



REPUBLIC OF SOUTH AFRICA



Unlocking the Economic Potential of South Africa's Oceans

Offshore Oil and Gas Exploration
Final Lab Report

15 August, 2014

Abstract

Context

- Although South Africa's oil and gas sector is in the early development phase, it has the potential to create large value to the country in the long run
- Developing an oil and gas industry takes decades; in Nigeria, it took 15-20 years from the moment of licensing until first production
- South Africa has possible resources of ~9 bn barrels oil and 11 bn barrels of oil equivalent of gas, but uncertainty is large
- Oil and gas exploration requires significant investments, particularly in South Africa's deep-water offshore environment where a single exploration well can cost over USD 150 mn. To achieve 30 exploration wells in the next 10 years, investments in the range of USD 3-5 bn are needed. Given that exploration success rates are below 15%, investors see these opportunities as risky

Vision – what success could look like

- In order to get a view of actual prospectivity, exploration activity must increase; the lab has set an aspiration to achieve 30 exploration wells in the next 10 years
- Assuming South Africa could achieve production levels of 370,000 barrels of oil and gas per day (of which the likelihood is hard to assess at this stage), this would mean up to 130,000 jobs are created with an annual uplift to GDP of USD 2.2 bn, while reducing the dependence on expensive oil and gas imports

What do you need to get there

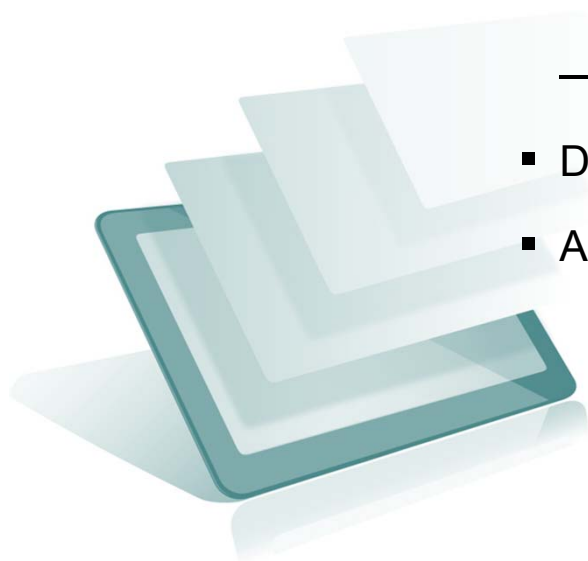
- **Infrastructure** – although the infrastructure is currently not a constraint to exploration, particularly for gas, further coordination with other stakeholders may be helpful to incorporate the potential implications of offshore production into infrastructure plans
- **Environment** – to address concerns about a potential negative impact of offshore oil and gas exploration and production (E&P) several initiatives have been proposed, of which joint emergency response drills, and operationalisation of the international oil pollution fund are 2 examples of “quick wins”
- **Capability development** – a collaborative skills strategy roadmap and sub-surface research capability should be developed
- **Supply chain (local content)** – although still in the exploration phase, limited opportunities arise to develop local content (potential for local seismic work is assessed); a mechanism should be developed for the production phase based on global best practices
- **Institutional arrangements:** to maximise value for the country, adequate institutional governance is critical to ensure efficient and effective reservoir management, licensing, planning, data management and auditing
- **Legislative:** to affirm investor confidence, clarity and stability must be provided on the full legislative, regulatory and contractual package

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- **Executive summary**

- Overview
- Case for change
- Lab vision and charter
- Initiatives
- Budget requirement
- Targets and KPIs
- Governance structure

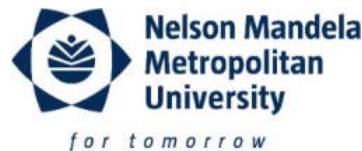
- Detailed solution implementation plans
- Appendices




Multiple organisations spanning the public and the private sector as well as academia have participated in the oil and gas lab

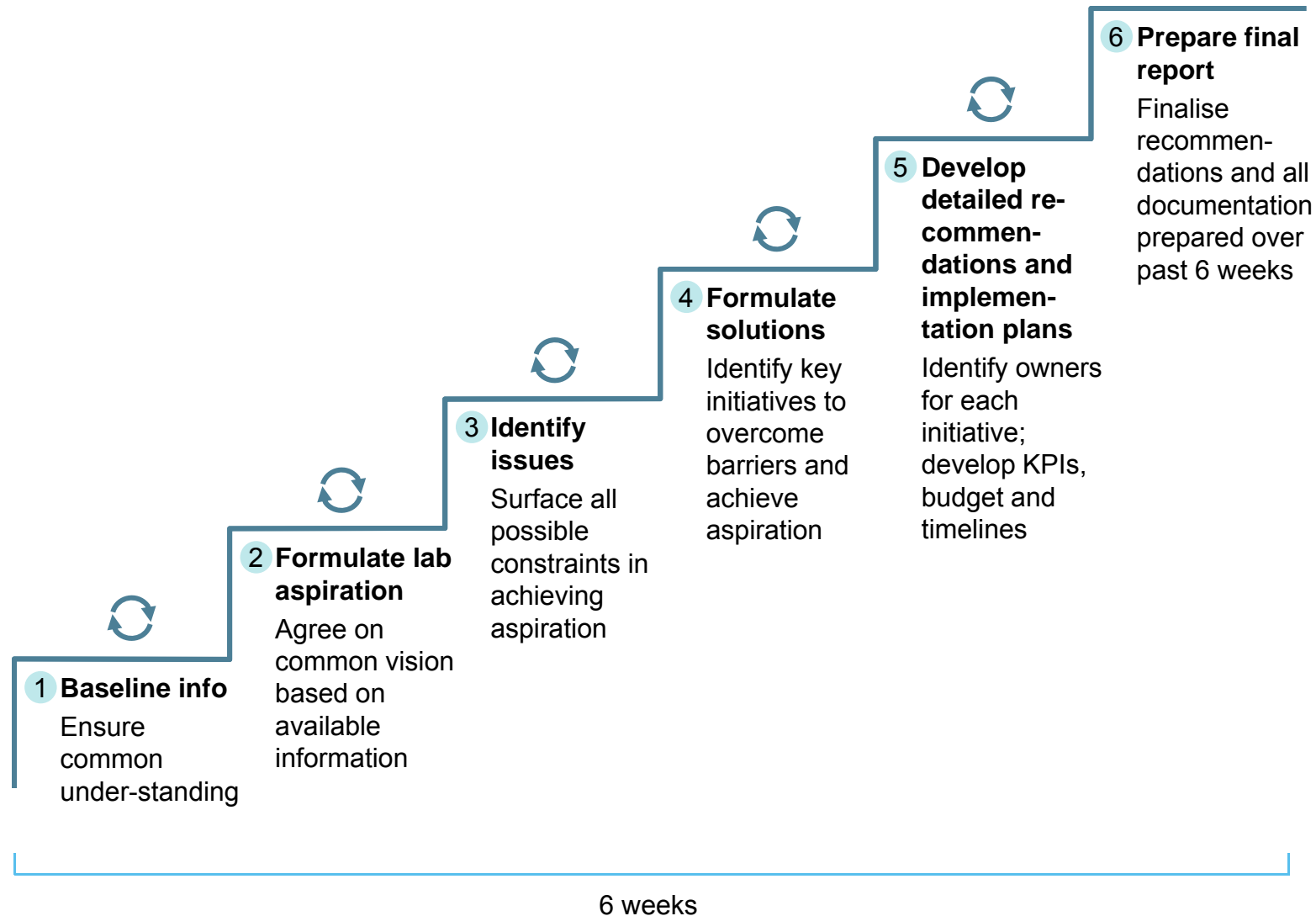


PetroSA



The lab followed a collaborative 6-week process, resulting in detailed recommendations and implementation plans ...

 Syndication
with key
stakeholders

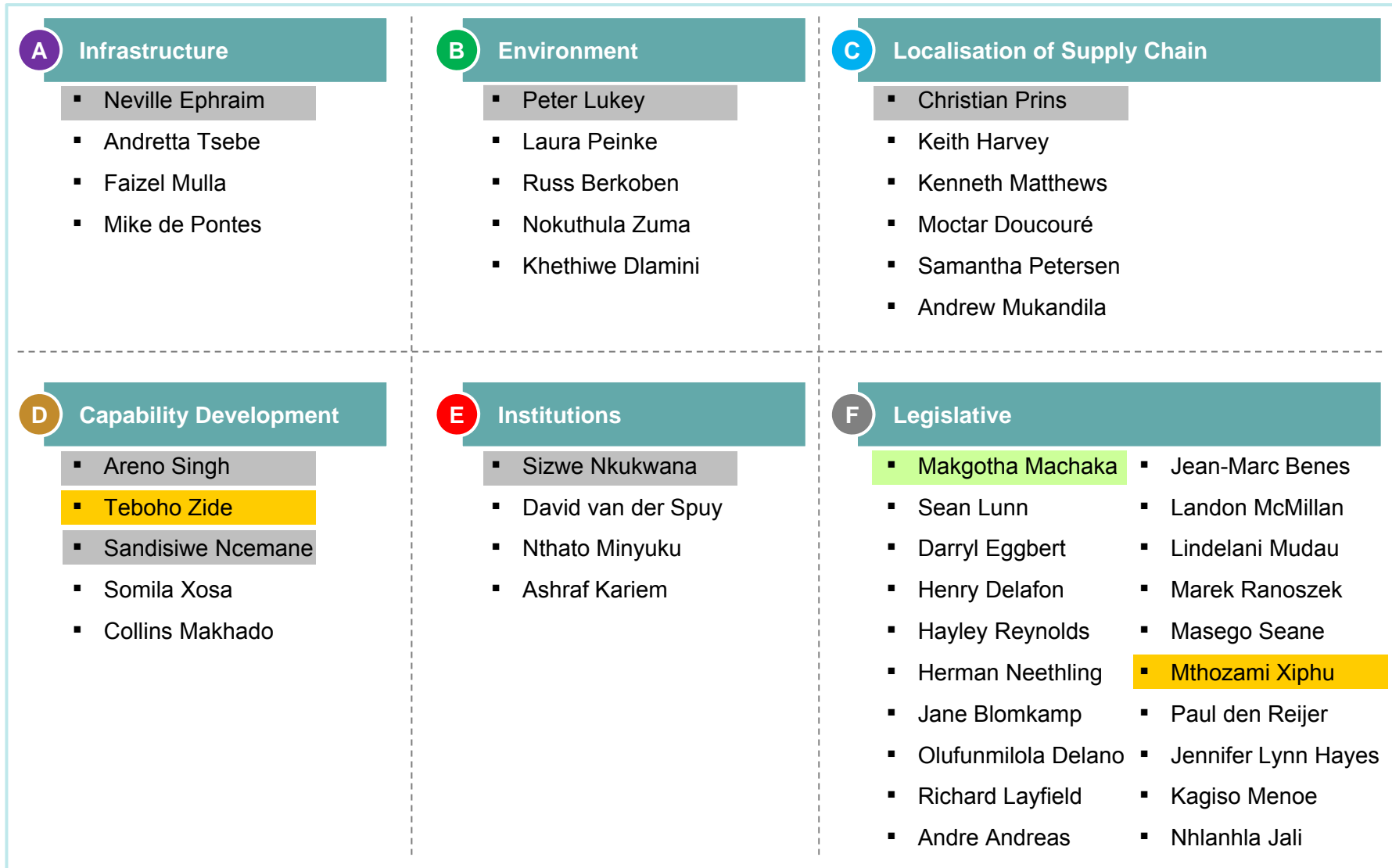


... through 6 core work streams

Lab COO

Lab leader

Work stream leader



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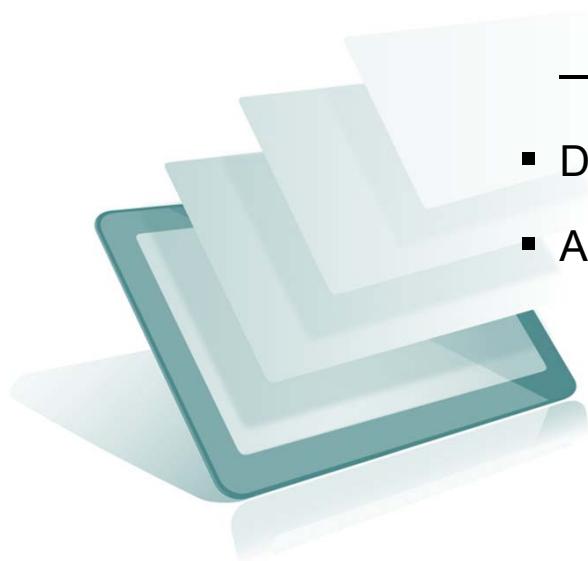
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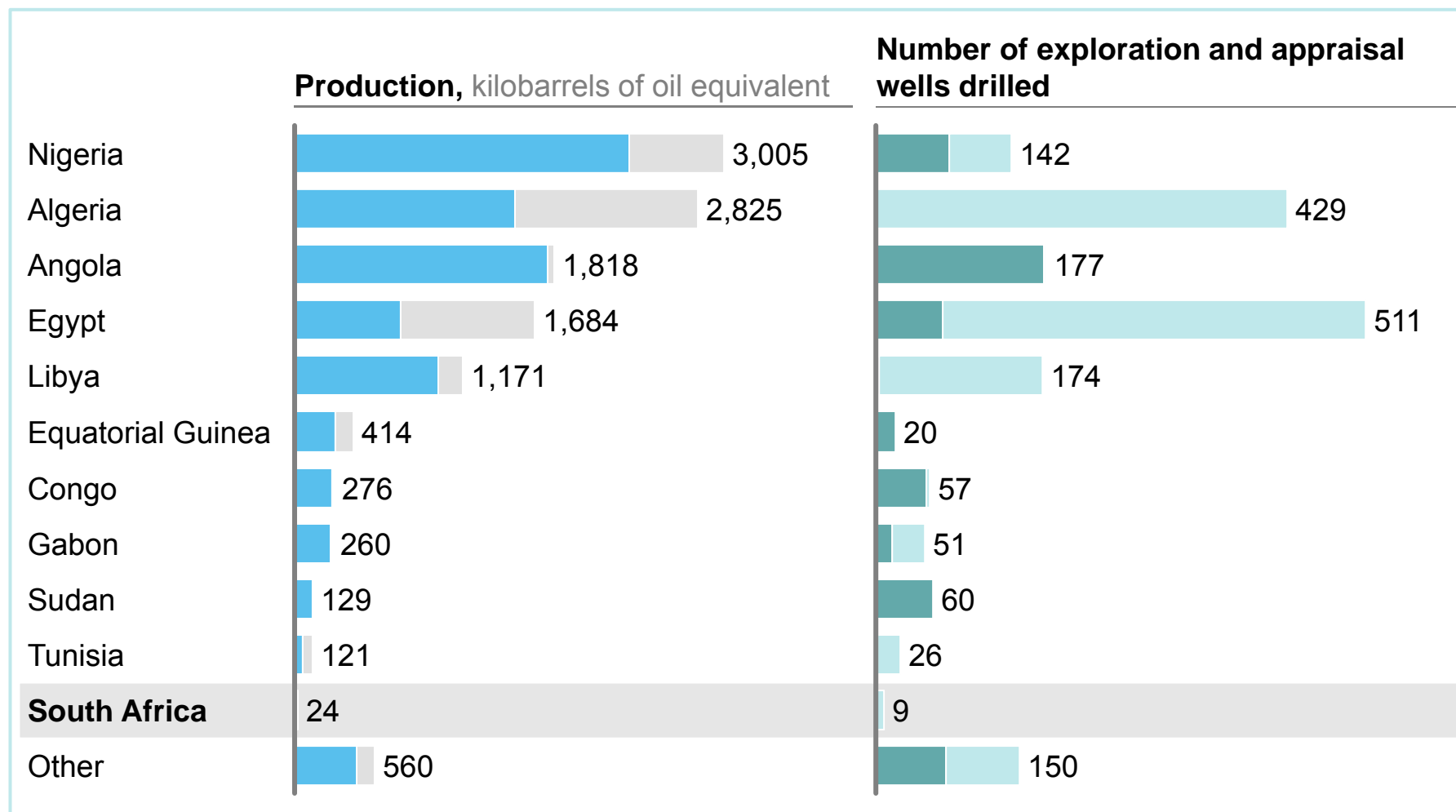


OVERVIEW

South Africa's oil and gas sector is in the early development phase

2013

Oil Gas Offshore Onshore



SOURCE: Baker Hughes; Spears and Associates; Wood Mackenzie

The oil and gas industry can create large value

① Enormous potential economic benefits ...

Example 1: Abu Dhabi in 1960

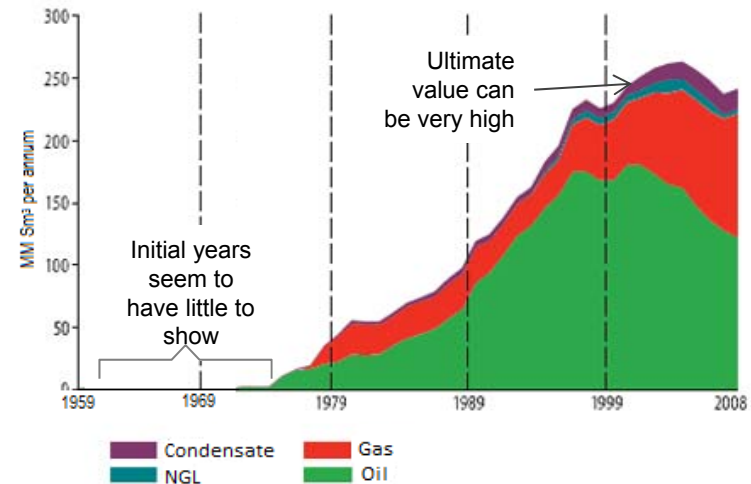


Example 2: Abu Dhabi today



② ... which take time to materialise

Norway oil and gas production



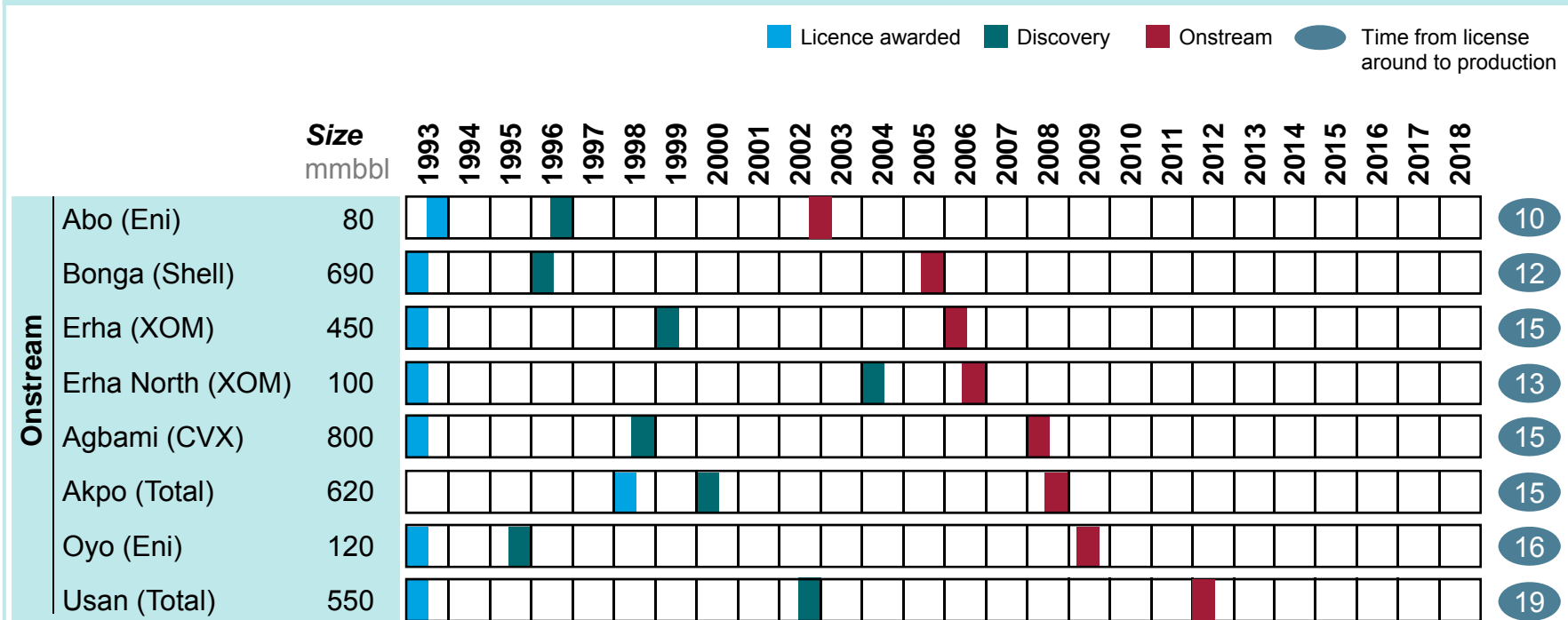
A timeline of failure, patience and success

- **1958:** Norwegian geological survey says: "The chances of finding [...] oil [...] off the Norwegian coast can be discounted"
- **1963:** Norway asserts rights over North sea acreage
- **1966:** exploration drilling starts; initial wells are dry
- **1969:** Ekofisk found (enormous discovery)
- **1971:** Ekofisk begins production
- **2012:** petroleum product exports ~USD 95 bn p.a.

