline 4 permits evacuating Soku flowstation AG production (average of 4 MMscf/d) that would otherwise be flared, protecting average of 8 kbopd production from the flowstation.

The design of the pipelines provides for tamper-proof measures and the installation of an intruder detection system to provide early warning and allow intervention to deploy defensive measures.

## **Summary Economics**

The Pre-FID economics of the Soku Liquids and AG Pipelines project was evaluated as a cost only using the 50/50 level II cost estimate treated as OPEX. It is expected that the full project IP would be evaluated as CAPEX after final investment decision.

A sensitivity view was done on 1.5% Pre-FID cost mark up due to BVA (bench marked verified approved) issues and the base case treated as CAPEX.

The Full project economics was evaluated using the 50/50 level II cost estimate and the NFA production forecast. The evaluation only considered the NFA forecast up till the end of the 25 Years life span of the respective pipelines. The maximum value at risk be will the oil production from Soku, Ekulama 1 and 2 flow stations which is estimated at about 40,000- 45,000 bopd. It is expected that, there is further development that will pass through the pipelines. These have not been captured in this evaluation.

The Soku Liquids to Sanbarth manifold pipeline was evaluated using the Soku Gas plant NFA Condensate forecast from 2014 after the pipeline project completion to the end of field life in 2018.

The Soku flow station to Soku gas plant Pipeline was evaluated using the Soku FS NFA Oil forecast from 2015 to the end of the pipelines' life span of 25 years. A consolidated view of flowing oil from Soku FS to Soku GS then mixed with condensate to San Barth manifold was also shown on.

Ekulama 2 AG pipeline to Soku gas plant was evaluated using the Ekulama FS 1 and 2 NFA AG forecast from 2016 to the end of the pipelines' life span.

Soku flow station to Soku Gas Plant AG line was evaluated using the Soku GP NFA AG forecast from 2015 after the project's completion till the end of the life span of the pipeline.

**Table 2: Economics Grid -**

**Pre-FID**

PV Reference Date: 1/7/2010	NPV (\$/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout- Time (RT)	Maximum Exposure (RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%	yyyy	\$mln
Base Case								
SV (\$50/bbl RT 10)	-2.6	-2.4						
RV (\$60/bbl RT 10)	-2.6	-2.4	NA	NA	NA	NA	NA	US\$ 2.6 mln (2011)
HV (\$80/bbl RT 10)	-2.6	-2.4						
Sensitivities (using RV)								
1.5% Pre-FID cost mark up due to BVA issues		-2.8	NA	NA	NA	NA	NA	NA
Pre-FID Cost treated as Capex		-3.2	-0.44	NA	NA	NA	NA	US\$ 4.0 mln (2011)

## Full Project Scope

PV Reference Date: 1/7/2010	NPV (\$/S \$ mln)		VIR	RTEP	UTC (RT \$/boe)		Payout- Time (RT)	Maximum Exposure (RT)
Cash flow forward from: 1/1/2010	0%	7%	7%	%	0%	7%	yyyy	\$mln
Base Case								
SV (\$50/bbl RT10)	-6.3	-15.07						
RV (\$60/bbl RT10)	-0.2	-11.8	-0.15	NA	NA	NA	NA	US\$ 56.1 mln (2014)
HV (\$80/bbl RT10)	11.9	-5.16						
BEP (RT \$/bbl)								
Projects (using RV)								
Soku GP to SanBarth Mfd Pipeline *		-8.4	-0.19	NA	NA	NA	NA	US\$ 31.7 mln (2014)
Soku FS to Soku GP Oil Line **		9.3	2.35	NA	NA	NA	NA	US\$ 2.6 mln (2013)
Consolidated Soku oil & condensate Lines		1.0	0.02	NA	NA	NA	NA	US\$ 34.0 mln (2014)
Ekulama 2 AG line to Soku GP		-10.6	-0.40	NA	NA	NA	NA	US\$ 20.8 mln (2014)
Soku FS to Soku GP AG Line		-2.0	-1.04	NA	NA	NA	NA	US\$ 2.7 mln (2019)

### Note:

\*The Soku GP to San Barth Manifold pipeline excludes the benefit of the NFA oil production through it.

\*\*Soku FS to Soku GP oil line benefits from the NFA oil.

## Key Project Parameter Data Ranges (Shell Share)

	Unit	Bus Plan	Low	Mid	High	Comments
Capex (MOD)	US\$ mln	NA		NA	NA	
Opex (MOD)	US\$ mln	0.35	NA	0.35	NA	
Production volume	Mmbbl	NA	NA	NA	NA	
Commission Date	mm/yyyy	NA	NA	NA	NA	
Production in first 12 months	Mmboe	NA	NA	NA	NA	

## Economics Assumptions

### Pre-FID

- Pre-FID level II cost estimates treated as Oil and AG independent Opex respectively.
- NDDC levy 3% of total expenditure
- AGFA fiscal incentive applied.