OVERVIEW

It takes a long time to develop an oil and gas industry

Example: Lead times of Nigerian deep-water projects



Reasons for long lead times

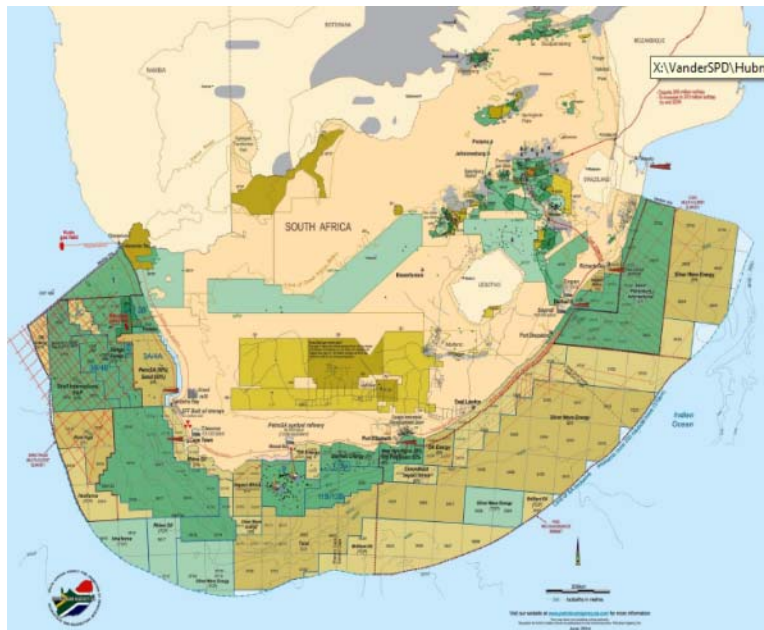
1. Long development process inherent to deep-water
2. Long approval processes

OVERVIEW

South Africa has possible in-place resources of ~9 bn barrels of oil and ~60 Tcf of gas offshore, but uncertainty is high

South Africa's offshore reserve basin

South African Coastal Province
Coastal land and adjoining water to depths of at least 2,000 m



Oil



~9 bn barrels of oil



Equivalent to 40 years of South African oil consumption¹

Natural gas



~60 Tcf of gas



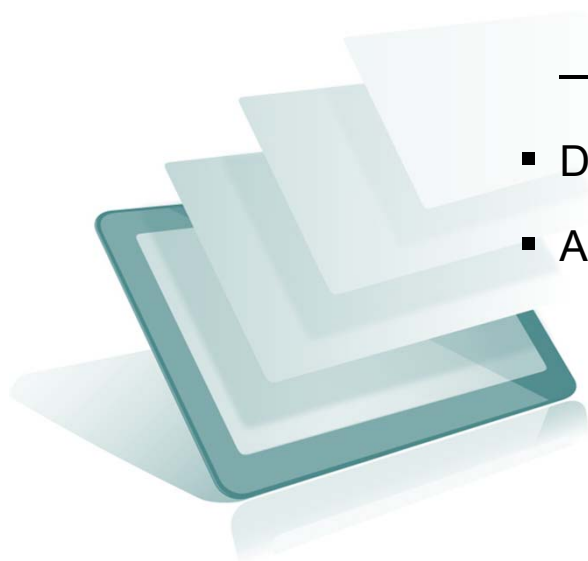
Equivalent to 375 years of South African gas consumption¹

¹ At current level: consumption of 595 kilobarrels of oil per day and 160 Bcf of gas per year

SOURCE: Petroleum Agency SA; EIA

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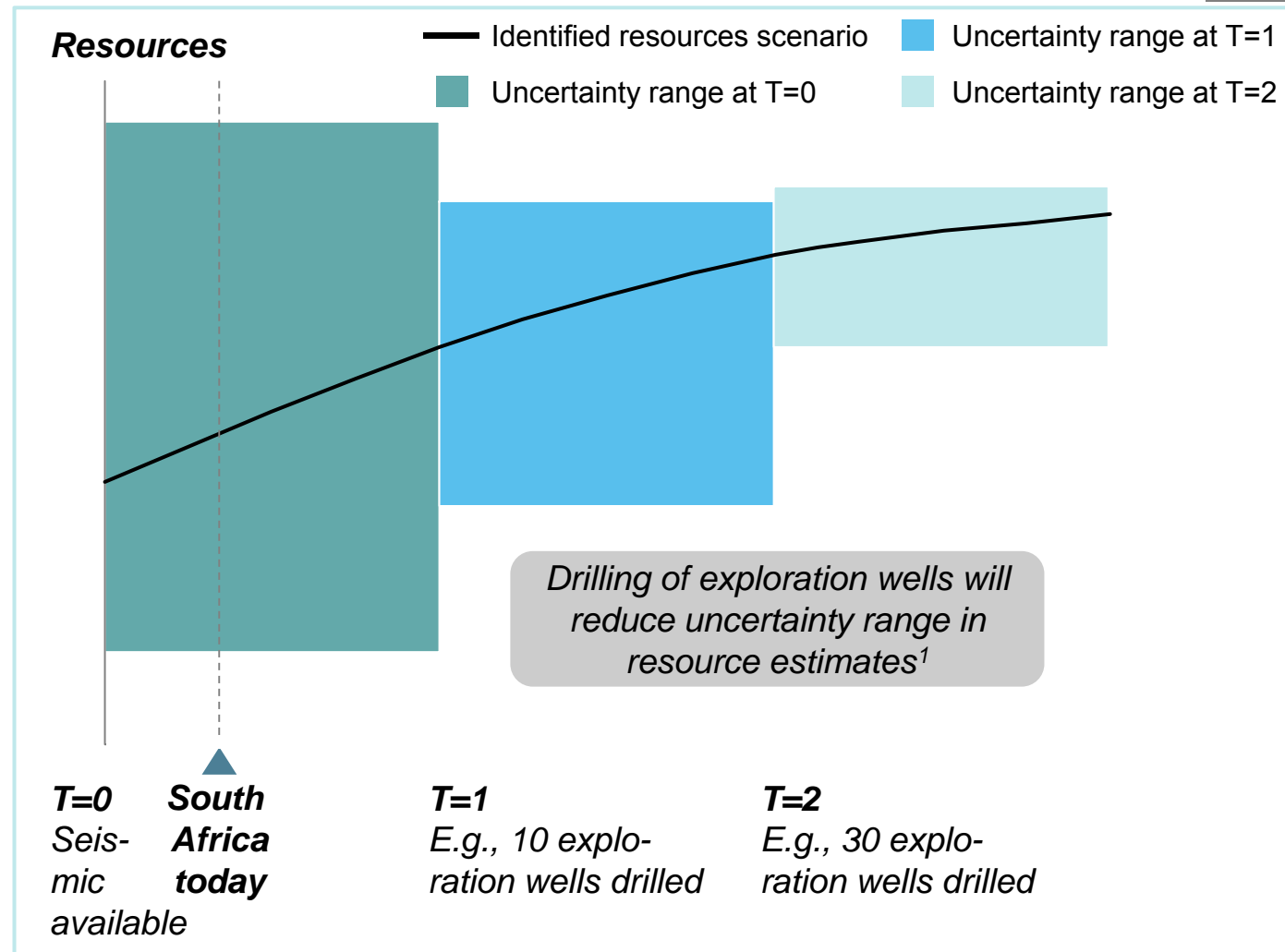
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CASE FOR CHANGE

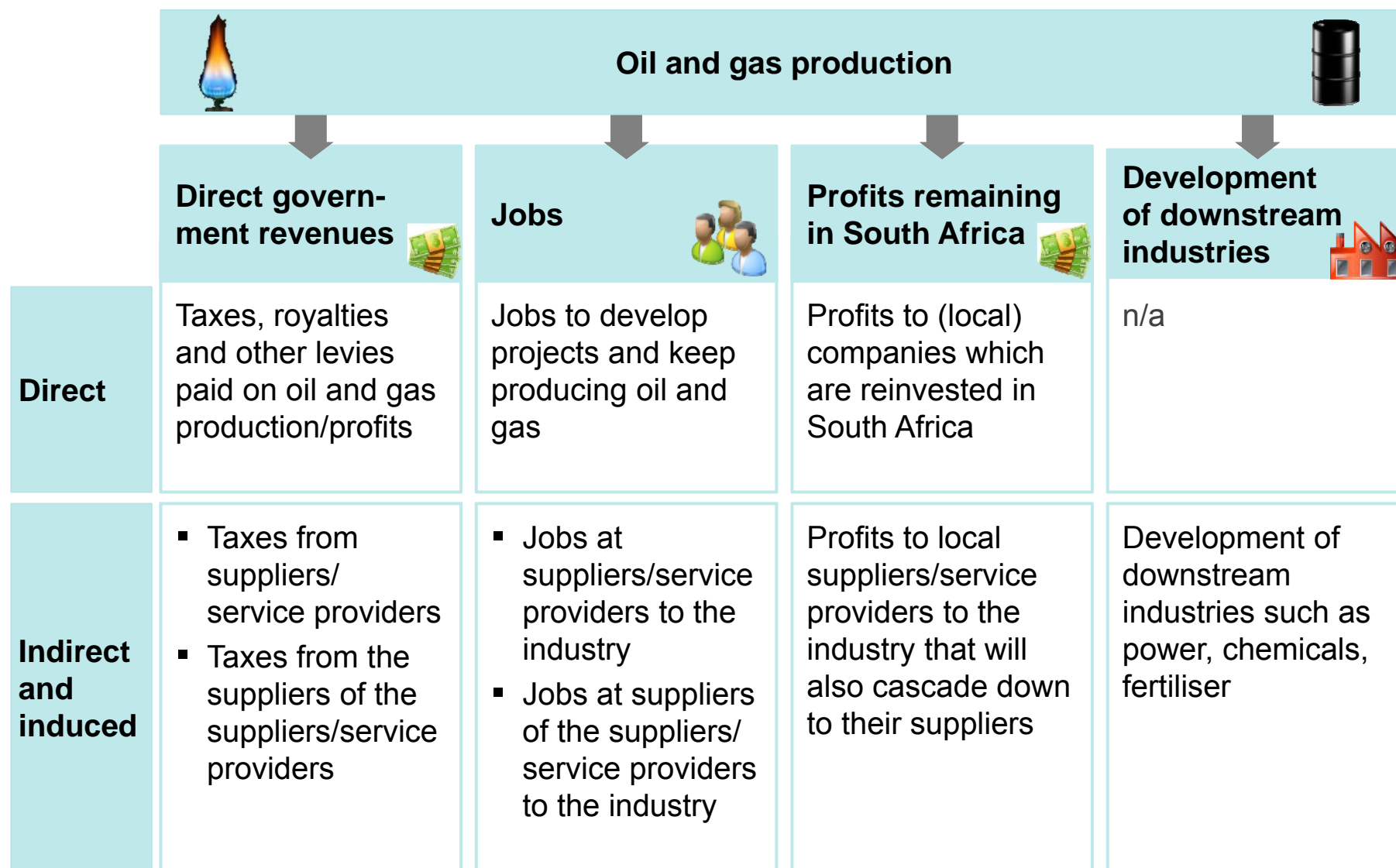
In order to get a view on the hydrocarbon prospectivity of South Africa's offshore basins, it is necessary to drill exploration wells

ILLUSTRATIVE –
EXAMPLE OF
SUCCESS CASE



¹ In this example, higher resources than expected, could also be lower

Developing the upstream oil and gas sector could bring significant value to the country



Example of what success could look like: 370,000 barrels of oil and gas produced per day

ILLUSTRATIVE

Direct, indirect and induced effects, average over 20 years

Deepwater development – assumptions



- 30 exploration wells
- 20% success rate
- Average discovery size of 450 mn barrels of oil equivalent

Annual ...

Oil and gas production =

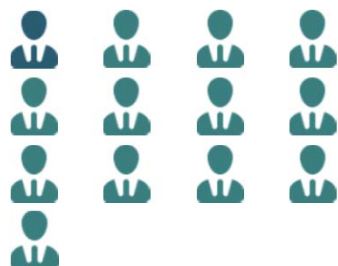
370,000+ barrels/day  = 20,000 barrels of oil equivalent



Equivalent to 80% of current oil and gas imports¹

Jobs = 130,000+

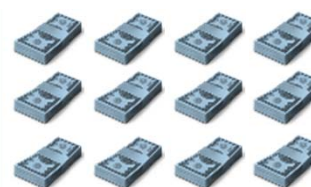
 = 10,000 jobs



Represents 2.5% of current unemployed labour force

GDP = USD 2.2 bn+

 = USD 200 m



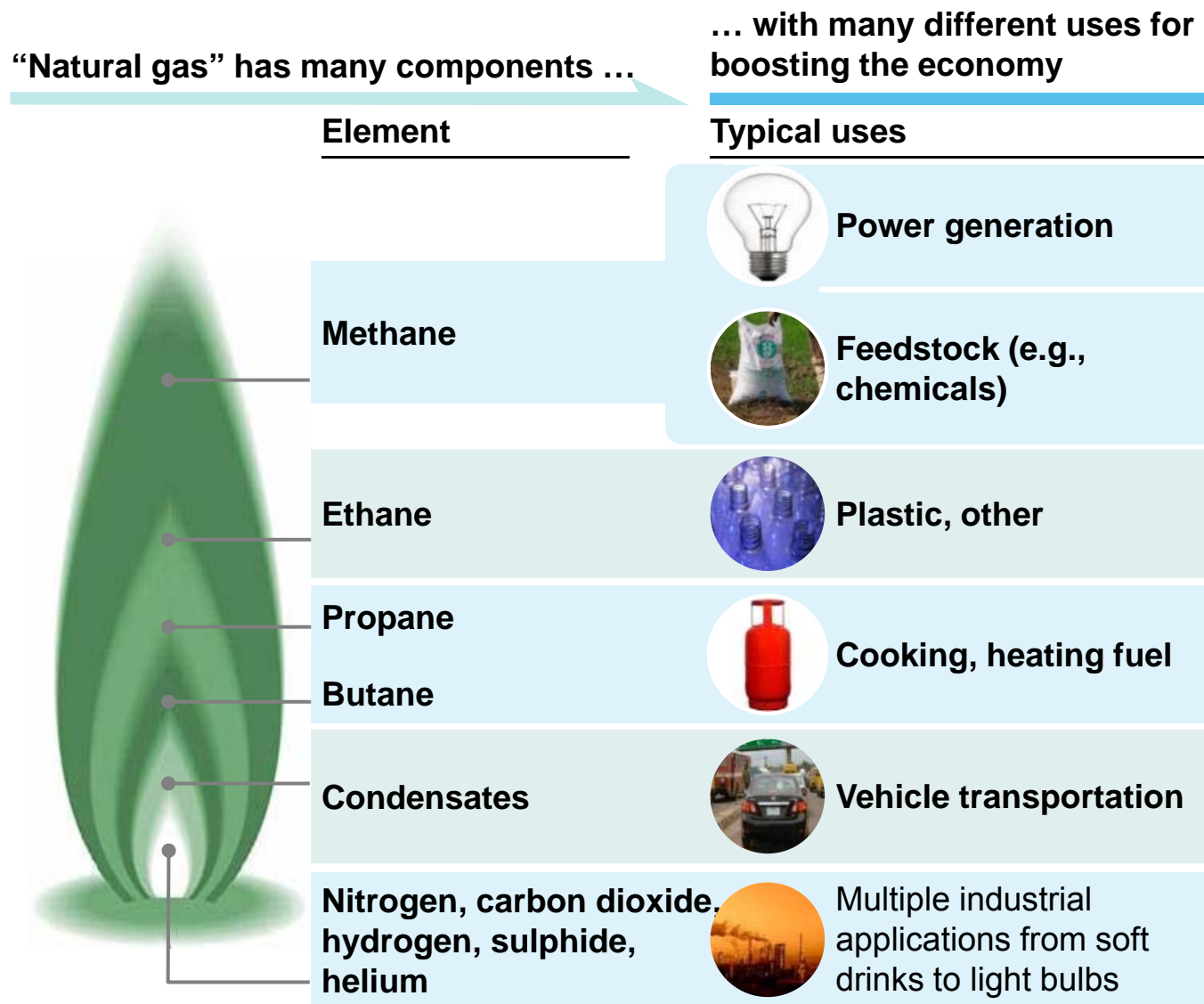
Represents 1% growth of GDP

¹ 1 410 kilobarrels per day petroleum import and 60 kilobarrels of oil equivalent per day natural gas imports

SOURCE: OECD Stat; ILO; Global Insight; MGI Economics research analysis; Rystad Ucube; EIA; Statistics South Africa; team analyses

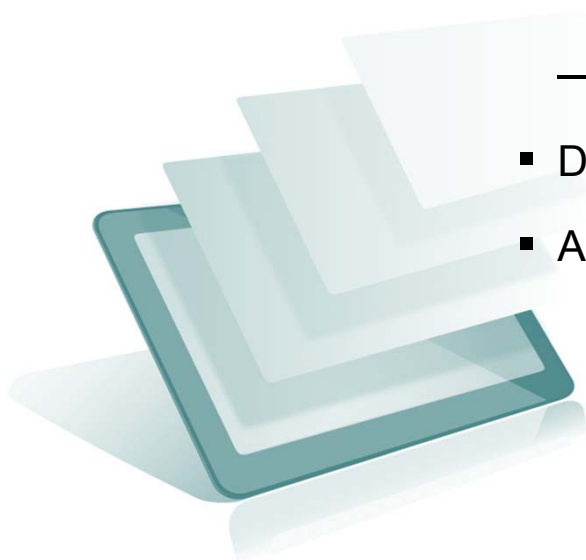
Furthermore, the development of gas could increase South Africa's independence and could help building downstream industries

SIMPLIFIED
ILLUSTRATION

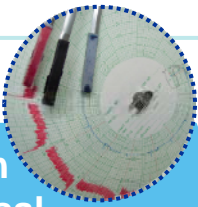



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Upstream oil and gas faces different challenges at different stages of the lifecycle; South Africa is at the initial stage

10 years Exploration and appraisal 	5 years Development 	30 years Production 	2 years Abandonment
Risks <ul style="list-style-type: none"> ▪ Dry hole or non-commercial discovery ▪ Industrial accidents/ environmental degradation 	<ul style="list-style-type: none"> ▪ Lower recoverable reserves than expected ▪ Project not commercially viable ▪ Industrial accidents/ environmental degradation 	<ul style="list-style-type: none"> ▪ Production performance lower than expected ▪ Security (piracy/ politics) ▪ Industrial accidents/ environmental degradation 	<ul style="list-style-type: none"> ▪ Environmental degradation
Investment (USD millions) Exploration well: 150-250 Appraisal: 500-1,000	5,000	~300 p.a. in operating cost	~500-1,000
Revenue (USD billions) 0	0	~1 p.a. or more	0

Thus the lab aspires to determine the extent of South Africa's offshore oil and gas reserves through exploration

OIL AND GAS LAB VISION

South Africa should ...

... create an environment that ***promotes exploration*** ...

... in order to ***drill 30 exploration wells*** in the next 10 years ...

... while simultaneously ***maximising the benefits for South Africa***



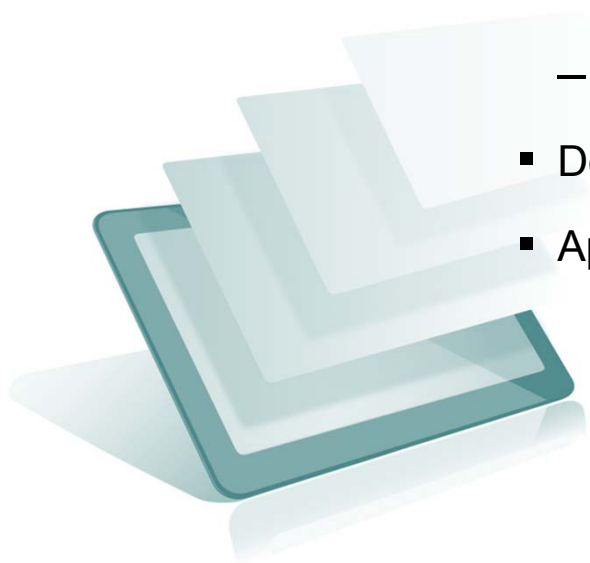
In order to reach this aspiration, 6 barriers need to be resolved

South Africa is not maximising its potential from oil and gas exploration. This may impair our ability to achieve our aspirations

- A Potential **infrastructure** constraints
- B Concerns about the **environmental** impact of the sector
- C Low integration of the **local supply chain** into oil and gas exploration and production (i.e., low local procurement)
- D Lack of adequate **local skills and technical capability** to support E&P
- E Ineffective **institutional arrangements** for managing E&P
- F Lack of **legislative** clarity

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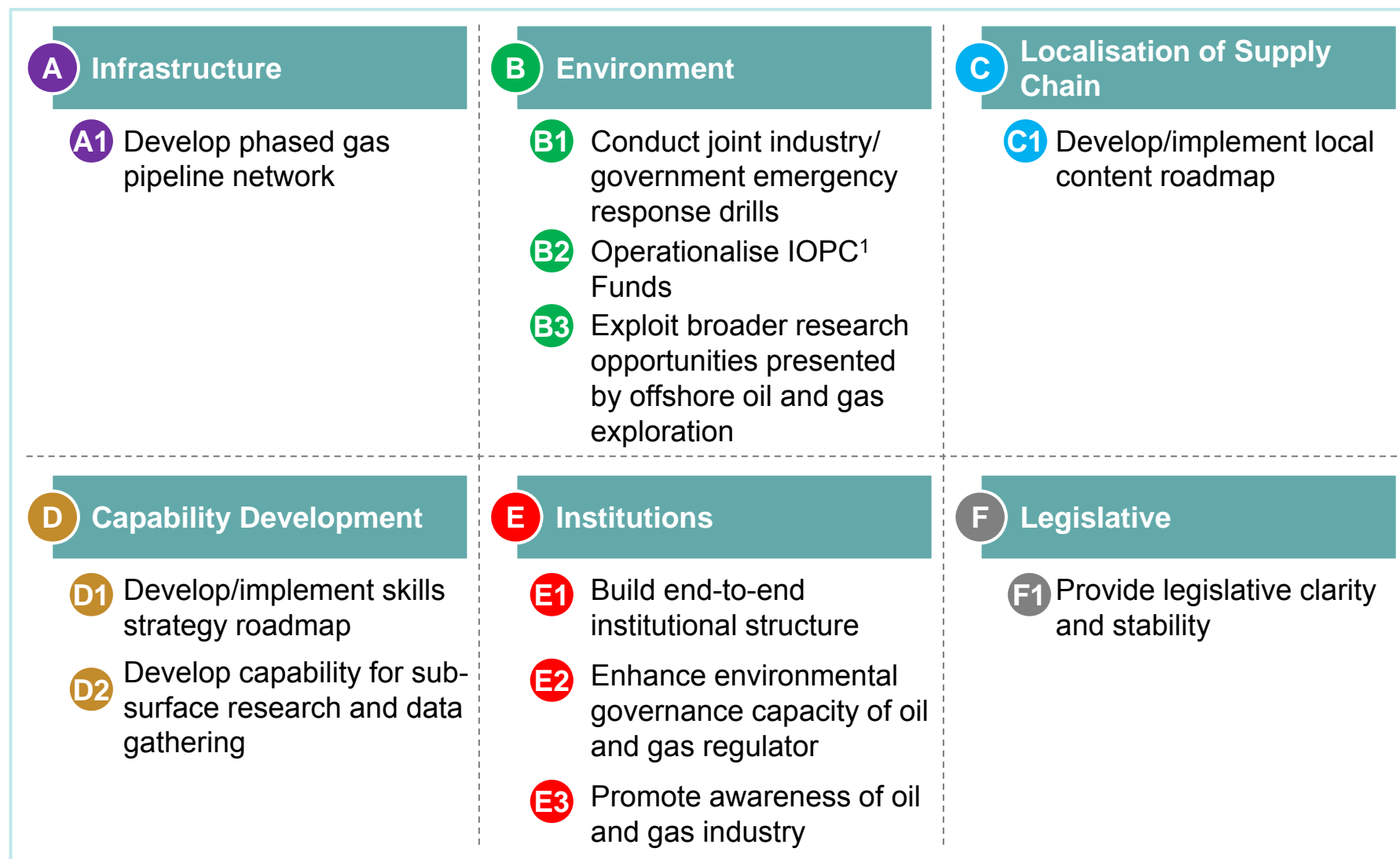


What does South Africa need?

A Infra-structure		To enable successful offshore oil and gas exploration, an adequate infrastructure like port facilities , pipeline networks and multipurpose research vessels need to be developed
B Environ-ment		To address the environmental concerns related to offshore oil and gas E&P , several initiatives have been proposed, of which joint emergency response drills and the operationalisation of the international oil pollution fund are 2 examples of “quick wins”
C Supply chain (local content)		In order to support local content development , an integrated plan needs to be developed – a champion organisation could be instrumental to drive this roadmap and involve stakeholders at an early stage
D (Local) skills		Although limited opportunities arise to develop local skills in the exploration phase, the potential for R&D, particularly in the sub-surface area, has been assessed. A skills strategy roadmap based on global best practices should be developed for the E&P phase
E Institutions		To maximise value for the country, adequate institutional governance is critical in terms of ensuring efficient and effective reservoir management, licensing, planning, data management and auditing
F Legislative		To affirm investor confidence, clarity and stability must be provided on the full legislative, regulatory and contractual package

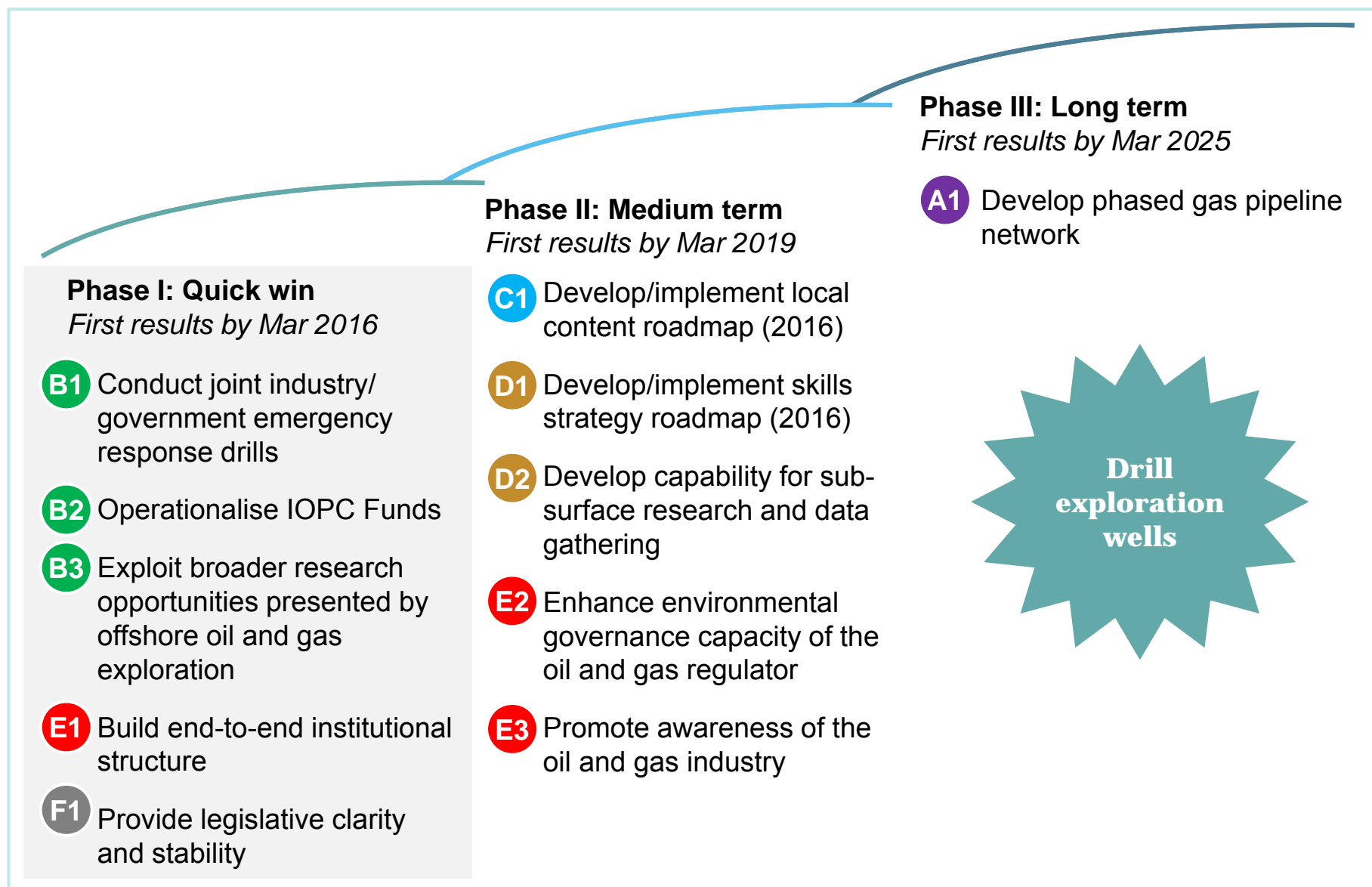
INITIATIVES

Based on these needs, the offshore oil and gas exploration lab has identified 11 initiatives



¹ Internal Oil Pollution Compensation

The initiatives identified have been evaluated for implementation timing



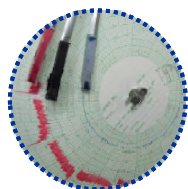
Lab initiatives target tangible results within the next 12-18 months

	Initiative	Impact	Timing of impact
F1	Provide legislative clarity and stability	<ul style="list-style-type: none"> Initiate common stakeholder view on what constitutes win-win fiscal terms 	Aug 2014
E1	Build end-to-end institutional structure	<ul style="list-style-type: none"> DMR one-stop shop regulator Streamlined licensing process Building and retaining core skills in line with functions 	Jan 2016
D1	Develop/implement skills strategy roadmap	<ul style="list-style-type: none"> Appointment of university and development chairs to drive knowledge generation and human capacity building and transformation 	Jan 2015
C1	Develop/implement local content roadmap	<ul style="list-style-type: none"> Reduce costs of marine environment R&D 	Jan 2016
B3	Exploit the broader research opportunities presented by offshore oil and gas exploration	<ul style="list-style-type: none"> A wealth of new ecosystem, marine data and ocean-related renewable energy data starts flowing to key data users 	Jan 2016
B1	Conduct joint industry/government emergency response drills	<ul style="list-style-type: none"> Improved coordination, cooperation, alignment etc. – the 1st step towards a world-class oil spill response capacity 	Jul 2015
E3	Promote awareness of oil and gas industry	<ul style="list-style-type: none"> Measurably improved availability of, and public access to, factual information relating to oil and gas exploration 	Jan 2016
B2	Operationalise IOPC Funds	<ul style="list-style-type: none"> Valid claims for compensation for pollution damage caused by oil will be paid by the IOPC Funds 	Mar 2015
A1	Develop phased gas pipeline network	<ul style="list-style-type: none"> Complete pipeline network strategy 	Jun 2015
D2	Develop capability for sub-surface research and data gathering	<ul style="list-style-type: none"> Formalised technical capability building programme 	Aug 2015
E2	Enhance environmental governance capacity of oil and gas regulator	<ul style="list-style-type: none"> Professional capacity building experts secured and project well underway 	Jun 2015

Critical lab initiatives focus on ensuring the exploration and appraisal of oil and gas

10 years

Exploration
and appraisal



What issues could prevent the exploration and appraisal of oil and gas?

- If legal and economic terms are too tight, oil companies do not drill ⇒ **no exploration and hence no discovery**
- If fiscal terms are too loose, South Africa loses out ⇒ **sociopolitical pushback makes drilling difficult**

-
- If South Africa does not have the correct institutional setup, its ability to strike a balance in fiscal terms erodes ⇒ **over time, a win-win balance for the government industry fails to materialise**

These issues can prevent investment in exploration and appraisal, and hence prevent the discovery of oil and gas

How do lab initiatives address this?

F1 Provide clarity on legal and economic terms

E1 Build end-to-end institutional structure

Lab initiatives are designed to provide South Africa with near-term win-win partnerships with oil companies *and* the capability to develop more such partnerships over time

Lab initiatives also address issues that can potentially prevent rapid development of the industry should oil and gas be found

5 years

Development



What issues could slow down the development of the industry even if oil and gas are found?

- If there is a public backlash on environmental or other issues, the development of oil and gas will be slower ⇒ **slow industry development**

- If skills and capabilities are insufficiently developed in South Africa, development of the industry may be hostage to public concern on lack of beneficiation ⇒ **slow industry development**

- Development of a gas pipeline network will be necessary for rapid development of gas should it be found

If these elements are not addressed, the development of the South African oil and gas industry may be slow, even if oil and gas are found

How do lab initiatives address this?

- B1** Operationalise IOPC Funds
- E2** Enhance environmental governance capacity of oil and gas regulator
- E3** Promote awareness of oil and gas industry

- C1** Develop/implement local content roadmap

- D1** Develop/implement skills strategy roadmap

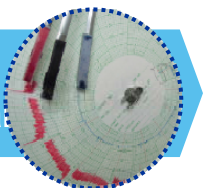
- A1** Develop phased gas pipeline network

Lab initiatives are designed to increase speed of development of oil and gas discoveries

Opportunities for cross-beneficiation between government and industry were also considered by the lab

10 years

Exploration
and appraisal



5 years

Development



What opportunities exist for cross-beneficiation?

- During the exploration phase, oil companies could collect a great deal of information which could be very valuable for South Africa ⇒ **opportunity for South Africa to benefit from oil companies' data collection**
- Over time, there are opportunities for South Africa to control more of the value chain for sub-surface research and data gathering, particularly in the gathering of primary data ⇒ **opportunity for South Africa to deepen capabilities in sub-surface research as oil and gas prospectivity increases**

These constitute opportunities for South Africa to better control knowledge and information in respect of its oil and gas resources, particularly if prospectivity is found to be good

How do lab initiatives address this?

- B3** Exploit broader research opportunities presented by offshore oil and gas exploration
- D2** Develop capability for sub-surface research and data gathering

Lab initiatives are designed develop both the understanding/knowledge base of oil and gas resources as well as associated capabilities

INITIATIVES

Initiatives have been ranked in priority and budget requirements have been specified

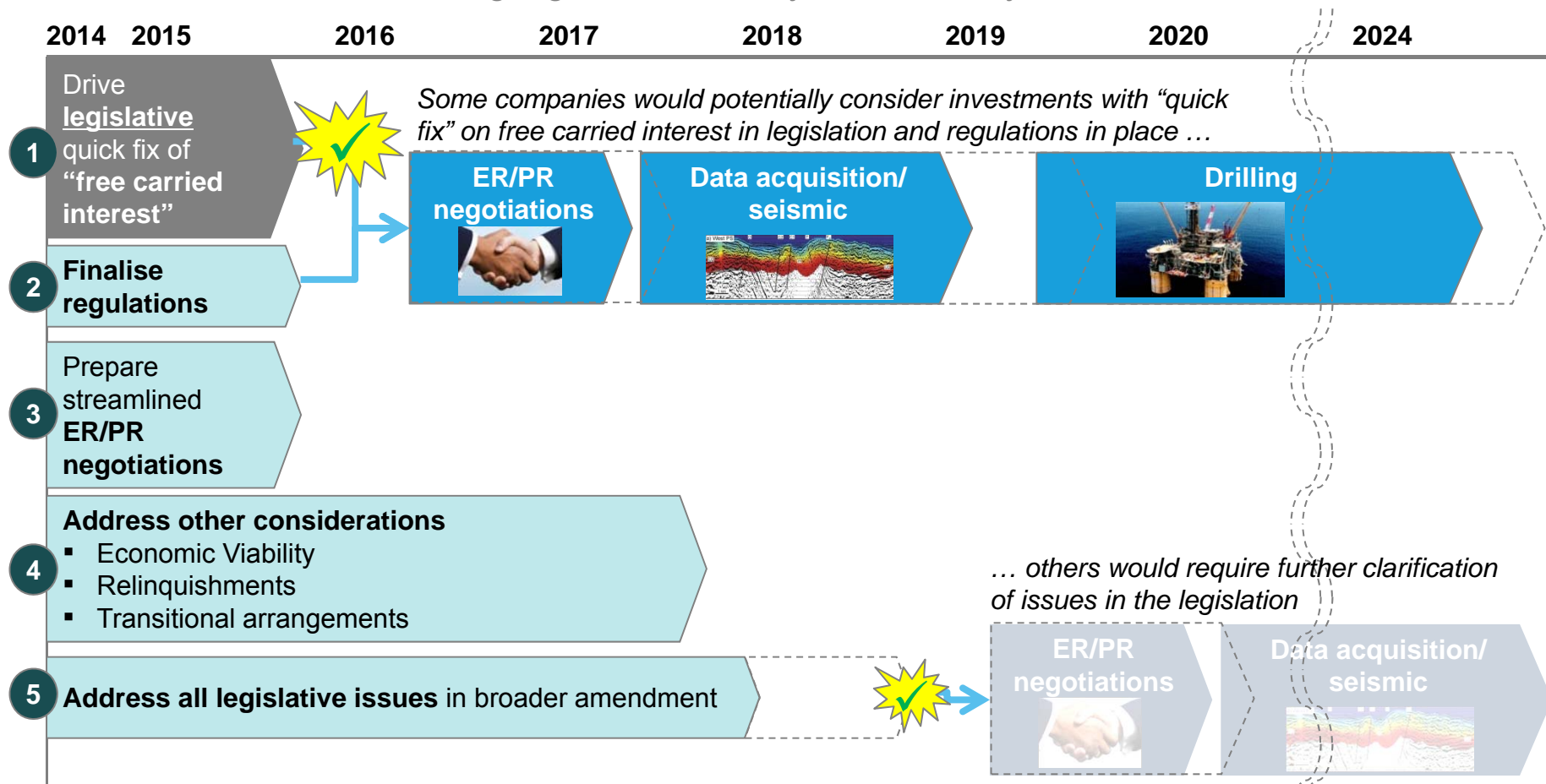
■ Detailed in following pages

		Cumulative budget required, ZAR millions
Highest priority	F1 Provide legislative clarity and stability	▪ 0
	E1 Build end-to-end institutional structure	▪ 598
	D1 Develop/implement skills strategy roadmap	▪ 62.79
	C1 Develop/implement local content roadmap	▪ 99.58
	B3 Exploit the broader research opportunities presented by offshore oil and gas exploration	▪ 18.16
	B1 Conduct joint industry/government emergency response drills	▪ 12.75
	E3 Promote awareness of oil and gas industry	▪ 8.22
	B2 Operationalise IOPC Funds	▪ 0.68
	A1 Develop phased gas pipeline network	▪ 1,763
	D2 Develop capability for sub-surface research and data gathering	▪ 264.13
	E2 Enhance environmental governance capacity of oil and gas regulator	▪ 11.10

F1 The legislative work stream has identified specific action steps to address issues which can prevent exploration

NOT EXHAUSTIVE

Illustrative timeline of creating legislative stability and certainty



- Picture assumes projects that are technically and economically viable
- Assuming no delays from, e.g., conflicts with marine protected areas

E1 The lab recommends empowering a 1-stop-shop regulator via a smooth transition process

Step 1

DMR one-stop-shop

BFR

Within 1 year

In the short term, this fulfils the selection criteria and can be accommodated in the proposed MPRDA amendment if upstream oil and gas is established as a separate region or Clauses 47-64 and 66-69 are kept in abeyance

Step 2

Regulator one-stop-shop

Long term

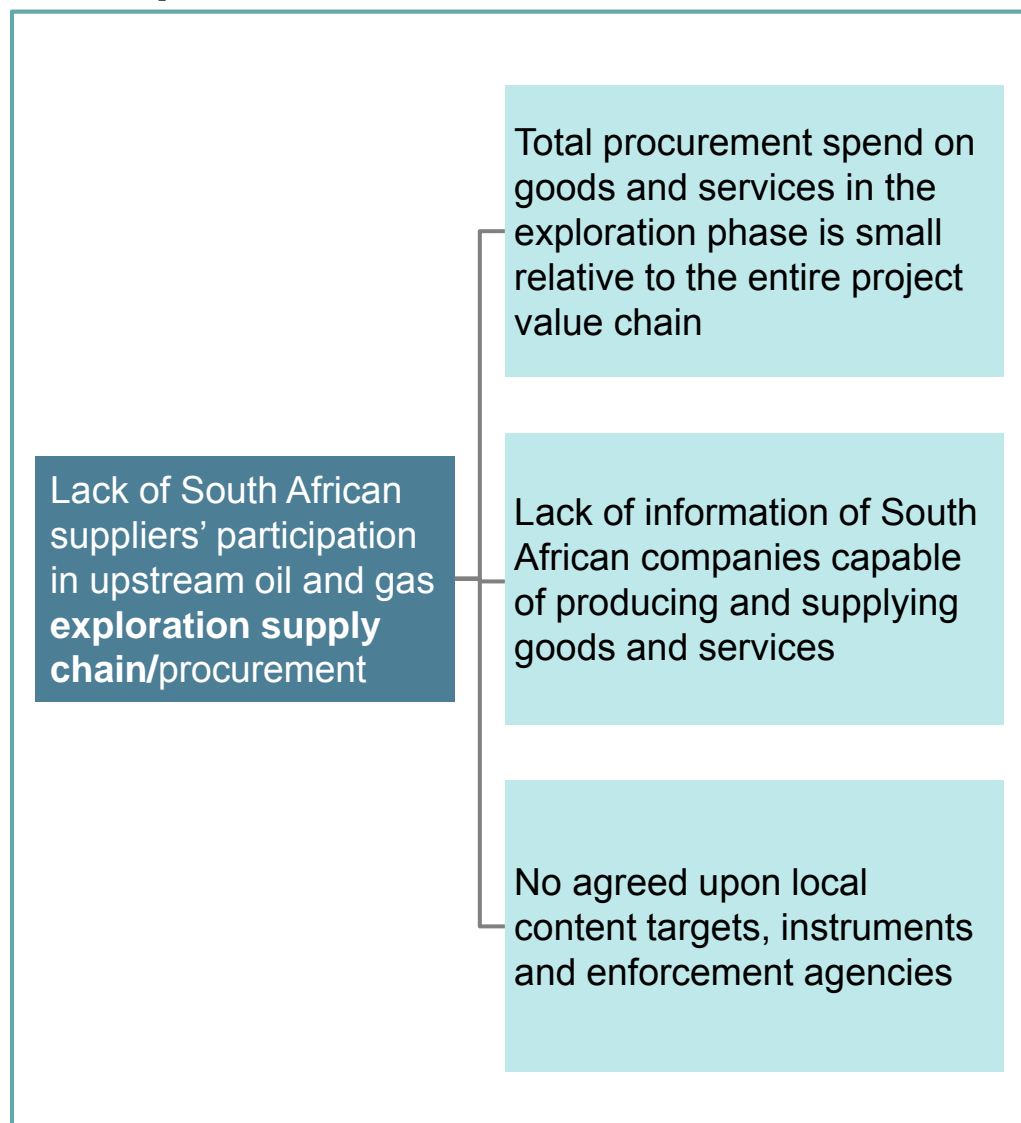
>5 years

In the long term, as commercially viable deposits are discovered, a better option is to establish upstream oil and gas under separate legislation, which also establishes the regulator in its own right

Impact of the options

- DMR endorsed and cabinet approved model that can be immediately implemented
- Operational institutional structure for regulating and licensing of the upstream oil and gas sector
- Efficient institutional systems and processes
 - Regulate timelines and service level agreements between role players
 - Clarify prequalification criteria for prospective licensees
- Institutional capability across all E&P technologies as well as economic modelling, environmental and operational oversight and enforcement

C1 The localisation of the supply chain initiative reflects the lab's aspirations for a broader South African benefit from oil and gas



Root causes

- Oil and gas exploration is not associated with high levels of procurement spending when compared to the development and production phases of the project cycle
- South Africa has not had a lot of exploration activity in the recent past – company and supplier development suffered as a result
- No overarching industry and public entity bodies involved in registration, verification and support to local supplier development (with exception of PetroSA)
- Government and industry have not agreed upon policy objectives and targets for local content
- No industry-wide supplier and enterprise development training and support programmes are in place (with exception of PetroSA)

D1 A champion organisation needs to drive the development of local skills for the offshore oil and gas industry

Steps to develop local skills

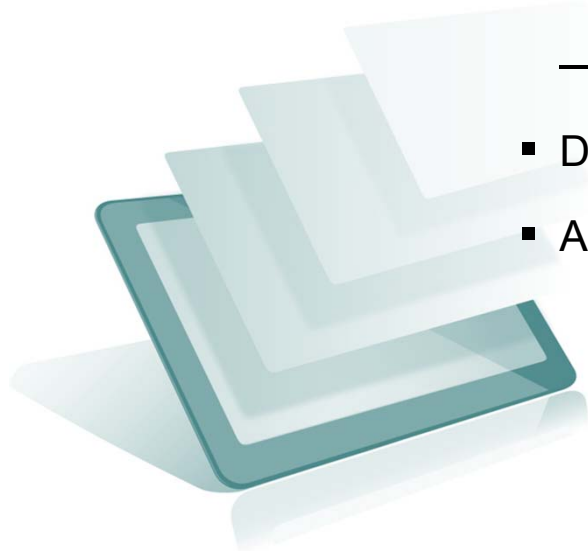
1. **Form a working group** (government, industry and tertiary institutions) to **develop the skills strategy roadmap** for the industry and governance based on the activities related to the offshore oil and gas project life cycle
 - 1.1 The skills strategy roadmap must include the **mechanism for knowledge generation**. This can be through university chairs, centres of excellence and centres of competencies
 - 1.2 The skills strategy roadmap must identify the **professional associations** (e.g., Society of Petroleum Engineers, SPE) to drive knowledge and skills exchange
2. Develop the **pathway for vocational technological and engineering skills** for the oil and gas industry

A champion organization is required

- To form the working group that will develop the skills strategy roadmap
- **To own and implement the strategies as detailed in the skills strategy roadmap**
- To ensure that the institutes of higher learning have the capabilities and capacities to develop the required skills

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Budget overview: oil and gas