### Full Project Scope

- Full project 50/50 level II cost estimates treated as CAPEX.
- Oil PSV of \$60/bbl RT10 and NLNG 2010 Gas Price.
- Oil & Condensate taxed at under PPT.
- ARPR 2010 fixed and variable OPEX was used.
- AGFA fiscal incentive applied.
- PPT Tax rate of 85% applied.
- Flare Penalty of US \$3.5/mscf non-tax deductible.
- GHV of 1150Btu/scf for gas sales to NLNG.
- NDDC levy 3% of total expenditure.
- 2% of MOD Capex expenditure treated as SCD.
- Education tax of 2% assessable profit.

### ***Section 3: Risks, opportunities and alternatives***

<b><i>Risk</i></b>	<b><i>Planned Mitigation</i></b>
Funding constraints	Pre-FID funding requirements will be met through the usual JV funding arrangements. However project funding is under the NLNG supply alternative funding arrangement being progressed.
Continued insecurity in the Niger Delta region	Mitigation for this risk is handled at a corporate and Nigerian National level and, if situation persists could negatively impact the cost, project schedule and first gas date. However, prior to mobilization for construction works, a detailed security plan will be developed in conjunction with the Area Security Advisor – Major Projects
Community Issues	A few pipeline communities to transverse during execution. This requires increased resources and may lead to delays and cost escalation. This would be mitigated by early engagement and incorporating dedicated SCD personnel in project team to proactively manage the process.
Cost escalation	Bid price escalation is now frequent in facilities tenders due to Nigeria specific issues including Niger Delta security situation. The cost estimates will be fully benchmarked including an ESAR review prior to DG4.
Nigerian Content	Risks associated with the Local Content Act is incorporated as part of the risk contingency but will be further evaluated at FID stage. Part of the NCD risks may be mitigated by the fact that the project may use surplus Shell Nigeria Gas 31-km x 12-inch pipes. Evaluation of the suitability of the lines pipes is currently ongoing.
Tax proposals in the Petroleum Industry Bill	The PIB is yet to be passed into law. Currently there are various versions and it is unclear what the final version will be. There is however the risk that the PIB may further depress the economics of the project. This is not expected to be significant as only costs incurred abroad are affected in this “cost only” evaluation.

### ***Section 4: Corporate structure, and governance***

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

### ***Section 5: Functional Support and consistency with Group and Business Standards***

This proposal complies with Group Business Principles, policies and standards. Functional support for this proposal is provided by Finance, Social Performance, Supply Chain Management, HSE, Operations, Legal, Treasury and Tax functions.

### ***Section 6: Project management, monitoring and review***

This project has been matured in line with the Opportunity Realization Process (ORP) and planned to undergo all necessary Value Assurance Reviews. DG3 is planned by December 2010. There is an identified Decision Executive, Business Opportunity Manager, Project Manager and Operations Manager. The existing Major Projects Decision Review Board will control any major change proposals and will monitor value delivery based on regular (PERT) reviews. Projects & Technology oversight will be exercised through membership of the Project DRB.

**Section 7: Budget provision**

The budget for the 2010 pre-FID works has been approved at DEVCOM and is in the SPDC JV base budget for 2010.

**Section 8: Group financial reporting impact**

The financial impact of this proposal on Shell Group Financials is as indicated in the table below.

US\$ mln	2010	2011	2012	2013	2014	2015
<b>Total Commitment</b>	0.63	7.45				
<b>Cash Flow</b>						
SCD Expenditure						
Pre-FID Expenditure	0.63	7.45				
Capital Expenditure						
Operating Expenditure	0.02	0.22				
Cash flow From Operations	(0.38)	(4.14)	1.91			
Cash Surplus/(Deficit)	(0.38)	(4.14)	1.91			
<b>Profit and Loss</b>						
NIBIAT +/-	(0.22)	(2.39)				
<b>Balance Sheet</b>						
Avg Capital Employed	0.08	1.03	0.95			

**Section 9: Disclosure**

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

**Section 10: Financing**

The pre-FID portion of this investment will be financed with JV funding and Shell Share capital expenditure will be met by SPDC's own cash flow.

**Section 11: Taxation**

Completion of the Soku pipelines should have appropriate tax treatment in line with statutory requirements.

**Section 12: Key Parameters**

Approval is sought for US\$8.08mln Shell Share for FEED, Route Survey, ESHIA & Land Acquisition , [SDCR engagements](#) and procurement of long lead materials.

***Section 13: Signatures***

This Proposal is submitted to GM Onshore/Shallow Offshore Projects for approval.

Supported by:

For Business approval:

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*Rob van Velden*  
(SPDC Finance Director, FUI/FB)  
Date:.... / .... / ....

.....  
*Andrew Birch*  
(GM Onshore/Shallow Offshore Projects,  
UIG/T/P)  
Date:.... / .... / ....

*Initiator: Ikenna Nwosu, UIG/T/PN*