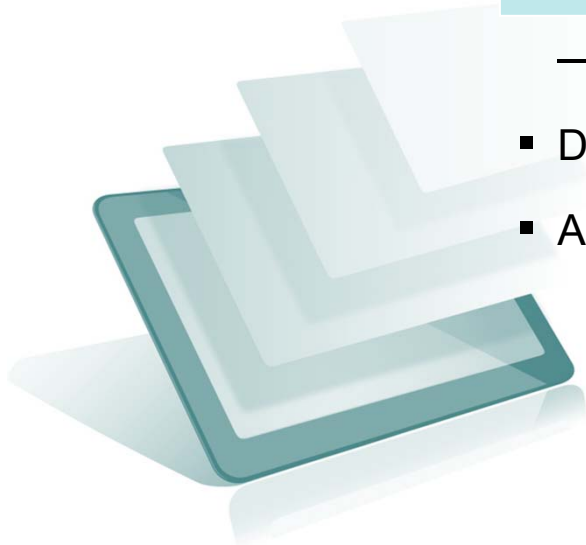
Total budget, ZAR millions

#	Initiative	2014/15		2015/16		2016/17- 2018/19		Total	
A1	Develop phased gas pipeline network	4	Govt: 3 Non-govt: 1	25	Govt: 7 Non-govt: 18	1,734	Govt: 16 Non-govt: 1,718	1,763	Govt: 26 Non-govt: 1,737
B1	Conduct joint industry/government emergency response drills	0.56	Govt: 0.56 Non-govt: 0	2.88	Govt: 1.95 Non-govt: 0.93	9.31	Govt: 4.69 Non-govt: 4.62	12.75	Govt: 7.20 Non-govt: 5.55
B2	Operationalise IOPC Funds	0 ¹	Govt: 0 Non-govt: 0	0.12	Govt: 0.05 Non-govt: 0.07	0.55	Govt: 0.22 Non-govt: 0.33	0.68	Govt: 0.27 Non-govt: 0.41
B3	Exploiting broader research Opportunities presented by offshore oil and gas exploration	5.26	Govt: 5.26 Non-govt: 0	12.80	Govt: 12.80 Non-govt: 0	0	Govt: 0 Non-govt: 0	18.16	Govt: 18.16 Non-govt: 0
C1	Develop/implement local content roadmap	23	Govt: 23 Non-govt: 0	23.68	Govt: 23.68 Non-govt: 0	52.9	Govt: 52.9 Non-govt: 0	99.58	Govt: 99.58 Non-govt: 0
D1	Develop/implement skills strategy roadmap	1.70	Govt: 0.9 Non-govt: 0.8	12.64	Govt: 10.82 Non-govt: 1.82	48.45	Govt: 40.45 Non-govt: 8	62.79	Govt: 52.18 Non-govt: 10.61
D2	Develop capability for sub-surface research and data gathering	151.80	Govt: 151.80 Non-govt: 0	109.63	Govt: 109.63 Non-govt: 0	2.70	Govt: 2.70 Non-govt: 0	264.13	Govt: 264.13 Non-govt: 0
E1	Build end-to-end institutional structure	125.90	Govt: 125.90 Non-govt: 0	138	Govt: 138 Non-govt: 0	334.10	Govt: 334.10 Non-govt: 0	598	Govt: 598 Non-govt: 0
E2	Enhance environmental governance capacity of oil and gas regulator	0.03	Govt: 0.03 Non-govt: 0	0.50	Govt: 0.50 Non-govt: 0	10.57	Govt: 10.57 Non-govt: 0	11.10	Govt: 11.10 Non-govt: 0
E3	Promote awareness of oil and gas industry	0.08	Govt: 0.08 Non-govt: 0	0.25	Govt: 0.25 Non-govt: 0	7.89	Govt: 7.89 Non-govt: 0	8.22	Govt: 8.22 Non-govt: 0
Total		312.33	Govt: 310.53 Non-govt: 1.80	325.5	Govt: 304.68 Non-govt: 20.82	2200.47	Govt: 469.52 Non-govt: 1730.95	2, 838.41	Govt: 1,084.83 Non-govt: 1,753.58

¹ There is a provisional ZAR 50 mn considered in planning, from possible payment of the disputed arrears and, hence, may not be a cost if negotiations with the IOPC Fund are favourable. A further dispute is around whether industry or government is responsible for these disputed arrears

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KPI: Oil and gas (1/5)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Oil and gas lab								
A1: Development of phased gas pipeline network								
1	Pipeline network phases defined	iGas/PetroSA (CEF)	Not initiated	Pipeline phasing identified				
2	Define pipeline length and size	iGas/PetroSA (CEF)	Not initiated	Complete by 31 Apr 2015	Define pipeline length and size			
3	Secure servitudes	iGas/PetroSA (CEF)	Not initiated			50% of Phases 1 + 2 completed	100% of Phases 1 + 2 completed	50% of Phase 3 completed
B1: Joint industry-government emergency response drills								
1	IOC emergency response committee established	Andre Share	n/a	Formalised report on IOC policies; formalised committee				
2	Establishing an Incident Management Team (IMT)	Andre Share/Nosipha Sobekwa	DEA's Oil Spill Response Team; IOC individual response	Emergency response plan	Established IMT			
3	Emergency response training plan & drills	Andre Share/ IMT Command/M. Mabuza	Oil Spill Response Team/DAFF/ Ltd training			Oil spill response training plan	1st practice drill	Conduct 2nd practice drill

KPI: Oil and gas (2/5)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
B2: Operationalise the International Oil Pollution Compensation (IOPC) Fund								
1	The IOPC Fund Risk Indicator: improved confidence in South Africa’s capacity to respond to significant oil spills and oil spill impacts through fully operationalised IOPC Fund	Dries van Niekerk/Adv. Jeannine Bednar-Giyose	High risk	High risk	Low risk	Low risk	Low risk	Low risk
B3: Exploit broader research opportunities presented by offshore oil and gas exploration								
1	Collaborative Research Indicator	Head Data Management Services??	0%	0%	10%	50%	75%	80%
2	Ocean-related Renewable Energy Knowledge Dissemination Indicator	Dr. Thembakazi Mali, Senior Manager: Clean Energy Solutions	0%	0%	0%	10%	50%	75%
3	Marine Environment Knowledge Dissemination Indicator	Dr. Kelly	0%	0%	0%	10%	50%	75%

KPI: Oil and gas (3/5)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
C1: Develop upstream oil & gas local content roadmap								
1	Set targets for minimum local production and supply in proportion to total domestic upstream oil and gas value chain spend	Garth Strachan, Deputy Director General	PetroSA has a Procurement Policy that takes into account broad-based black economic empowerment and fair and objective procurement processes. National industry-wide local content targets not in place	Convene multi-stake holder forums to assess and agree upon targets for local content. Also, stakeholders set objectives for socio-economic targets and measures to assess impact	Convene multi-stake holder forums to assess and agree upon targets for local content. Also, stake-holders set objectives for socio-economic targets and measures to assess impact	Complete agreement on local content roadmap with all stake-holders by Dec 2016. Framework set in place for reporting, monitoring and evaluation	Continuous updating and impact assessment	Continuous updating and impact assessment
2	Establish national enterprise and supplier development and training programmes for upstream O&G	Garth Strachan, Deputy Director General	PetroSA has a well-defined supplier development programme with targets that are evaluated and reviewed annually. National industry-wide competitive supplier development programme not in place	Establish criteria for supplier development	Establish supplier registration and certification mechanism	Put in place agreement and mechanisms with companies, industry associations, public entities and government departments on establishing training and development initiatives, programmes and facilities for supplier development	Increase the number of small and medium enterprises that have access to training and development programmes.	Increase the number of small and medium enterprises that have access to training and development programmes

KPI: Oil and gas (4/5)

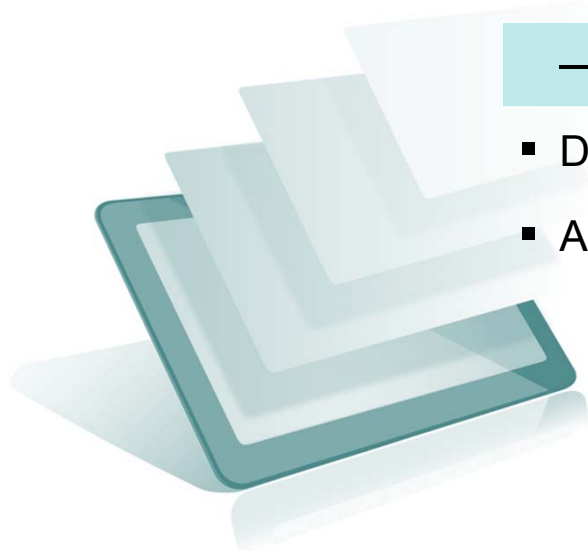
#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
D1: Collaborative skills strategy roadmap								
1	Skills and human capacity strategy roadmap report	Dr. F. Prinsloo	0	1	0	0	0	0
2	Appointment of University and development chairs	Dr. F. Prinsloo	0	2	2	2	2	2
3	Number of petroleum geosciences graduate engineers	Dr. F. Prinsloo	70	180	280	320	380	430
D2: Develop capability for sub-surface research and data gathering								
1	Identify the technical capability built programmes for reservoir information activities	DST/DEA/DMR	Informal process, no documentation	Completed Checklist				
2	Review and assess the mechanism to formalise the reservoir technical capability	DST/DEA/DMR			Clause effected on the E & P Licensing Rights			
3	Develop reservoir information acquisition infrastructure	DST/DEA/DMR					Equip multipurpose vessel (Signed commissioning handover documentation)	
2	Establish an multi-agency ocean R&D strategy and implementation programme	DST/DEA/DMR	Programme non-existent		10%	20%	30%	40%

KPI: Oil and gas (5/5)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
E1: Streamlined end to end institutional structure								
	Migrate PASA from CEF Group to DMR – Public Entity	DG Ramontja or CEO new entity	PASA with licensing directly in DMR with MPRDA amendment bill		Functioning licensing and regulating entity by January 2016			
E2: Enhance environmental governance capacity of oil and gas regulator								
2	Compliance with standard operating procedures	Linda Garlipp, Chief Director Legal Services	n/a - SOPs not yet in place	–	–	50%	90%	98%
3	Compliance Monitoring Indicator	Director: environmental management?	0%	0%	5%	8%	9%	10%
E3: Promote awareness of the Oil and Gas industry								
1	Gap and needs analysis report		PASA's public advertising/ awareness unit		Initiate data collection draft conceptual design on key issues	- Final report: existing and required information on offshore exploration awareness - Final Report: public Concerns & Matters of Interest		
2	Output information platforms	DirectorGeneral				- 1 to 2 public awareness campaigns on key public concerns - Create website with functional information links and contact details	Develop a document repository system that is accessible by public users	
3	National launch	DirectorGeneral					Launch date: Public Awareness Unit	

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 - Case for change
 - Lab vision and charter
 - Initiatives
 - Budget requirement
 - Targets and KPIs
 - **Governance structure**
- Detailed solution implementation plans
- Appendices



Proposed oil and gas governance structure

Steering Committee: meeting once a month

- Initiative owners to provide progress updates
- Makes decisions and provides guidance/direction to the team
- Resolves conflicts
- Oversees all other matters related to work stream

Steering Committee Chair: Lead Minister

Members:

- DG of DMR
- DG of DOE
- DG DEA
- DTI
- DG Water and Sanitation
- Deputy President's Office (HR Council)
- Head of Oceans Secretariat
- CEO of CEF
- CEO PASA
- Coastal Provinces

Secretariat: Delivery Unit

Outcome facilitator (DPME)

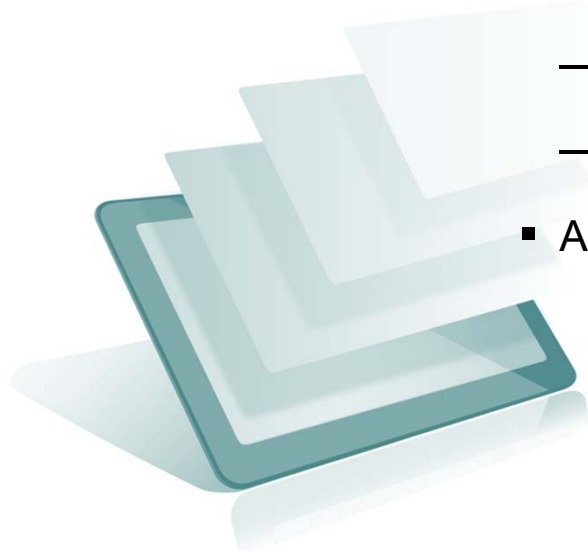
Working level: meeting more frequently (i.e., biweekly)

- Liaise directly with Delivery Unit and respective DPME Outcome Facilitator

A1) Develop phased gas pipeline network	B1) Conduct industry/gov. joint emergency response drills	B2) Operationalise IOPC Funds	B3) Exploit broader research opportunities presented by offshore oil and gas exploration	C1) Develop/ implement Local content roadmap	D1) Develop/ implement skills strategy roadmap	D2) Develop capability for sub-surface research capability	E1) Build end-to-end institutional structure	E2) Enhance environmental governance capacity of oil and gas regulator	E3) Promote awareness of oil and gas industry	F1) Provide legislative clarity and stability
Owner: <ul style="list-style-type: none"> Ompi Aphane (DDG: DoE) Other key implementors: <ul style="list-style-type: none"> Landi Themba (DoE), Neville Ephriam (Igas) S. Nceman (CDC) Dee Fischer (DEA) 	Owner: <ul style="list-style-type: none"> Mondi Mayekiso, DDG: Oceans & Coasts, DEA Other key implementors: <ul style="list-style-type: none"> Yazeed Peterson (DEA) A Molden (SAPIA) TNPA Sean Lunn (OPASA) Brig David Garnett (NAT JOINTS) Collins Makhado (SAMSA) 	Owner: <ul style="list-style-type: none"> DDG (DoT) Other key implementors: <ul style="list-style-type: none"> J. Bednar-Giyose (NT) D. van Niekerk (SARS) Sipho Mbatha (SAMSA) Yazeed Peterson (DEA) Sandia de Wet (DIRCO) A. Moldan (SAPIA) 	Owner: <ul style="list-style-type: none"> Thomas Auf de Hyde, DDG: DST Other key implementors: <ul style="list-style-type: none"> Peter Lukey and Ashley Naidoo (DEA) Sean Lunn (OPASA) NRF Kerry Sink (SANBI) Thembakazi Mali (SANEDI) Sean Johnson (PASA) CSIR and NRF Russ Berkoben 	Owner: <ul style="list-style-type: none"> Garth Strachan (DDG: DTI) Other key implementors: <ul style="list-style-type: none"> A. Mukandila (DTI) Sean Lunn (OPASA) M. Xiphu (SAOGA) IDZs (CEOs) S. Nceman (CDC) Jacky Molisane (DPE) Mmabatho Matiwane (PetroSA) Lunga Saki (CEF/SASDA) 	Owner: <ul style="list-style-type: none"> Florus Prinsloo (DHET) Other key implementors: <ul style="list-style-type: none"> Mpumi Mnconywa (DoL) Sean Lunn (OPASA) M. Xiphu (SAOGA) A. Singh (Eskom) Docoure (NMMU) Dr. Sipho S. (DPSA) CEOs SETAs/FETs 	Owner: <ul style="list-style-type: none"> Dave v. Spuy (PASA) Other key implementors: <ul style="list-style-type: none"> Ian Calvert (SAMSA) Gilbert Siko/ Somila Xosa (DST) Florus Prinsloo (DHET) Sean Lunn (OPASA) Musa Mabuza (DMR) Moctar Doucoure (NMMU) 	Owner: <ul style="list-style-type: none"> Mosa Mabuza (DDG: DMR) Other key implementors: <ul style="list-style-type: none"> T. Zungu (DoE) Y. Chetty (Cef) Greg Botha (CGS) Sizwe (SAMSA) N. Tantsi (PetroSA Legal) 	Owner: <ul style="list-style-type: none"> Alf Wills, DDG: Environmental Advisory Services, DEA Other key implementors: <ul style="list-style-type: none"> Musa Mabuza (DDG: DMR) Dee Fischer and Alan Boyd (DEA) Khethiwe Dlamini (Ugu Munic) Head of the "end-to-end institutional structure" for oil and gas regulation (see E1) 	Owner: <ul style="list-style-type: none"> Musa Mabuza (DDG DMR) Other key implementors: <ul style="list-style-type: none"> Dave v. Spuy (PASA) Sean Lunn (OPASA) M. Xiphu (SAOGA) 	Owner: <ul style="list-style-type: none"> Fundi Tshadizibana (NT)/Musa Mabuza Other key implementors: <ul style="list-style-type: none"> Musa Mabuza Tseliso Maqubela N. Tantsi (PetroSA) B. Ncanywa (DoE – Legal) M. Xiphu (SAOGA) Andre Andreas (DMR Legal) Sean Lunn (OPASA)

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- **Detailed solution implementation plans**
 - Infrastructure
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 - Localisation of supply chain
 - Capability development
 - Institutions
 - Legislative
 - Governance structure
- Appendices



In order to reach lab aspirations, isx barriers need to be resolved

South Africa is not maximising its potential from oil and gas exploration. This may impair our ability to achieve lab aspirations

- A Potential **Infrastructure** constraints
- B Concerns around the **Environmental** impact of the sector
- C Low integration of the **Local Supply Chain** into Oil and Gas Exploration and Production
- D Need for South Africa **Capability Development** to benefit from E&P
- E Ineffective **Institutional Arrangements** for managing exploration and production
- F Lack of **Legislative** clarity

Contents

- Executive summary
- **Detailed solution implementation plans**

A Infrastructure

B Environment

C Localisation of supply chain

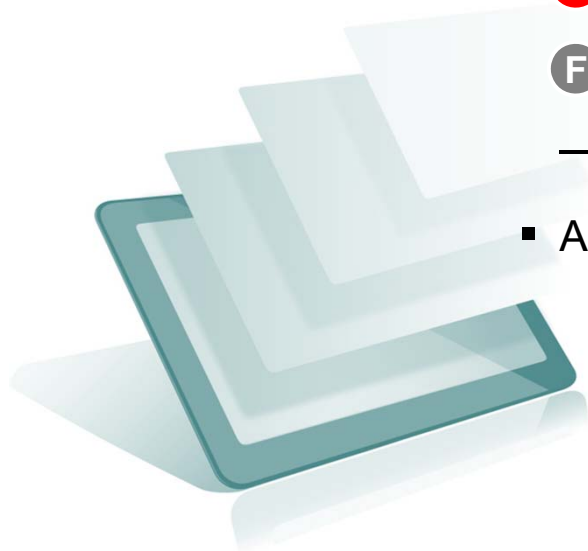
D Capability development

E Institutions

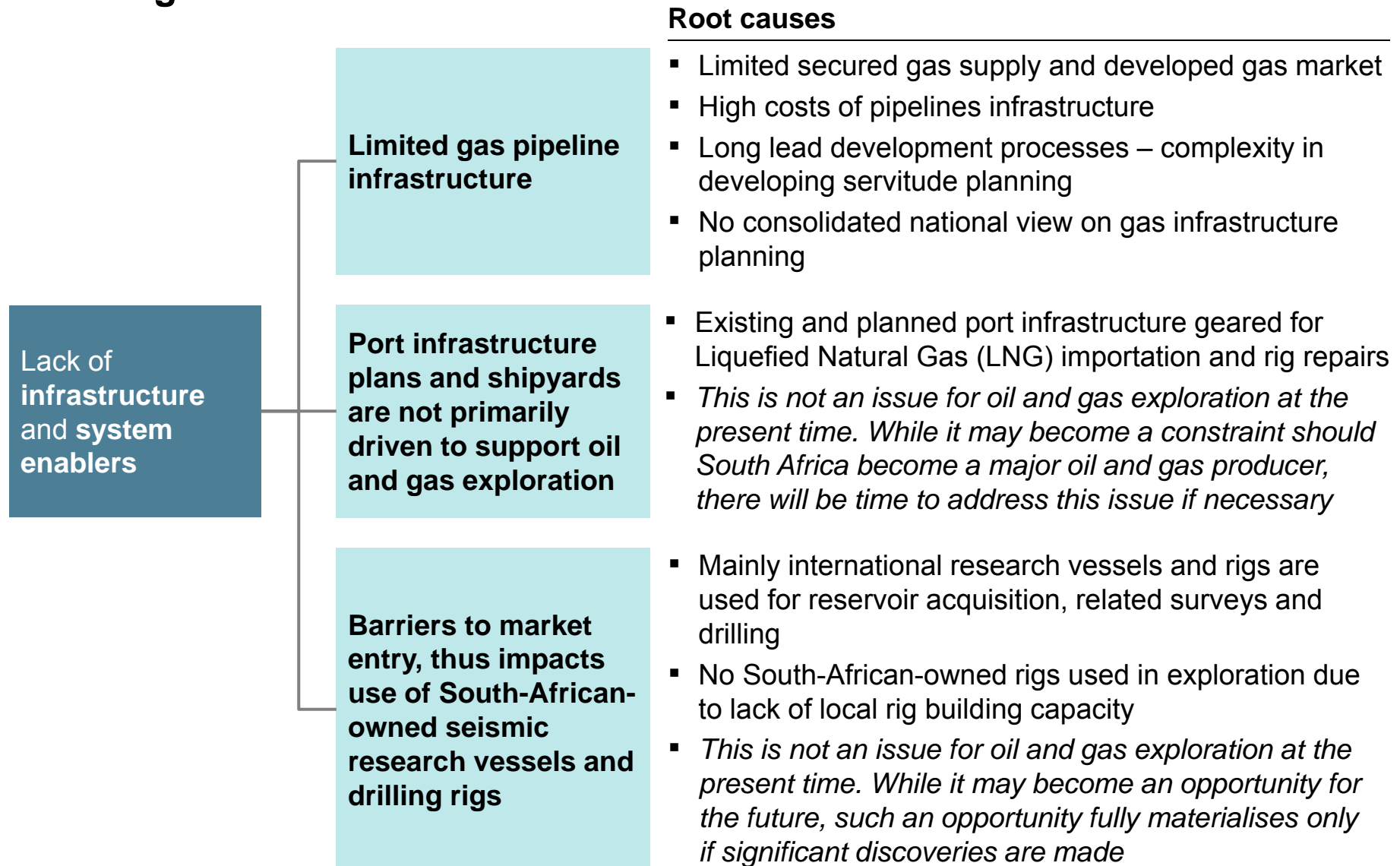
F Legislative

— Governance structure

- Appendices



The lab has studied the infrastructure issue as relates to upstream oil and gas



4 possibilities for infrastructure were considered by the lab

Proposal P1



- The utilization of a South African multipurpose research vessel to extract and process oil-and gas-related seismic geological and geophysical information to maximise the benefit for South Africa
- *Opportunity: South Africa to add value to its own geological data*
- *Dependency: cost-benefit trade-off of seismic vessel ownership*

Proposal P2



- The use of South African drilling rigs during exploration and development
- *Opportunity: South African economy benefits in terms of GDP and jobs*
- *Dependency: decision on type of rig to invest in and cost-benefit trade-off*

Proposal P3



- The development of port and harbor infrastructure with required capacity to service the oil and gas exploration activities
- *Opportunity: port and supporting industry benefits from South African oil and gas activities*
- *Dependency: outcome of exploration drilling*

Initiative A1



- Planning of phased gas pipelines
- **This was developed into further detail as an initiative**

P1 – Utilization of a South African multipurpose research vessel to extract and process oil- and gas-related geological and geophysical information to maximise the benefit for South Africa

- A South African multipurpose research vessel to be utilised for extraction and processing of seismic information and other ocean-geological information (other than that for oil and gas) for the benefit of the country and potential international countries
- South African oil and gas industry and government must optimise its ability to acquire information from its oceans
- Thus it would be of value to utilise a versatile multipurpose vessel that is capable of seismic surveys and research on marine biology, climate and environmental, geological, as well as fishery and aquaculture
- This implies that other useful data can be simultaneously collected with offshore operations

Benefits of a South African multipurpose research vessel

- Oil and gas exploration in South African EEZ
- Revenue from international exploration contracts
- Industrialisation
- Job creation and skills development
- Knowledge generation

Dependencies for a South African multipurpose research vessel

- Funding and revenue framework (e.g., PPP)
- Offtake agreements: international and SADC exploration contracts
- Skills and institutional framework

Owner and implementing agencies

- Department of Science & Technology (DST) will be accountable for capacitating the multipurpose research vessel
- Council for Scientific and Industrial Research (CSIR) will be responsible for capacitating the multipurpose research vessel

Related national strategic initiatives

- Carbotage policy from Department of Transport
- National Industrial Participation Programme (NIPP)

P2 – construction and utilization of South African rigs for domestic and global oil and gas offshore exploration

- Global oil and gas companies have turned to deep-water exploration in search of more lucrative fields driven by increase in oil prices and need to increase global production portfolios
- The offshore exploration industry in South Africa has been affected by years of underinvestment and interest in deep- and ultra deep-water exploration through seismic research vessels and rigs
- Historically, South Africa has not attracted meaningful foreign investment in offshore oil and gas exploration due to the uncertainty about potential oil and gas reserves
- Currently, PetroSA and other international oil and gas companies lease exploration rigs predominately from South Asian countries such as South Korea and Singapore
- Global scarcity and heavy bookings of drilling equipment and exploration rigs is one of the main barriers to expanding deep- and ultra deep-water exploration. The scarcity of exploration rigs has contributed to a cost increase in drilling costs

Benefits of a South African deep- and ultra deep-water rig

- Oil and gas exploration in South African EEZ
- Revenue for PetroSA from international exploration contracts
- Industrialisation
- Job creation and skills development

Dependencies for construction of deep- and ultra deep-water rig

- Funding and revenue framework (e.g., PPP)
- Offtake agreements: international and SADC exploration contracts
- Skills and institutional framework

Owner and implementing agencies

- Department of Mineral Resources (DMR) will be accountable for enabling the rig construction and utilisation structure
- Central Energy Fund (CEF) through its subsidiary PetroSA will be responsible for implementing of the rig construction and utilisation

Related national strategic initiatives

- Carbotage policy from Department of Transport
- National Industrial Participation Programme (NIPP)

P3 – Development of port the and harbour infrastructure with required capacity to service oil and gas exploration activities

- The South African oil and gas industry and government needs to prioritise the benefit for local industry participation in servicing the upstream exploration equipment and rigs at national ports and harbours
- This is an opportunity that South Africa to undertake optimum utilization of its existing ports' and harbours' capacity as a catalyst for investment and industrialization of exploration-related infrastructure
- The objective of this initiative is to align and develop capacity in 'priority' ports and harbours for the exploration-related services activities of South Africa to maximise opportunity to service vessels and rigs during exploration phase
- There is a need for maintenance and support services for current exploration activities in the Sub-Saharan Africa which emphasises the urgency for South Africa to capture the opportunity
- The proposed solution needs to be cognizant of the developmental and socio-economic impact of the location of the required infrastructure

Benefits for port and harbor infrastructure development

- Rig maintenance in South Africa
- Revenue for TNPA and province(s)
- Industrialisation
- Job creation and skills development

Dependencies for port and harbour infrastructure development

- Funding and revenue framework (e.g., PPP)
- Operator and offtake agreements: international rig operators
- Skills and institutional framework

Owner and implementing agencies

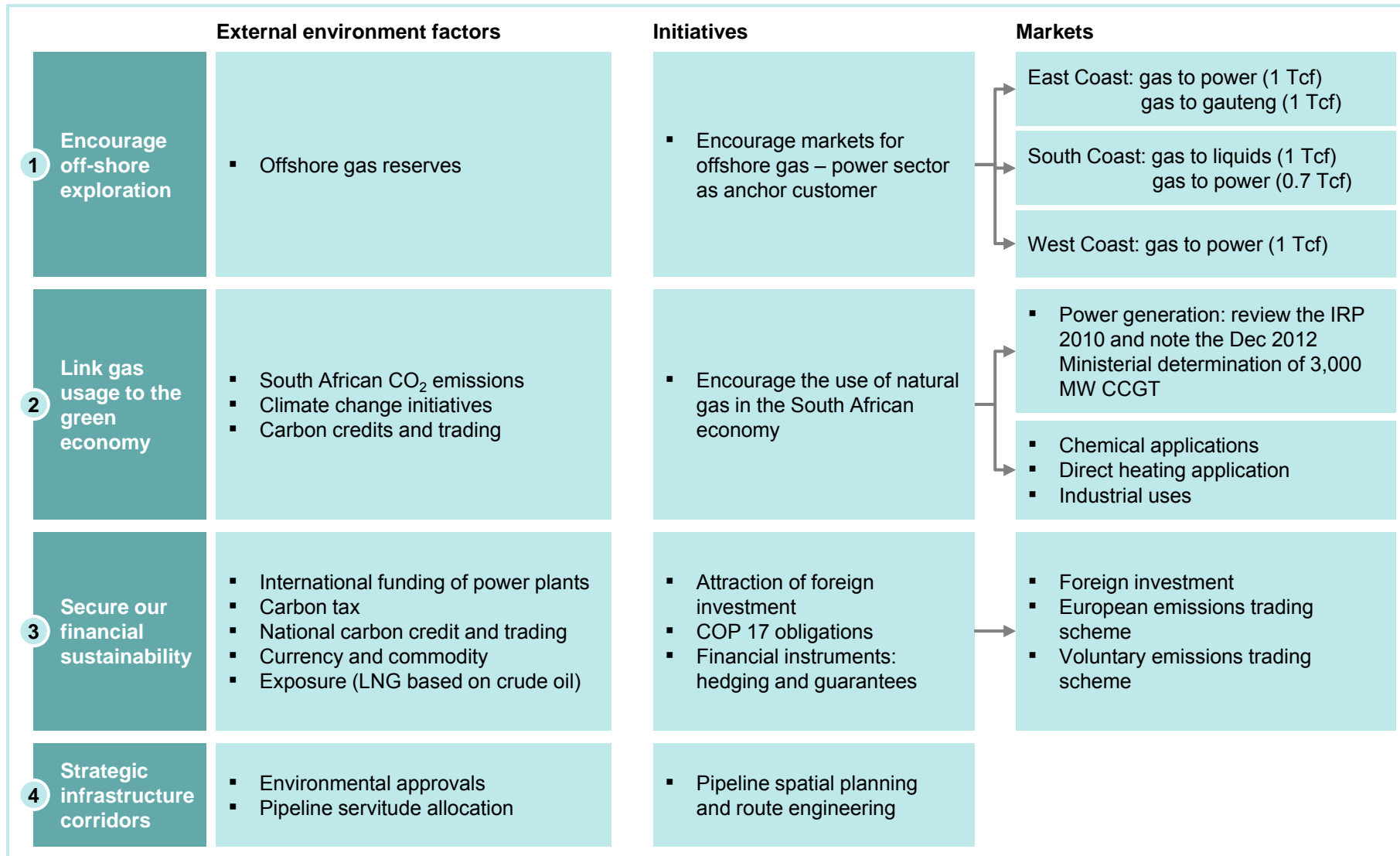
- The Department of Transport (DOT) will be accountable for enabling a port and harbour rig and other services framework
- Transnet through its subsidiary TNPA will be responsible for implementing port and harbour infrastructure

Related national strategic initiatives

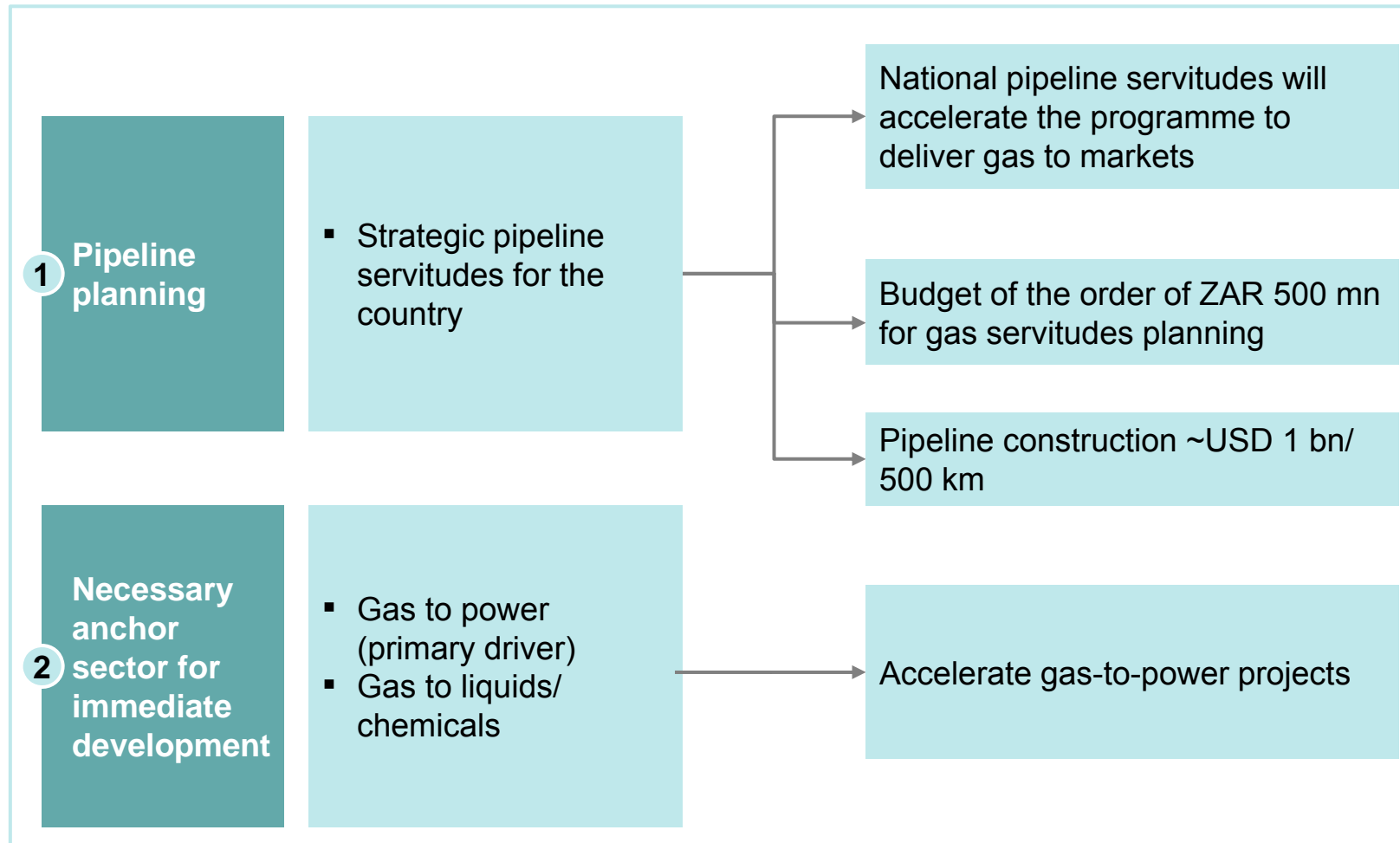
- Strategic Integrated Projects (SIPs) which encompass port and harbour development to support offshore oil and gas industry.
- National Ports Act and Transnet plans
- National Industrial Participation Programme (NIPP)

A INFRASTRUCTURE

4 strategic imperatives were considered in respect of markets for gas within South Africa



Specific infrastructure issues were considered in respect of potential offshore gas production



Problem statement: is the current natural gas market able to attract offshore exploration to South Africa?

Answers:

1. Natural gas found as associated gas with oil in deep waters will probably be re-injected to increase the oil extraction
2. Natural gas found in quantities larger than the likely re-injection quantities can immediately supply the South African markets. A prerequisite is a **focus on gas-to-power projects** and **pre-planning for a gas transmission system** before the resource comes into production
3. Natural gas found in large quantities will, unlike Mozambique, need to be encouraged to first supply the industrialisation of coastal cities before being exported as LNG to international markets. This opportunity, **if the gas reserves are found**, has the potential of significant growth for the South African economy

Purpose of the following infrastructure-related pages

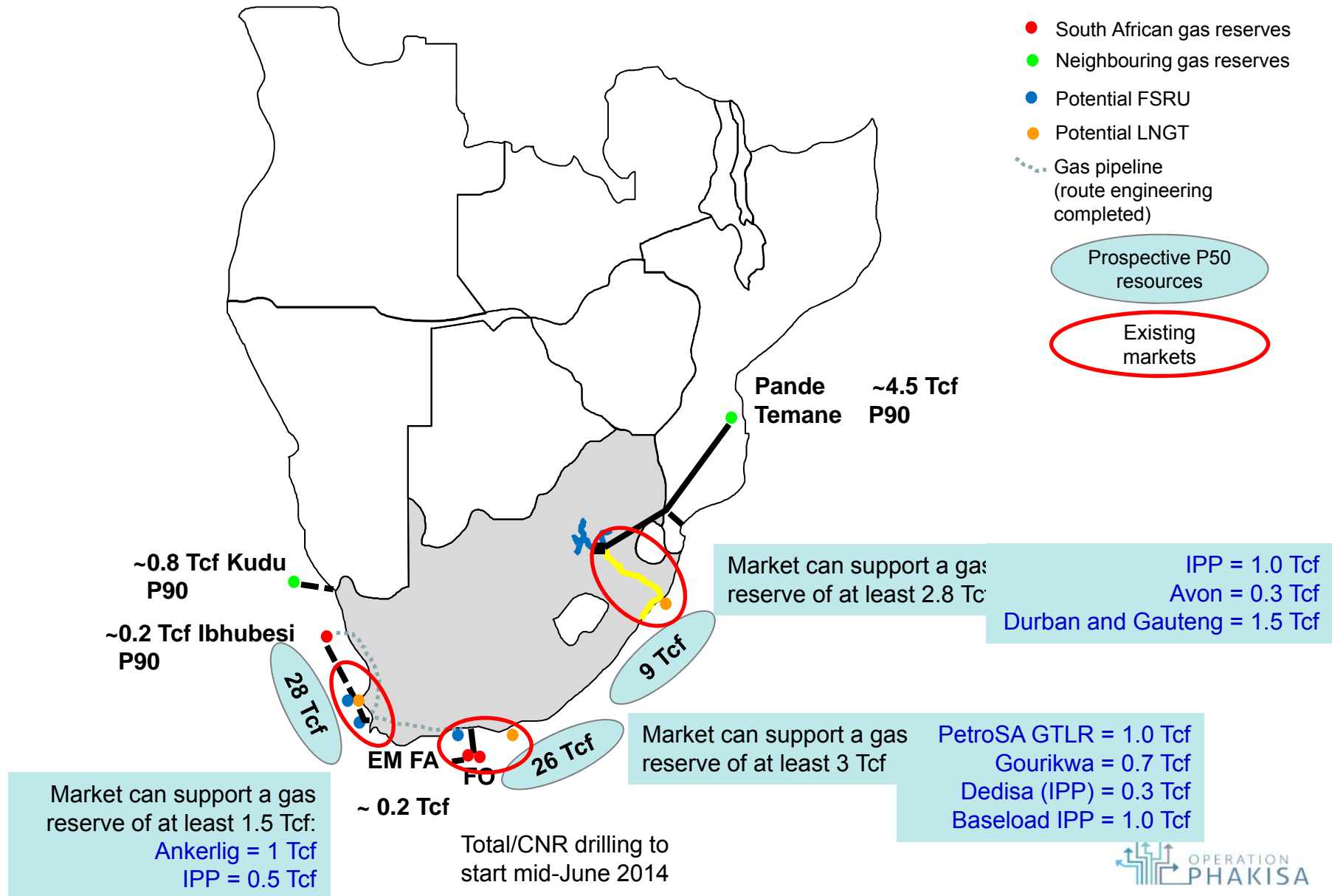
The following slides show that the existing and potential gas market as well as the proposed gas infrastructure are not limiting factors for offshore exploration

However, planning must start now to encourage explorers to quickly monetise the natural gas, in the scenario where the offshore gas finds are significant, and to prevent a situation where the only option is to export the gas in the form of LNG

It is emphasised that the existing anchor customers are gas to liquids and chemicals, and it is stressed that future anchor customers must include gas to power

A INFRASTRUCTURE

Existing gas markets and planned pipeline infrastructure are not limiting factors for offshore exploration



Situation: Current state of gas exploration and usage in South Africa (1/3)

- The current situation with gas pipelines is the 865 km ROMPCO Pipeline from the Pande/Temane gas fields in Mozambique to Secunda. These fields have a total P90 reserve of 4.5 Tcf. From Secunda, Sasol transmits the gas to Sasolburg and to industrial users in Gauteng
- Transnet transmits methane-rich offgas from Sasol to Richards Bay and Durban via the Lilly Pipeline
- South African offshore gas finds are limited to
 - PetroSA's FA and EM fields off Mossel Bay coast (largely depleted, but with a tail that can still be utilised, provided other gas sources can be used to supplement the tail). PetroSA is also currently developing the FO field, which has a P90 reserve estimate of 0.2 Tcf.
 - The Ibhubesi gas field (0.21 Tcf 1P¹): a business case is being developed by Sunbird to bring the gas to market in the Western Cape, i.e., via Eskom's Ankerlig Power Station. iGas has completed the route engineering for an onshore pipeline from the landing point (Abraham Villiers Baai) to Saldanha and Ankerlig. However, Sunbird is currently contemplating a subsea pipeline to these locations
 - The Kudu gas field (0.80 Tcf P90), which remains unexploited. Past projects contemplated include an 800 MW power station in Namibia and transmitting the gas to Cape Town
- Total is currently drilling an exploration well off the Southern Coast of the country. A gas find in this region has significance for both the PetroSA Mossel Bay GTLR as well as encouraging fast-tracked developments for the Coega industrial development zone

Situation: Current state of gas exploration and usage in South Africa (2/3)

Existing gas markets or markets that can be developed in the short term (within 5 years):

- West Coast (1.5 Tcf)
 - Eskom's Ankerlig OCGT in Atlantis – currently fired by diesel, but with plans for conversion to dual firing (gas and diesel) and the conversion of 5 units to CCGT (1 Tcf)
 - Potential IPP in the Saldanha IDZ (0.5 Tcf)
- South Coast (3.0 Tcf)
 - PetroSA's GTLR in Mossel Bay (1 Tcf)
 - Eskom's OCGT in Mossel Bay – currently fired by diesel, but with plans for conversion to dual firing (gas and diesel) and the conversion of 2 units to CCGT (0.7 Tcf)
 - The Dedisa IPP OCGT peaking power plant in the Coega IDZ – currently fired by diesel, but can be converted to natural gas firing (0.3 Tcf)
 - An IPP mid-merit power station of ~2,400 MW at Coega (1 Tcf)
- East Coast (minimum of 2.8 Tcf)
 - Existing Durban, Richards Bay and Gauteng markets via reverse flow up the Lilly Pipeline or a new gas transmission pipeline to Gauteng (1.5 Tcf)
 - The Avon IPP OCGT peaking power plant south of Richards Bay – currently fired by diesel, but can be converted to dual firing (gas and diesel) (0.3 Tcf)
 - A minimum 1,600 MW baseload IPP in Richards Bay (1 Tcf). As aging coal-fired power stations in Mpumalanga are retired, this can be increased depending on the gas availability

Situation: Current state of gas exploration and usage in South Africa (3/3)

- P50 gas resources in South African waters are¹
 - 28 Tcf off the West Coast
 - 26 Tcf off the South Coast
 - 9 Tcf off the East Coast
- Gas markets therefore exist to support exploration in South African waters
- Pipeline planning
 - iGas has completed the onshore route engineering for a West Coast gas transmission pipeline from Abraham Villiers Bay to Saldanha and Atlantis to take West Coast gas to the closest markets
 - PetroSA has completed the pre-feasibility for a gas transmission pipelines from Saldanha to Mossel Bay and Coega to take West Coast gas to the South Coast markets. Alternatively, the flow can be reversed to take South Coast gas to the West Coast markets
- ***Hence, existing gas markets and planned pipeline infrastructure are not the limiting factors for offshore exploration***
- ***Baseload IPP CCGT's are currently being planned, will require maturity and, once offtake agreements are signed, will take ~26 months to construct***

Observation: Why haven't gas pipelines been built to develop existing gas resources?

- ***The market exists and there are unexploited gas reserves on the West Coast. So why haven't the pipelines been built?***
- **Ownership of the gas:** Namibia and South Africa have been in discussions for years about developing the Kudu gas field. However, negotiations stalled with South Africa's desire to transport the gas to Ankerlig for power generation and Namibia's desire to build a power station in Namibia and export excess power to South Africa
- **Ibhubesi is too small to support a conventional power station:** the 1P reserve of 0.21 Tcf is too small to support a large power station like Ankerlig
- **Currency and commodity price risk for fuel:** Eskom currently buys coal and sells electricity in ZARs. Gas prices are typically indexed against oil and priced in USD. This will require Eskom to buy fuel priced in USD and fluctuating with the price of oil but can only sell electricity in ZAR and priced in accordance with the MYPD. This is currently too much of a risk for them
- **Spatial planning:** securing servitudes is a mammoth task for pipeline development, requiring individual negotiations with multiple landowners. Strategic servitude planning needs to be undertaken

National strategic gas pipeline servitude initiative – to develop the gas pipeline infrastructure (1/3)

Pre-planned national gas transmission pipeline servitudes are means to accelerate gas development around the country. This experience is learnt from Eskom's transmission power line development and the associated Strategic Environmental Assessment (SEA)

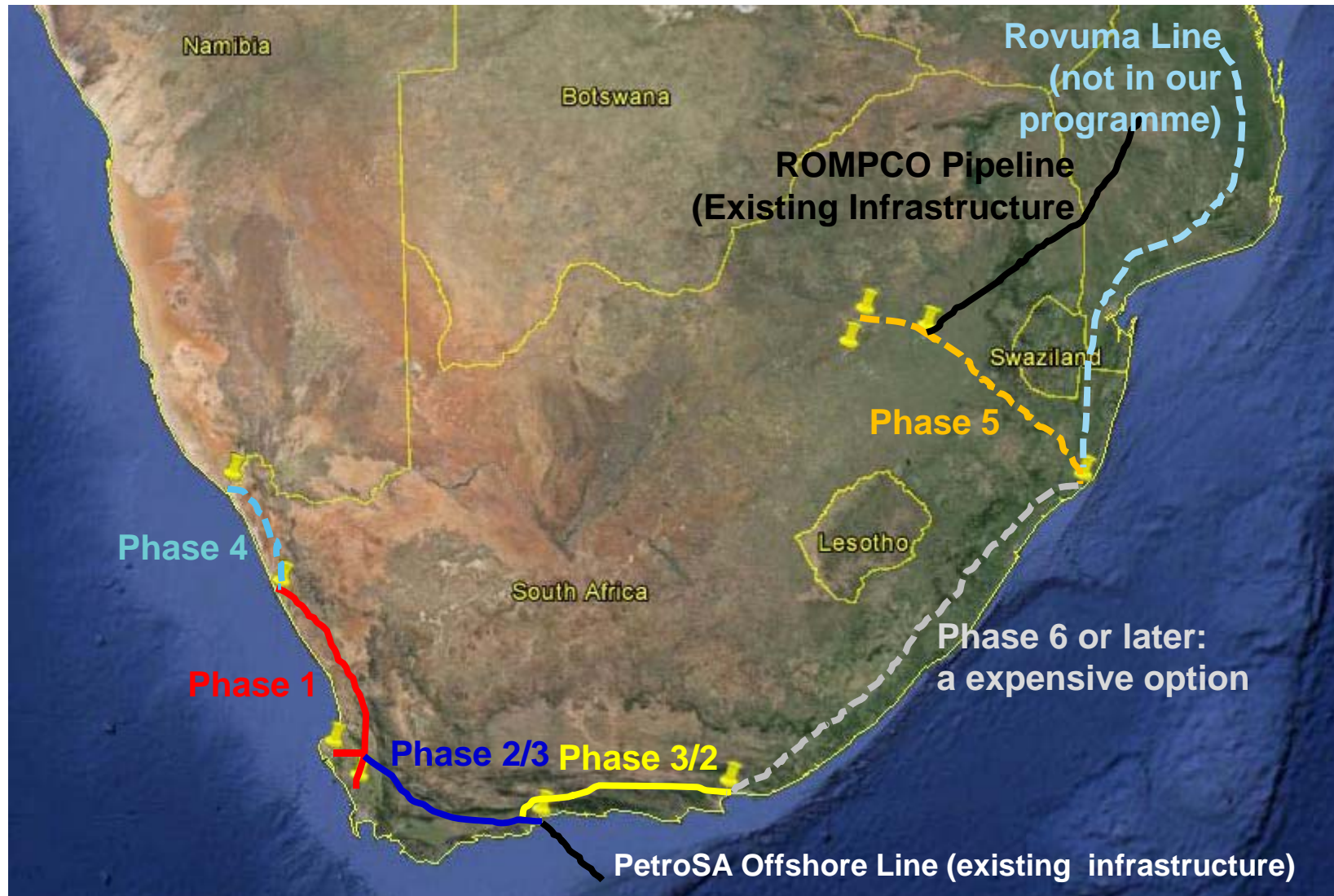
For this reason, the proposal is to immediately mandate an SOE/SOC to commence work as follows:

- A gas transmission pipeline network along the South African coast from Oranjemund on the West Coast to Richards Bay on the East Coast has been contemplated in various different forums over the past 14 years.
 - At a cost rate of USD 70,000/km and with high-level estimates of a 26", 2,500 km pipeline, the cost would be USD 4.55 bn
 - This is clearly too much to spend on enabling infrastructure to encourage offshore exploration in the hope of significant gas finds, even for strategic sections of the network
 - The following initiatives are therefore proposed
 - **Servitude security:** engage with the Department of Environmental Affairs to undertake SEAs for both oil and gas pipelines
 - Route engineering for relevant sections of the South African network, excluding sections already done
 - Use Route engineering results to engage with land owners and secure servitudes as required.
- Experience from Eskom** is that this is a very time-consuming process and can take up to **10 years or more**. Their **minimum cost** in the past 3 years was **ZAR 1 mn** and the **maximum cost** was **ZAR 2.5 mn**
- **Power generation must be the anchor client for these projects, hence engage with both IPPs and Eskom for gas offtake negotiations**

A INFRASTRUCTURE

National strategic gas pipeline servitude initiative – to develop the gas pipeline infrastructure (2/3)

The gas pipeline network will be developed in 6 phases as *deemed economically viable*



National strategic gas pipeline servitude initiative – to develop the gas pipeline infrastructure (3/3)

Phase	Coast	Start	End	Status
1	West	Abraham Villiers Bay	Saldanha/Atlantis	Route engineering completed
2	South	Saldanha	Mossel Bay	Pre-feasibility study completed
3	South	Mossel Bay	Coega	Pre-feasibility study completed
4	West	Oranjemund (Namibia)	Abraham Villiers Bay	Conceptual
5	East	Coega	Richards Bay	Not initiated (very dependant on commerciality)
6	North	Richards Bay	Gauteng	Currently have Lilly pipeline
	East	Palma (Mozambique)	Richards Bay	Feasibility study in progress. Noted but no action required. Length in the order of 2,800 km, i.e., equivalent to the entire South African network

Notes:

Phases 2 and 3 are interchangeable and will be implemented depending on where the gas originates.
Not all of these phases may eventually be feasible and are dependant on commercial viability

Resources: Budget and manpower

The work will be executed within the CEF Group: team to be comprised of iGas and PetroSA employees

Budget

#	Initiative	2014/15	2015/16	2016/17- 2019/20	Total
1	Establish indicative pipeline costs	4	4	0	8
		Govt: 3 Non-govt: 1	Govt: 3 Non-govt: 1	Govt: 0 Non-govt: 0	Govt: 6 Non-govt: 2
2	Secure servitudes/reserves for pipelines	0	21	1,715	1,736
		Govt: 0 Non-govt: 0	Govt: 4 Non-govt: 17	Govt: 12 Non-govt: 1,703	Govt: 16 Non-govt: 1,720
3	Conduct basic assessment	0	0	19	19
		Govt: 0 Non-govt: 0	Govt: 0 Non-govt: 0	Govt: 4 Non-govt: 15	Govt: 4 Non-govt: 15
Total		4	25	1,734	1763
		Govt: 3 Non-govt: 1	Govt: 7 Non-govt: 18	Govt: 16 Non-govt: 1,718	Govt: 26 Non-govt: 1,737

- Note: The non-government funding will be by SOCs (parastatals) in joint ventures with other companies. These are therefore not funds requested from the National Treasury**

Dependencies: What decisions and by whom

- DEA: initiative for strategic gas pipeline servitude
- DWP + public: engagement for servitudes
- Nersa: pipeline tariff
- PFMA & MFMA: funding for offtake
- DOE
 - Allow an SOC to pre-plan the important gas transmission pipeline servitudes
 - Instruct an SOC to interact with commercial companies seeking to develop independent power plants
 - Government and SOC/SOE forum to be set up for the different parties on the planning for gas with a clearly defined mandate to each SOC
 - Integration between the Gas Utilization Master Plan (GUMP) and these initiatives

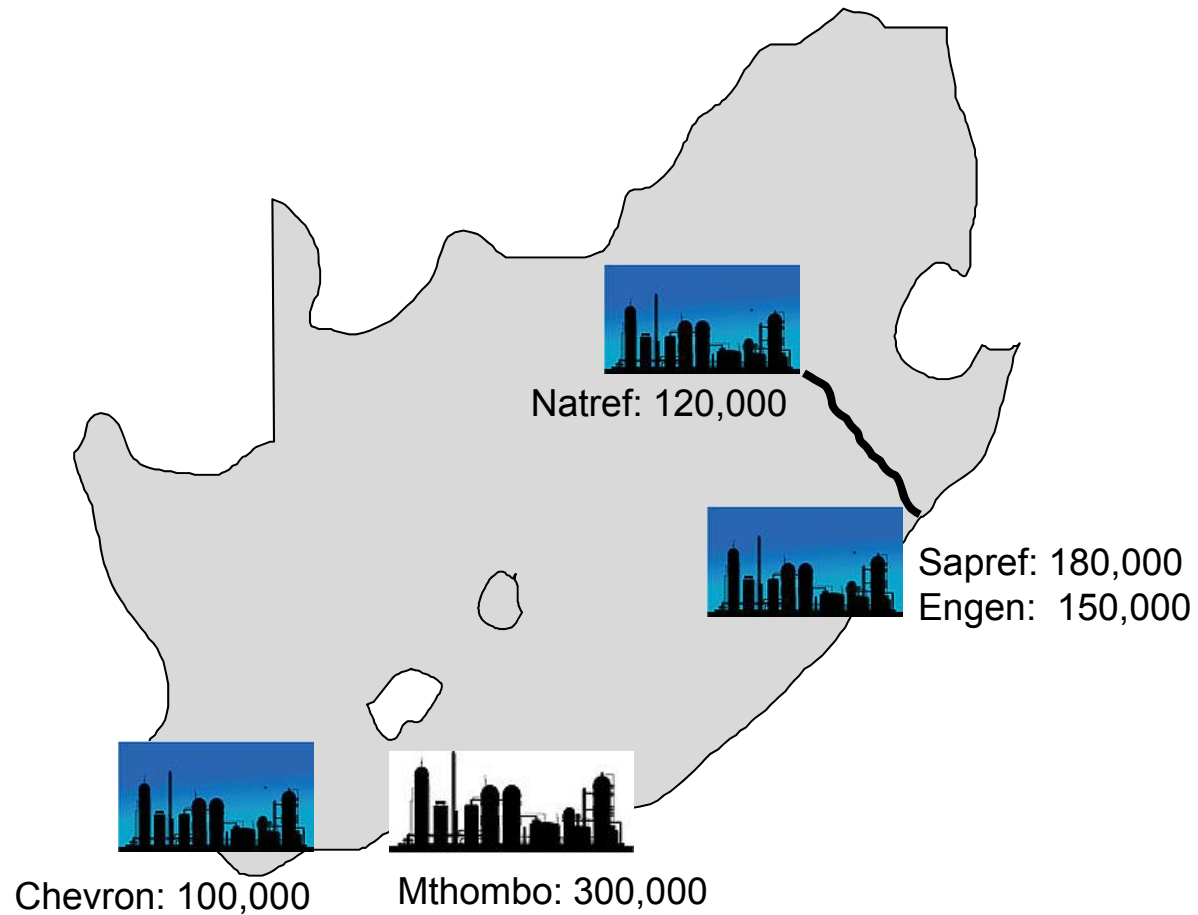
Conclusion: The current status of the natural gas market is not a constraint to exploration in South Africa

The following items need to be progressed to ensure the best use of natural gas in South Africa:

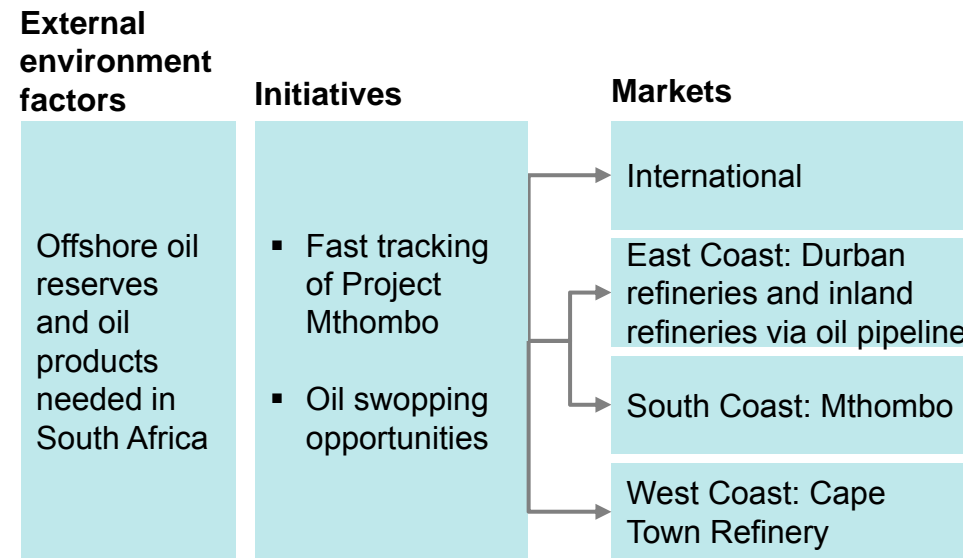
1. Accelerate the planning for gas to power as part of the Government's Integrated Resource Plan (IRP) and as part of GUMP
2. Ensure that an SOE starts to pre-plan for a concerted, commercial and logical development of gas transmission servitudes within South Africa. The following steps of engineering and completing the relevant business case can only be led by the relevant gas resource finds with commercial opportunities

Offshore oil production can tap into local markets

Barrels of oil per day



The current state of oil markets in South Africa



Oil found in South African waters can be supplied directly to the South African markets

A INFRASTRUCTURE – BUDGET

Initiative A1 – Develop phased gas pipeline network

ZAR millions

#	Initiative	2014/15		2015/16		2016/17- 2019/20		Total	
1	Establish indicative pipeline costs	4	Govt: 3 Non-govt: 1	4	Govt: 3 Non-govt: 1	0	Govt: 0 Non-govt: 0	8	Govt: 6 Non-govt: 2
2	Secure servitudes/reserves for pipelines	0	Govt: 0 Non-govt: 0	21	Govt: 4 Non-govt: 17	1,715	Govt: 12 Non-govt: 1,703	1,736	Govt: 16 Non-govt: 1,720
3	Conduct basic assessment	0	Govt: 0 Non-govt: 0	0	Govt: 0 Non-govt: 0	19	Govt: 4 Non-govt: 15	19	Govt: 4 Non-govt: 15
Total		4	Govt: 3 Non-govt: 1	25	Govt: 7 Non-govt: 18	1,734	Govt: 16 Non-govt: 1,718	1763	Govt: 26 Non-govt: 1,737

Initiative A1: Develop phased gas pipeline network

In order to meet the demand for gas, it would be necessary for the country to establish its broader national and regional role, and to not only exploit its offshore oil and gas but to also provide access to gas via importation of LNG and CNG. This could also meet the requirements for GUMP.

Initiative concept/details/highlights

- i** Cost/km for natural gas pipeline benchmark
- ii** Servitudes/reserves for pipelines – access to property; municipal spatial plans
- iii** Environmental impact
- iv** Tolling/tariffs
- v** Alignment with energy policies, e.g., IRP, GUMP

Develop phased gas pipeline network along the South African coastline. This could enable both the exploitation of deep water and shallow water discoveries ...

Implementing agency

PetroSA, iGas, Transnet

Key stakeholders identified:

DPW, Transnet, DPE, DOE, COGTA, NT, PetroSA, IOCs, iGas, DMR, Dept. of Rural Dev. & Land Reform, regional governments, NERSA

Required resources

Partnership: NT and oil companies

Implementation timeframe

- Start date: <?>
- End date: <?>

KPIs

- Develop a phased pipeline network as per the exploration programme and downstream demand centres
- Develop a funding and revenue framework
- Cabinet approval for pipeline construction
- Obtain approvals for servitudes

KPI: Initiative A1 – Develop phased gas pipeline network

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall Key Performance Indicator								
1	Pipeline network strategy defined	...	Not initiated	...	...	...	...	...
Establish indicative pipeline costs								
1.1	Pipeline network strategy defined	...	Not initiated	Complete by 30 Jun, 2015	...	...	...	...
1.2	Pipeline network phases defined	...	Not initiated	Complete by 3 Apr, 2015	...	...	...	...
1.3	Define pipeline length and size	...	Phases 1 and 2 completed	Complete by 3 Aug, 2015	...	...	...	...
Secure servitudes/reserves for pipeline								
2.1	Strategic Environmental Assessment (SEA)	...	Not initiated	Prepare terms of reference	Complete Phases 1 and 2 by 31 Mar, 2016	Complete Phases 3 and 4 by 31 Mar, 2017	Complete Phases 3 and 4 by 31 Mar, 2017	Complete Phase 5 by 31 Mar, 2018
2.2	Route engineering	...	Phase 1 completed			Complete Phase 2 by 31 Mar, 2017	Complete Phase 2 by 31 Mar, 2018	Complete Phase 2 by 31 Mar, 2019
2.3	Secure servitudes	...	Not initiated			50% of Phases 1 and 2 completed	100% of Phases 1 and 2 completed	50% of Phase 3 completed
3.1	Basic assessment for land use	...	...	...	...	...	...	Complete Phases 1 and 2 by 31 Mar 2015

3-ft. plan: Initiative A1 – Develop phased gas pipeline network (1/2)

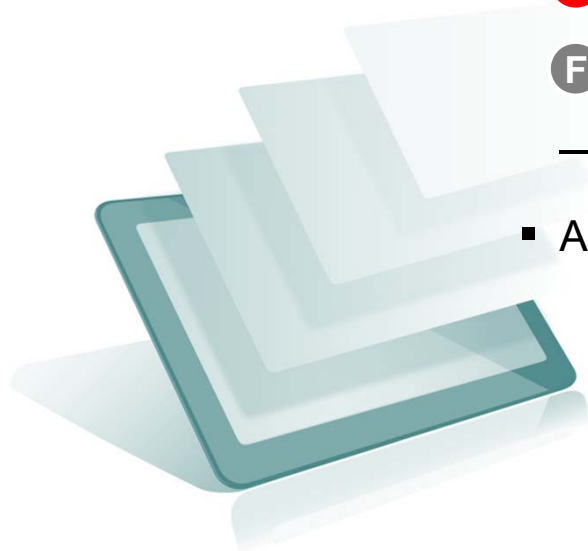
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Establish indicative pipeline costs			iGas			
		1.1	Clearly defined pipeline route/pipeline strategy	iGas, PetroSA, GUMP (lead), DEA	01.10.2014	01.09.2015	52
		1.2	Identify location of phases of the pipeline	iGas, PetroSA, GUMP (lead), DRLR (National Spatial Plan)	01.10.2014	01.09.2015	52
		1.3	Identify high-level pipeline length and size	iGas (lead), PetroSA	01.10.2014	01.09.2015	52
2	Secure servitudes/reserves for pipelines			iGas			
		2.1	Strategic Environmental Assessment (SEA)	iGas (lead), PetroSA, DEA	01.04.2015	01.04.2018	156
			Phase 1: Abraham Villiers Bay to Saldanha/Atlantis	iGas (lead), DEA	01.04.2015	01.04.2016	52
			Phase 2: Saldanha to Mossel Bay	iGas (lead), PetroSA, DEA	01.04.2015	01.04.2016	52
			Phase 3: Mossel Bay to Coega	iGas (lead), PetroSA, DEA	01.04.2015	01.04.2016	52
			Phase 4: Oranjemund to Abraham Villiers Bay	iGas (lead), DEA	01.04.2015	01.04.2016	52
			Phase 5: Coega to Richards Bay	iGas (lead), DEA	If required		52
			Phase 6: Richards Bay to Palma (Northern Mozambique)	Gigajoule	After route engineering		
		2.2	Route engineering (including Environmental Screening Study and Desktop Seismic Study)	iGas (lead), PetroSA	01.04.2016	01.04.2017	156
			Phase 1: Abraham Villiers Bay to Saldanha/Atlantis	iGas	Completed		
			Phase 2: Saldanha to Mossel Bay	iGas (lead), PetroSA	01.04.2016	01.04.2017	52
			Phase 3: Mossel Bay to Coega	iGas (lead), PetroSA	01.04.2016	01.04.2017	52
			Phase 4: Oranjemund to Abraham Villiers Bay	iGas	01.04.2016	01.04.2017	52
			Phase 5: Coega to Richards Bay	iGas	If required		
			Phase 6: Richards Bay to Palma (Northern Mozambique)	Gigajoule	In progress		
		2.3	Secure servitudes: Purchase/lease land from owners; provisions of land from National Government	Surveyor General DRDLR (National Spatial Plan)	01.04.2016	01.04.2018	104
			Phase 1: Abraham Villiers Bay to Saldanha/Atlantis	Surveyor General DRDLR (National Spatial Plan)	01.04.2016	01.04.2018	104
			Phase 2: Saldanha to Mossel Bay	Surveyor General DRDLR (National Spatial Plan)	01.04.2016	01.04.2018	104
			Phase 3: Mossel Bay to Coega	Surveyor General DRDLR (National Spatial Plan)	01.04.2016	01.04.2018	104
			Phase 4: Oranjemund to Abraham Villiers Bay	Surveyor General DRDLR (National Spatial Plan)	01.04.2016	01.04.2018	104
			Phase 5: Coega to Richards Bay	Surveyor General DRDLR (National Spatial Plan)	If required		
			Phase 6: Richards Bay to Palma (Northern Mozambique)	Gigajoule			

3-ft. plan: Initiative A1 – Develop phased gas pipeline network (2/2)

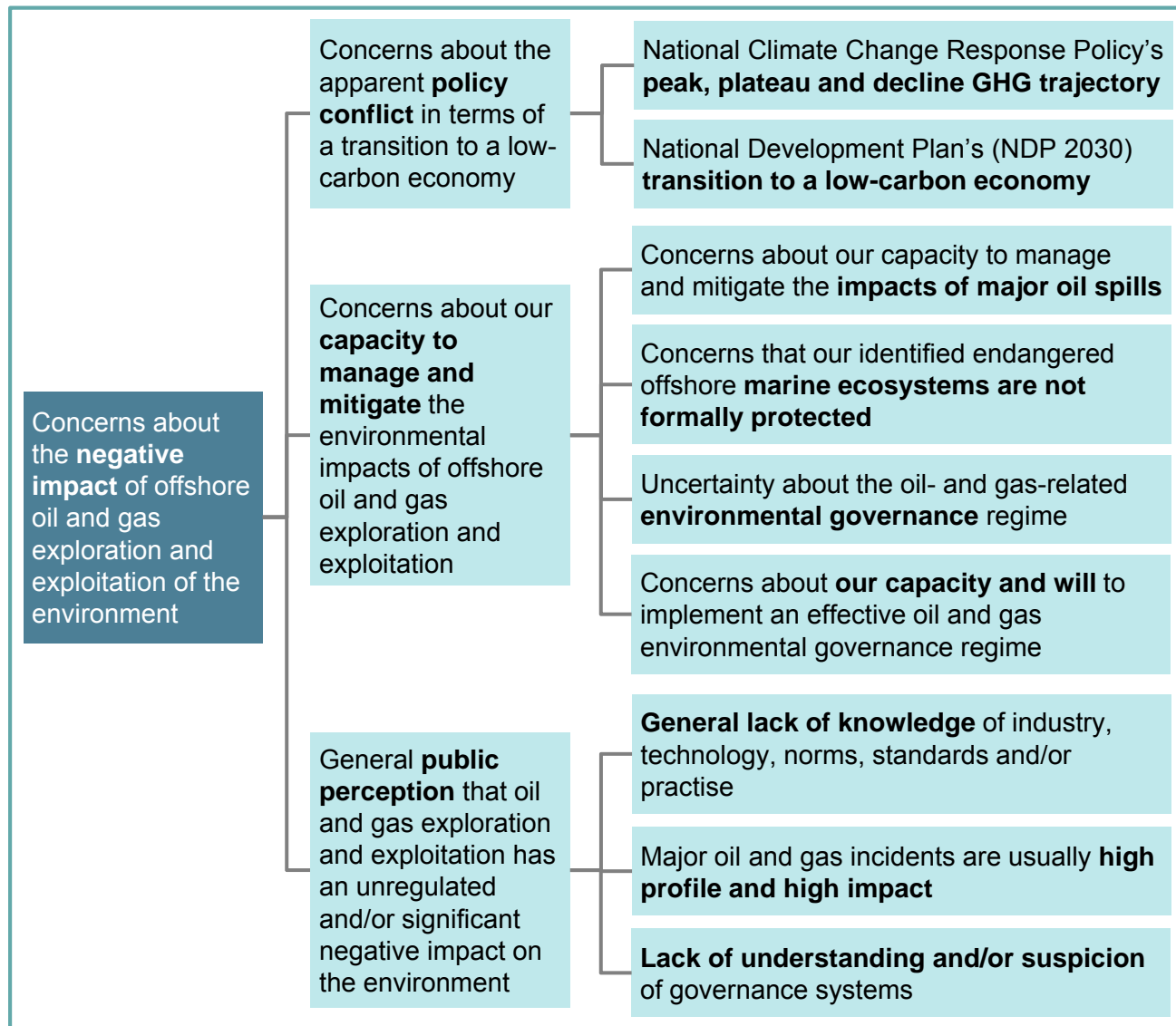
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
3	Conduct basic assessment			Project proponent/developer			
		3.1	Basic assessment for land usage	Project proponent/developer	01.04.2018	01.04.2019	52
			Phase 1: Abraham Villiers Bay to Saldanha/Atlantis	iGas	01.04.2018	01.04.2019	52
			Phase 2: Saldanha to Mossel Bay	iGas (lead), PetroSA	01.04.2018	01.04.2019	52
			Phase 3: Mossel Bay to Coega	iGas (lead), PetroSA	01.04.2018	01.04.2019	52
			Phase 4: Oranjemund to Abraham Villiers Bay	iGas	01.04.2018	01.04.2019	52
			Phase 5: Coega to Richards Bay	iGas	If required		
			Phase 6: Richards Bay to Palma (Northern Mozambique)	Gigajoule	If required		

Contents

- Executive summary
- **Detailed solution implementation plans**
 - Ⓐ Infrastructure
 - Ⓑ Environment**
 - Ⓒ Localisation of supply chain
 - Ⓓ Capability development
 - Ⓔ Institutions
 - Ⓕ Legislative
 - Governance structure
- Appendices



The environmental initiatives reflect lab thinking about potential real and perceived environmental risks



Root causes

- Major oil spill response capacity *concerns*
- IOPC Funds not yet operational*
- Marine spatial planning not taking place
- No declared offshore marine protected areas (MPAs)
- Governance regime concerns including centralisation vs. de-centralisation, institutional anchoring, transparency
- Will within DMR to fight for environmental concerns
- Concerns about lack of skills, knowledge, experience and/or expertise to make properly informed governance decisions
- Concerns about enforcement capacity and poor enforcement track record in the mining sector
- Poor facilitation of active private sector, inter-governmental and civil society participation
- Little, if any, feedback to stakeholder comments/concerns and public information about governance processes

B ENVIRONMENT

The offshore oil and gas industry has a potentially significant impact on the marine environment, natural resources and coastal communities

- **Emergency incidents** (e.g., fires, collisions)
- **Oil spills**
- **The product is a fossil fuel – use contributes to climate change**
- **Wastewater discharges** (e.g., produced water; hydrostatic testing water; cooling water; desalination brine and; other waste waters)
- **Air emissions** (e.g., exhaust gases; venting and flaring; well testing; and fugitive emissions)
- **Solid and liquid waste management** (e.g., drilling fluids and drilled cuttings; produced sand; completion and well work-over fluids; naturally occurring radioactive materials; and hazardous materials management)
- **Noise (especially seismic);**
- **Alien-invasive species**



B ENVIRONMENT

Issues that may undermine or subvert our aspiration of “creating an environment that promotes oil and gas exploration”

Concerns about the **negative impact** of offshore oil and gas exploration and exploitation of the environment



Concerns about our **capacity to manage and mitigate** the impacts of offshore oil and gas exploration and exploitation on the environment



General **public perception** that oil and gas exploration and exploitation has an unregulated and/or significant negative impact on the environment



Concerns about the apparent **policy conflict** in terms of a transition to a low-carbon economy

B ENVIRONMENT

3 environmental and 2 institutional initiatives have been identified to address issues that may undermine or subvert lab aspirations



Concerns about our **capacity to manage and mitigate** the impacts of offshore oil and gas exploration and exploitation on the environment



General **public perception** that oil and gas exploration and exploitation has an unregulated and/or significant negative impact on the environment



Concerns about the apparent **policy conflict** in terms of a transition to a low-carbon economy

Initiative B1: Conduct joint industry-government emergency response drills

Initiative B2: Operationalise IOPC Funds

Initiative E2: Enhance environmental governance capacity of oil and gas regulator

Initiative E3: Promote awareness of oil and gas industry

Initiative B3: Exploit broader research opportunities presented by offshore oil and gas exploration

B ENVIRONMENT

The 3 environment initiatives have potentially significant benefits with relatively low input costs and relatively low implementation complexity

Quick
win

Initiative B1: Joint industry-government emergency response drills

Active participation of all affected parties paying their own costs. Annual drills are likely to cost the parties between ZAR 1-5 mn



Initiative B2: Operationalise Funds

Senior negotiators. Possible high-level political and/or diplomatic intervention. ZAR 50 mn disputed payment arrears

Quick
win

Quick
win

Initiative B3: Exploit broader research opportunities presented by offshore oil and gas exploration

Active participation of all affected parties paying own costs. Setup costs of ZAR 2 mn



The 3 environment initiatives have few, if any, significant dependencies



Initiative B1: Joint industry-government emergency response drills

Buy-in and active participation of all affected parties

Initiative B2: Operationalise IOPC Funds

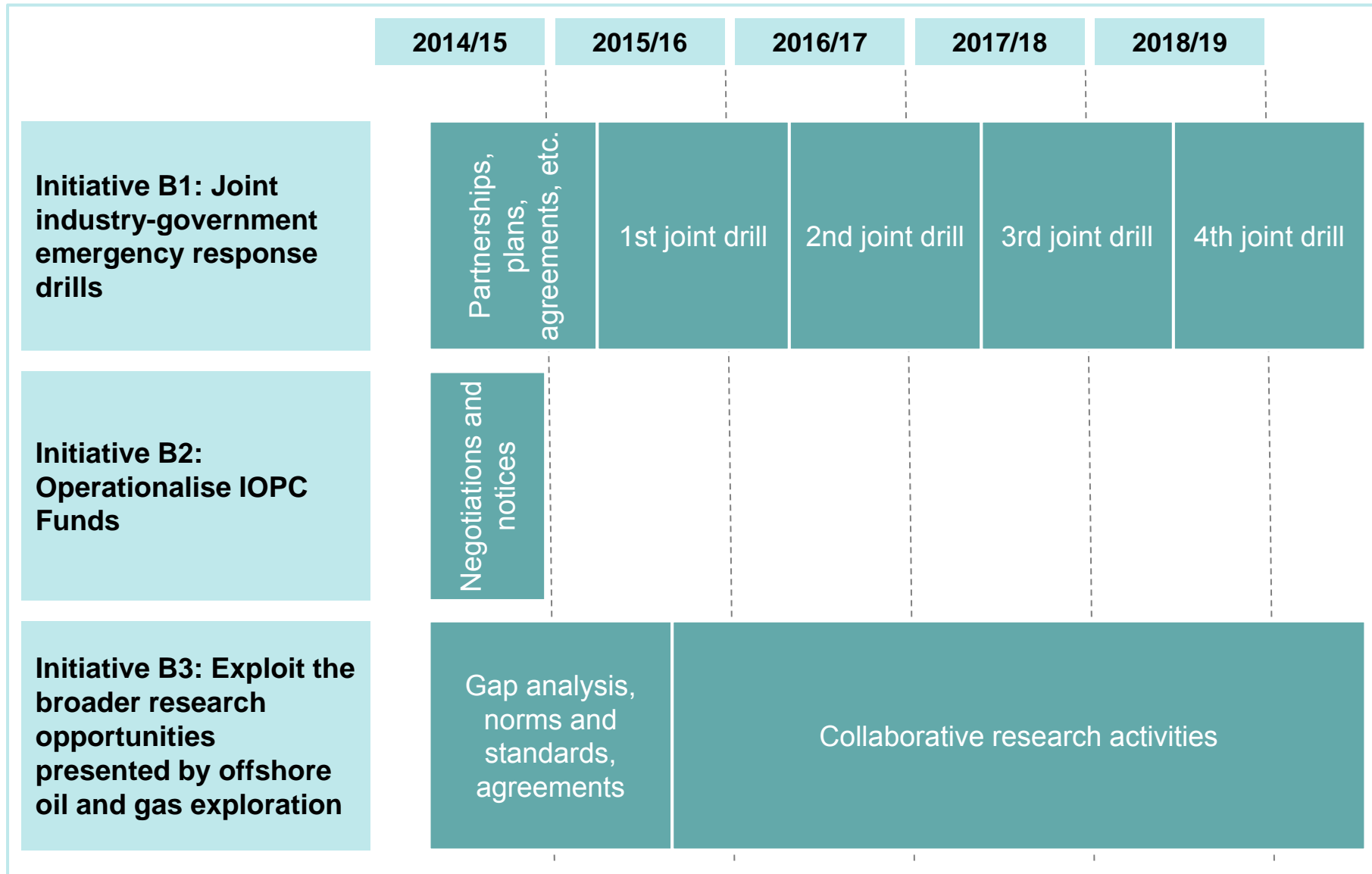
Successful negotiations with the IOPC Funds



Initiative B3: Exploiting the broader research opportunities presented by offshore oil and gas exploration

Buy-in and active participation of all affected parties

The 3 environment initiatives have relatively short delivery times



Initiative B1: Conduct joint industry-government emergency response drills

- More formal multi-stakeholder involvement in emergency response drills
- Improved coordination, cooperation, alignment, training, hands-on experience, community of practice, planning and general knowledge and expertise
- Testing contingency plans

Initiative concept/details/highlights

- i OPASA to form committee to organise IOC participation
- ii Identify key international emergency response drill organisations
- iii Syndication across agencies and private sector
- iv Gap analysis of existing knowledge and oil spill response bodies, technology and equipment
- v Identify funding structures from both private and public sector

An annual, large-scale multi-stakeholder emergency response drill that efficiently and effectively tests preparedness

Implementing agency

- Post-lab implementation team

Key stakeholders identified

- IOCs, SAOGA, DMR, DoT, SAMSA, PASA, DEA, provincial and local authority, the Navy, DAFF, SANCCOB

Required resources

- IOCs
- Public sector organisations
- NGOs

Implementation time frame

- Start date: Sep 2014
- End date: May 2016 and ongoing

KPIs

- Effective and timely emergency response to oil spills
- Kick-off initiative Q1 2015
- 1st drill 2016
- 2nd drill 2017

Initiative B1: Budget

ZAR millions

#	Initiative	2014/15	2015/16	2016/17-2018/19	Total
1	Milestone 1: Formalise IOC participation	0.12	0	0	0.12
		Govt: 0.12 Non-govt: 0	Govt: 0 Non-govt: 0	Govt: 0 Non-govt: 0	Govt: 0.12 Non-govt: 0
2	Milestone 2: Formalising institutional and strategic framework	0.44	0.20	0	0.65
		Govt: 0.45 Non-govt: 0	Govt: 0.20 Non-govt: 0	Govt: 0 Non-govt: 0	Govt: 0.649 Non-govt: 0
3	Milestone 3: Annual joint emergency response drill	0	2.68	6.54	9.21
		Govt: 0 Non-govt: 0	Govt: 1.75 Non-govt: 0.93	Govt: 3.30 Non-govt: 3.23	Govt: 5.05 Non-govt: 4.16
4	Milestone 4: Annual joint emergency response pre-drill training	0	0	2.77	2.77
		Govt: 0 Non-govt: 0	Govt: 0 Non-govt: 0	Govt: 1.39 Non-govt: 1.39	Govt: 1.39 Non-govt: 1.39
Total		0.56	2.88	9.31	12.75
		Govt: 0.56 Non-govt: 0	Govt: 1.95 Non-govt: 0.93	Govt: 4.69 Non-govt: 4.62	Govt: 7.20 Non-govt: 5.55

KPI: Initiative B1 – Conduct joint industry-government emergency response drills (1/2)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
KPI								
1	Number of successful joint industry-government emergency response drills	Dr. Monde Mayekiso, DDG: Oceans & Coasts, DEA	0	0	1	1	1	1
Initiative B1: Joint industry-government emergency response drills								
B1.1	Joint industry-government Emergency Response Committee established	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA	n/a	Formalised report on key IOCs in South Africa and their respective policies on spill prevention and mitigation. Formalised committee with names of members, meeting schedule	...	...	...	...
B1.2	Gap analysis of existing and required capacity and structures	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA	Oil Spill Response Team Framework (2007) and review (current)	Consolidation report: Chpt 1: Key role-players (incl. intl. oil spill response organisations, govt stakeholders and legislation) Chpt 2: Review of existing framework and contingency plans Chpt 3: Develop a best practice contingency plan incl. requirements	...	...	...	...
B1.3	Establishing an Incident Management Team (IMT)	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA	DEA's Oil Spill Response Team; IOC individual response	Emergency response plan: classification definitions and response	Established IMT with charter on mission, objectives and lines of responsibility. Terms of reference for the plan to be implemented by IMT Integration Plan – signed agreements with disaster, fire, emergency, spill mitigation teams			

KPI: Initiative B1 – Conduct joint industry-government emergency response drills (2/2)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
B1.4	Pre-emergency planning and implementation	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA/Incident Management Organisation (IMO) Command	Best practice case studies - intl oil spill organisations	...	...	Pre-emergency manual ... (incl. hazard identification and classification; mitigation plan, e.g., buffer zones, fencing, corridors; legislative and standards oversight; transition procedural plan regional, national and international budget, equipment and resources plan and approval appendix: Emergency; communication network/contact list)	...	...
B1.5	Emergency response	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA/IMO Command	n/a	...	...	Emergency manual (incl. emergency coding definitions; emergency action checklist; response monitoring and communication; waste management plan; site restoration plan)	...	...
B1.6	Emergency response training plan and drills	Dr. Yazeed Peterson, Director: Coastal Pollution Management, DEA/IMO Command	Oil Spill Response Team/DAFF/ Oil Spill Response Ltd training	...	...	Oil spill response training plan (partners, institutions etc.)	Skills targets and training milestones (formalise training plan and identify trainers, budget and students; number of trainees)- 1st practice drill	Conduct 2nd practice drills

3ft plan: Initiative B1 – Joint industry-government emergency response drills (1/3)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Formalise IOC participation			DMR, OPASA, DEA, IOCs, SAOGA	01.09.2014	31.12.2014	18
		1.1	Identify key IOCs operating in South Africa	Lead: DMR Support: OPASA, SAOGA, DEA	01.09.2014	12.09.2014	2
		1.2	Establish IOC policy statements and commitments to emergency prevention and preparedness	Lead: DEA, DMR	15.09.2014	10.10.2014	4
		1.3	Formalised committee to represent IOCs/private sector participation	Lead: OPASA, IOCs	13.10.2014	31.12.2014	12
2	Gap analysis of existing capacity, stakeholders and entities			Various stakeholders	01.09.2014	17.10.2014	7
		2.1	Identify key international oil spill response organisations, e.g., API, IOPC Funds, IMO, OSRL	Lead: SAOGA IOCs Support: DEA	01.09.2014	12.09.2014	2
		2.2	Identify relevant government stakeholders and the relevant pieces of legislation affecting an oil spill emergency response plan	Lead: DEA, DoT Support: DAFF/DMR/DEA/OPASA/SANNCOB/IOCs/SAOGA/NGOs etc.	01.09.2014	17.10.2014	7
		2.3	Review of process around emergency response framework and subsequent amendments	Lead: DEA, DoT Support: IOCs, OPASA, Spill Organisations	01.09.2014	17.10.2014	7
		2.4	Review of existing oil spill response contingency plans and equipment, resources in the country including regional agreements	Lead: DEA, DoT Support: Task team incl. DAFF/DMR/DEA/OPASA/SANNCOB/IOCs/SAOGA/NGOs etc.	01.09.2014	17.10.2014	7
3	Setting Oil Spill Response Team purpose and scope			Various Stakeholders	20.10.2014	15.03.2015	
		3.1	Developing a state of readiness which will allow for a prompt and orderly response to an emergency, including <ul style="list-style-type: none"> Understanding type and extent of a potential emergency Establishing high order of preparedness in line with the risk Ensuring orderly and timely decision-making and response process 	Lead: DEA, DoT; oil spill response organisations Support: DAFF/DMR/OPASA/SANNCOB/IOCs/SAOGA/NGOs etc.	20.10.2014	31.12.2014	10.5
		3.2	Establishment of an IMO with clear missions and lines of authority	Lead: DEA, DoT; international oil spill organisation Support: DAFF/DMR/DEA/OPASA/SANNCOB/IOCs/SAOGA/NGOs etc.	01.01.2015	30.06.2015	26.5

B ENVIRONMENT

3-ft. plan: Initiative B1 – Joint industry-government emergency response drills (2/3)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
		3.3	Identify terms of reference for the development of a plan which includes <ul style="list-style-type: none"> Geographic and physical locations covered by the plan Who/what does the plan have jurisdiction over Types of emissions or spills which the plan is designed to address List of organisations or groups having responsibility under the plan 	Lead: IMO Support: DAFF/DoT DMR/ DEA/ OPASA/SANNCOB/ IOCs/ SAOGA/NGOs etc.	01.07.2015	11.09.2015	11
		3.4	Integrating and ensuring compatibility with disaster, fire and/or emergency response plans of local, provincial and national agencies: incident Command System (best practice)	IMO Support: National Disaster Response Command	14.09.2015	15.03.2015	26
4	Pre-emergency planning			Lead: IMO, international Oil Spill Response Teams, DEA	16.03.2015	30.09.2015	28.5
		4.1	Hazard identification: type, risk and possible impact	Lead: IMO, international Oil Spill Response Teams Support: DEA, DoT, SAMSA	16.03.2015	16.04.2015	5
		4.2	Development of a mitigation plan that reduces exposures to the community or the environment should a spill occur (e.g., buffer-zones, fencing, dykes/barriers, transportation corridors).	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA	17.04.2015	13.06.2015	8
		4.3	Identification of risks associated with each hazard including spill mitigation and prevention	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA	15.06.2015	27.06.2017	2
		4.4	Identify all legislation and industry standards that apply to the plan and its operations (possible consideration around a Code of Good Practice in line with IOCs policies)	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA	29.06.2017	10.07.2015	2
		4.5	Clear outline of procedures associated with transition from stages of oil spill response (regional, national, international etc.)	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA, international Oil Spill Response Teams	13.07.2015	14.08.2015	5
		4.6	Identify resources for implementation of the plan <ul style="list-style-type: none"> Sources of local assistance including names and telephone numbers Equipment, personnel, technology, expertise 	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA, international Oil Spill Response Teams	17.08.2015	11.09.2015	4
		4.7	Establish effective emergency communication network and prompt notification of individuals and agencies including external agencies and support bodies as well as a public relations mechanism	Lead: DEA, IMO Support: DoT, IOCs, NGOs, SAMSA, international Oil Spill Response Teams	14.09.2015	30.09.2015	2.5

3-ft plan: Initiative B1 – Joint industry-government emergency response drills (3/3)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
5	Emergency response			A2/A3	01.10.2015	12.12.2015	10.5
		5.1	Response action decision: emergency coding that defines the severity and potential impact of an emergency	Lead: IMO, SAMSA, international Oil Spill Response Support: DEA, DMR, NGOs, SANCOBB	01.10.2015	17.10.2015	2.5
		5.2	Plan activation and response mobilisation e.g., appropriate and continuous assessment of the situation via emergency action checklist	Lead: IMO, SAMSA, international Oil Spill Response Support: DEA, DMR, NGOs, SANCOBB	19.10.2015	30.10.2015	2
		5.3	Response action, mobilisation and clean-up: methods to manage the spill, on/offsite equipment etc.	Lead: IMO, SAMSA, international Oil Spill Response Support: DEA, DMR, NGOs, SANCOBB	02.11.2015	21.11.2015	3
		5.4	Waste management and disposal of contaminants etc.	Lead: IMO, DEA	02.11.2015	21.11.2015	3
		5.5	Site restoration	Lead: IMO, SAMSA, international Oil Spill Response Support: DEA, DMR, NGOs, SANCOBB	02.11.2015	21.11.2015	3
		5.6	Post-Incident evaluation - incident de-brief and evaluation of the effectiveness of the IMO and plan	Lead: IMO	23.11.2015	12.12.2015	3
6	Emergency response training and drills			Lead: IMO, DEA, SAMSA, international Oil Spill Response			
		6.1	Training and developing competency in responding to emergency incidents	Lead: IMO, DEA, international Oil Spill Response, SAMSA	01.01.2016	30.05.2016	6
		6.2	Practice drills to improve proficiency (may be on-site, computer synthesised or desktop)	Lead: IMO, DEA, international Oil Spill Response, SAMSA	01.06.2016	30.06.2017	Ongoing

Initiative B2: Operationalise IOPC Funds

This initiative will contribute to an environment that promotes exploration whilst simultaneously maximising the benefits for South Africa through improved public confidence in South Africa's capacity to respond to significant oil spills and oil spill impacts resulting from a fully operationalised international regime of compensation for damage caused by oil pollution known as the IOPCs

Initiative concept/details/highlights

- i An agreement on the disputed payment arrears is reached between National Treasury, SARS and the IOPC Funds before end of 2014
- ii All remaining structural and systems barriers to a fully operational IOPC Funds (e.g., responsibility declaration, registration requirements Notice) are resolved and addressed before the end of Mar 2015
- iii By Mar 2015, all the structures and systems are in place to ensure that valid claims for compensation for pollution damage caused by oil transported by a tanker that has caused a quantifiable economic loss¹ will be paid by the IOPC Funds

Improved confidence in South Africa's capacity to respond to significant oil spills and oil spill impacts through fully operationalised IOPC Funds

Implementing agency

- National Treasury (NT) in partnership with Department of Transport (DoT)

Key stakeholders identified

- South African Revenue Services (SARS)
- South African Maritime Safety Authority (SAMSA)
- South African Petroleum Industry Association (SAPIA)
- Department of Environmental Affairs (DEA)

Required resources

- Provision for possible payment of disputed arrears of ZAR 50 mn

Implementation timeframe

- Start date: immediate
- End date: before end of Mar 2015

KPIs

- IOPC Funds fully operationalised and the IOPC Funds Risk Indicator moves from high to low risk by end of Mar 2015

Budget: Initiative B2 – Operationalise the IOPC Funds

Total budget , ZAR millions

#	Initiative	2014/15		2015/16		2016/17- 2018/19		Total	
1	Agreement on disputed payment arrears (see note below)	50.54	Govt: 25.54 Non-govt: 25.00	0	Govt: 0 Non-govt: 0	0	Govt: 0 Non-govt: 0	50.54	Govt: 50.54 Non-govt: 0
2	Fully operational IOPC Funds	0	Govt: 0 Non-govt: 0	0.12	Govt: 0.05 Non-govt: 0.07	0.56	Govt: 0.22 Non-govt: 0.33	0.68	Govt: 0.27 Non-govt: 0.41
Total		50.54	Govt: 25.54 Non-govt: 25.00	0.12	Govt: 0.05 Non-govt: 0.07	0.56	Govt: 0.22 Non-govt: 0.33	0.68	Govt: 0.27 Non-govt: 0.41

Note: It must be noted that ZAR 50 mn is only a provision for the possible payment of the disputed arrears and, hence, may not be, in fact, be a cost if negotiations with the IOPC Funds are favourable. A further dispute is about whether industry or government is responsible for these disputed arrears

KPI: Initiative B2 – Operationalise the IOPC Funds

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	The IOPC Funds Risk Indicator (see below)	Dries van Niekerk/ Adv. Jeannine Bednar-Giyose	High Risk	High Risk	Low Risk	Low Risk	Low Risk	Low Risk
IOPC Funds								
B2.1	IOPC Funds Risk Indicator: the risk ("high" = fund will not pay; "medium" = fund may not pay; and "low" = fund likely to pay) that valid claims for compensation for pollution damage caused by oil transported by a tanker that has caused a quantifiable economic loss will be paid by the IOPC Funds	Adv. Jeannine Bednar-Giyose (NT) and Dries van Niekerk (SARS)	High Risk	High Risk	Low Risk	Low Risk	Low Risk	Low Risk

3-ft. plan: Initiative B2 – Operationalise the IOPC Funds

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Agreement on disputed payment arrears			NT, SARS	31.08.2014	15.12.2014	15
		1.1	Build case to support South Africa's position on disputed payment arrears	NT (lead), SARS, SAPIA	31.08.2014	12.10.2014	6
		1.2	Present and argue case to IOPC Funds	NT (lead), SARS	13.10.2014	24.11.2014	6
		1.3	Exchange letters confirming agreement on disputed payment arrears	NT	25.11.2014	15.12.2014	3
2	Fully operational IOPC Funds			NT, SARS, SAPIA, DEA, DoT, SAMSA	01.09.2014	31.03.2015	30
		2.1	Publish IOPC Fund registration requirements in the gazette (if necessary)	NT (lead), SARS	15.01.2015	31.03.2015	11
		2.2	Publish declaration indicating that government, rather than oil importers, will collect and pay the levies directly to the Funds	NT	15.01.2015	31.03.2015	11
		2.3	Conduct IOPC Funds implementation audit and identify any other issue that may prevent the Funds from being fully operational by Mar 2015	NT (lead), SARS, SAPIA, DEA, DoT, SAMSA	01.09.2014	13.10.2014	6
		2.4	Address all the potential implementation barriers identified by the audit, if any	NT (lead), SARS, SAPIA, DEA, DoT, SAMSA	15.01.2015	31.03.2015	11
		2.5	Issue press statement	NT	31.03.2015	31.03.2015	0.1

Initiative B3: Exploiting the broader research opportunities presented by offshore oil and gas exploration

- Offshore oil and gas exploration activities (e.g., seismic surveys) provide a unique and timely opportunity to gather important ecosystem, marine data and ocean-related renewable energy data (e.g., wave, wind, ocean current, temperature and salinity gradients) which would otherwise be difficult and very expensive to obtain
- The primary obstacle/cost factor in collecting such data are the costs associated with vessels
- If exploration operators made their vessels and useful data available to researchers, such research could be facilitated at a much larger scale

Initiative concept/details/highlights:

- i A multi-stakeholder collaborative research project management team (PMT) established and maintained
- ii Bringing the offshore oil and gas community together with the scientific community to undertake a gap analysis ("kick-start workshop")
- iii The development and finalisation of research opportunity exploitation reports, protocols, norms, standards and standard operating procedures as well as associated agreements
- iv Fully and actively exploit the broader research opportunities presented by offshore oil and gas exploration
- v Data is efficiently and effectively archived, used and made broadly available by the marine living natural resources, marine environment and ocean-related renewable energy research communities

South Africa's knowledge of its marine living natural resources, marine environment and ocean-related renewable energy resources is greatly enhanced through collaborative research with oil and gas exploration activities

Implementing agency

- Parties to the data gathering and management agreements, e.g., DST and OPASA

Key stakeholders identified:

- IOCs, OPASA
- DST, DEA, DMR, DOE
- NRF, CSIR, SANEDI, SANBI, PASA
- WWF
- Stellenbosch University etc.

Required resources

- Parties to the data gathering and management agreements pay for their own costs

Implementation time frame

- Start date: immediate
- End date: ongoing

KPIs

- Data gathering and data management agreements signed by Jan 2016

B ENVIRONMENT

Budget: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration

Total budget, ZAR millions

#	Initiative	2014/15		2015/16		2016/17-2018/19		Total	
1	High-profile project launch and the signing of data gathering and data management agreements	0.26	Govt: 0.26 Non-govt: 0	1.22	Govt: 1.05 Non-govt: 0	0	Govt: 0 Non-govt: 0	1.58	Govt: 1.58 Non-govt: 0
2	Maximised exploitation of the broader research opportunities presented by offshore oil and gas exploration	5.00	Govt: 5 Non-govt: 0	11.58	Govt: 11.58 Non-govt: 0	0	Govt: 0 Non-govt: 0	16.58	Govt: 16.58 Non-govt: 0
Total		5.26	Govt: 5.26 Non-govt: 0	12.80	Govt: 12.80 Non-govt: 0	0	Govt: 0 Non-govt: 0	18.16	Govt: 18.16 Non-govt: 0

KPI: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	Marine Knowledge Dissemination Indicator: the percentage of published scientific ocean-related research using data gathered in accordance with oil and gas exploration collaborative research agreements	Dr. Thomas Auf de Hyde, DDG: DST	0%	0%	0%	5%	25%	40%
Initiative B3: Exploit broader research opportunities presented by offshore oil and gas exploration								
B3.1	Collaborative Research Indicator: the percentage of oil and gas exploration voyages undertaken within the reporting period collecting atypical data in accordance with collaborative research agreements	Viljoen Storm, Head Data Management Services, PASA	0%	0%	10%	50%	75%	80%
B3.2	Ocean-Related Renewable Energy Knowledge Dissemination Indicator: the percentage of published scientific ocean-related renewable energy papers using data gathered in accordance with oil and gas exploration collaborative research agreements	Dr. Thembakazi Mali, Senior Manager: Clean Energy Solutions (E-mail: thembakazim@sanedi.org.za; Tel. +27 (0)10 201 4782; Cell. +27 (0)82 326 9501)	0%	0%	0%	10%	50%	75%
B3.3	Marine Environment Knowledge Dissemination Indicator: the percentage of published scientific marine environment, ecology and/or climate change impact-related papers using data gathered in accordance with oil and gas exploration collaborative research agreements	Dr. Kerry Sink, Head Marine Biodiversity Research, SANBI	0%	0%	0%	10%	50%	75%

3-ft. plan: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration (1/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Project design			DEA (O&C) (lead), DST, SANBI, SANEDI Task Team	20.08.2014	08.10.2014	7
		1.1	Any necessary approvals and/or endorsements required post-Phakisa	Post-Lab Implementation Team	20.08.2014	02.09.2014	2
		1.2	Compile standard project ToR and tender documentation	DEA (SEI Unit)	03.09.2014	16.09.2014	2
		1.3	Submit for DG approval to tender	DEA (SEI Unit)	17.09.2014	07.10.2014	3
		1.4	DG approval to tender	DEA DG	08.10.2014	08.10.2014	0
2	Tender process and contracting			DEA (O&C)	23.10.2014	25.02.2015	18
		2.1	Advertise tender	DEA (O&C)	23.10.2014	29.10.2014	1
		2.2	Tenderers compile bids	Tenderers	30.10.2014	26.11.2014	4
		2.3	Bids evaluated	Task Team (lead), DST, DEA (O&C), SANBI, SANEDI	27.11.2014	17.12.2014	3
		2.4	Preferred bidder presented to DAC	DEA (O&C) (lead), DEA DAC	18.12.2014	14.01.2015	4
		2.5	SLA drafted and negotiations with bidder	DEA (O&C)	15.01.2015	28.01.2015	2
		2.6	Legal services vetting	DEA LS	29.01.2015	18.02.2015	3
		2.7	SLA signed with successful tenderer	DEA (lead), service provider	19.02.2015	25.02.2015	1
3	Stakeholder analyses and database			DST	20.08.2014	24.03.2015	31
		3.1	Contact identified stakeholders and request contacts for others	DST	20.08.2014	26.08.2014	1
		3.2	Stakeholders respond	DST	27.08.2014	09.09.2014	2
		3.3	Follow-up contact	DST	10.09.2014	16.09.2014	1
		3.4	Stakeholders respond	DST	17.09.2014	30.09.2014	2
		3.5	Finalise and maintain stakeholder database	DST	01.10.2014	07.10.2014	1
		3.6	Maintain stakeholder database	DST	08.10.2014	24.03.2015	24

B ENVIRONMENT

3-ft. plan: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration (2/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
4	Establish and maintain multi-stakeholder project management team (PMT)			DST	20.08.2014	07.01.2016	72
		4.1	Invite key stakeholders to nominate participants for 8 (max) PMT members	DST	20.08.2014	26.08.2014	1
		4.2	Confirm PMT membership	DST	27.08.2014	16.09.2014	3
		4.3	Compile draft PMT ToR	Post-Lab Implementation Team	23.07.2014	29.07.2014	1
		4.4	Invite nominees to an inaugural PMT meeting	DST	17.09.2014	23.09.2014	1
		4.5	Host inaugural PMT meeting	DST	22.10.2014	22.10.2014	0.1
		4.6	2nd PMT meeting	DST	01.06.2015	01.06.2015	0.1
		4.7	3rd PMT meeting	DST	07.01.2016	07.01.2016	0.1
5	Kick-start workshop – research gap analysis			DST (lead), DEA (O&C), SANBI, SANEDI Task Team, PMT	30.07.2014	20.03.2015	33
		5.1	Compile initial workshop objective and programme	DST (lead) and PMT	30.07.2014	05.08.2014	1
		5.2	Discuss draft at PMT meeting	PMT	22.10.2014	22.10.2014	0.1
		5.3	Circulate revised draft to stakeholders with comment request	DST	23.10.2014	29.10.2014	1
		5.4	Revise workshop objective and programme	DST (lead) and PMT	20.11.2014	26.11.2014	1
		5.5	Organise venue and logistics	DST	02.02.2015	16.02.2015	2
		5.6	Issue workshop invitations	DST	16.02.2015	27.02.2015	2
		5.7	Finalise workshop programme and presentations	DST (lead) and PMT	26.02.2015	19.03.2015	3
		5.8	Host kick-start workshop	DST (lead) and PMT	19.03.2015	20.03.2015	0.1
6	Research catalogue and gap analysis (RC&GA) report			DST	23.03.2015	08.06.2015	11
		6.1	Compile kick-start workshop report	Service provider	23.03.2015	03.04.2015	2
		6.2	Conduct all necessary follow-up research and interviews	Service provider	06.04.2015	15.05.2015	6
		6.3	Compile initial research catalogue and gap analysis report	Service provider	18.05.2015	29.05.2015	2

3-ft. plan: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration (3/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
		6.4	Present report to PMT	Service provider	01.06.2015	01.06.2015	0.1
		6.5	Edit report	Service provider	02.06.2015	08.06.2015	1
7	Research Opportunity Exploitation (ROE) reports and agreements – climate change and biological resources sector			DST (lead), Service provider, DEA (O&C), SANBI	09.06.2015	01.10.2015	16
		7.1	Organise sector workshop venue and logistics	Service provider	09.06.2015	16.06.2015	1
		7.2	Issue invitations and circulate draft RC&GA report	Service provider	16.06.2015	22.06.2015	1
		7.3	Finalise workshop programme and presentations	PMT (lead) and service provider	14.07.2015	28.07.2015	2
		7.4	Host climate change and biological resources sector workshop	PMT	28.07.2015	29.07.2015	0.1
		7.5	Compile the climate change and biological components of the ROE report	Service provider	30.07.2015	26.08.2015	4
		7.6	Circulate to sector for comment	Service provider	27.08.2015	23.09.2015	4
		7.7	Finalise draft	Service provider	24.09.2015	30.09.2015	1
		7.8	Present draft to PMT	Service provider	01.10.2015	01.10.2015	0.1
8	Research Opportunity Exploitation (ROE) reports and agreements – ocean-related renewable energy sector			DST	09.06.2015	01.10.2015	16
		8.1	Organise sector workshop venue and logistics	Service provider	09.06.2015	16.06.2015	1
		8.2	Issue invitations and circulate draft RC&GA report	Service provider	16.06.2015	22.06.2015	1
		8.3	Finalise workshop programme and presentations	PMT (lead) and service provider	14.07.2015	28.07.2015	2
		8.4	Host ocean-related renewable energy sector workshop	PMT	28.07.2015	29.07.2015	0.1
		8.5	Compile the renewable energy components of the ROE report	Service provider	30.07.2015	26.08.2015	4
		8.6	Circulate to sector for comment	Service provider	27.08.2015	23.09.2015	4
		8.7	Finalise draft	Service provider	24.09.2015	30.09.2015	1
		8.8	Present draft to PMT	Service provider	01.10.2015	01.10.2015	0.1

3-ft. plan: Initiative B3 – Exploit broader research opportunities presented by offshore oil and gas exploration (4/4)

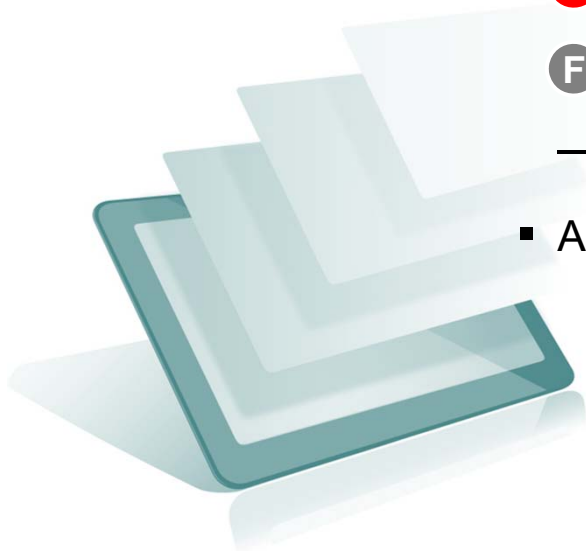
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
9	Data management structures and systems agreement			DST	20.08.2015	28.01.2016	23
		9.1	Confirm data custodians and users	Service provider	20.08.2015	30.09.2015	6
		9.2	Compile data management norms, standards and SOPs	Service provider	20.08.2015	30.09.2015	6
		9.3	Draft data management agreement between all key parties	Service provider	01.10.2015	11.11.2015	6
		9.4	Circulate draft agreement and annexures to parties for comment	Service provider	12.11.2015	18.11.2015	1
		9.5	Parties comment on agreement	Data custodians and users	19.11.2015	23.12.2015	5
		9.6	Edit draft agreement	Service provider	24.12.2015	06.01.2016	2
		9.7	Present draft to PMT	Service provider	07.01.2016	07.01.2016	0.1
		9.8	Finalise agreement negotiations with all parties	Service provider	08.01.2016	28.01.2016	3
10	Data gathering agreements			DST	06.08.2015	28.01.2016	25
		10.1	Confirm data gathering partners	Service provider	06.08.2015	01.10.2015	8
		10.2	Compile data gathering norms, standards and SOPs	Service provider	01.10.2015	28.10.2015	4
		10.3	Draft data gathering agreement between all key parties	Service provider	15.10.2015	11.11.2015	4
		10.4	Circulate draft agreement and annexures to parties for comment	Service provider	12.11.2015	18.11.2015	1
		10.5	Parties comment on agreement	IOCs, DST, DEA (O&C), SANBI, SANEDI	19.11.2015	23.12.2015	5
		10.6	Edit draft agreement	Service provider	24.12.2015	06.01.2016	2
		10.7	Present draft to PMT	Service provider	07.01.2016	07.01.2016	0.1
		10.8	Finalise agreement negotiations with all parties	Service provider	08.01.2016	28.01.2016	3
11	Project completion and launch			PMT	02.10.2015	29.01.2016	17
		11.1	Compile detailed project report	PMT (lead) and service provider	02.10.2015	29.10.2015	4
		11.2	Compile executive summary and outreach material	PMT (lead) and service provider	30.10.2015	12.11.2015	2
		11.3	Create project Web site and populate	PMT (lead) and service provider	16.10.2015	12.11.2015	4
		11.4	Organise launch and agreement signing ceremony	PMT (lead) and Service provider	20.11.2015	29.01.2016	10
		11.5	Launch and agreement signing ceremony	All interested and affected parties	29.01.2016	29.01.2016	0.1

The 3 environment initiatives are all relatively low risk

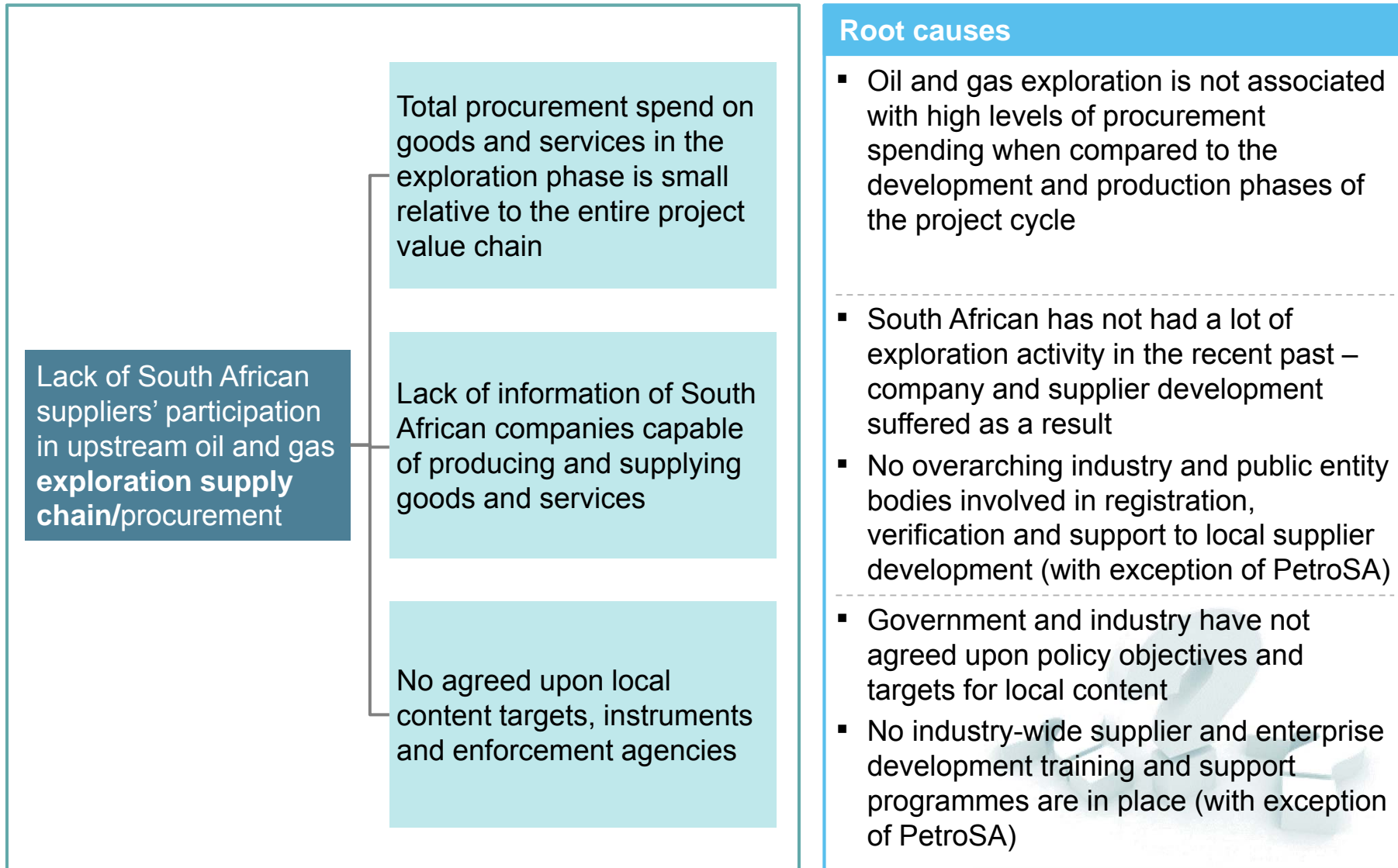
Initiative	Assumption	Risk	Mitigation Measure
Initiative B1: Joint industry-government emergency response drills	That government and industry are willing to work together as partners	Low – both parties have expressed unreserved interest in joint drills	None, although the inclusion of joint response drills could be included in license conditions in the unlikely event that the assumption is not met
	That parties are willing to contribute human, technological and financial resources to joint drills	Low – both parties are already carrying out independent drills	
Initiative B2: Operationalise IOPC fund	That agreement on the disputed payment arrears can be resolved speedily	Medium – the dispute is a relatively complex legal issue	The amount of the disputed arrears has been provided for in the budget
Initiative B3: Exploit the Broader Research Opportunities Presented by Offshore Oil And Gas Exploration	That oil and gas companies will welcome non-oil and gas researchers onto their exploration vessels	Low – the industry is keen on supporting research, especially research that could be considered to be a positive climate change response	None, although the inclusion of collaborative research could be included in license conditions in the unlikely event that the assumption is not met
	The research community fully exploits the non-oil and gas data gathering opportunities presented by oil and gas exploration voyages	Low – the cost of ocean-going vessels is prohibitive to large-scale research activities and, hence, free passage on these voyages are likely to be in high demand	None, although a ZAR 16.5 mn budget provision has been made to purchase additional data gathering technology as a further incentive to researchers

Contents

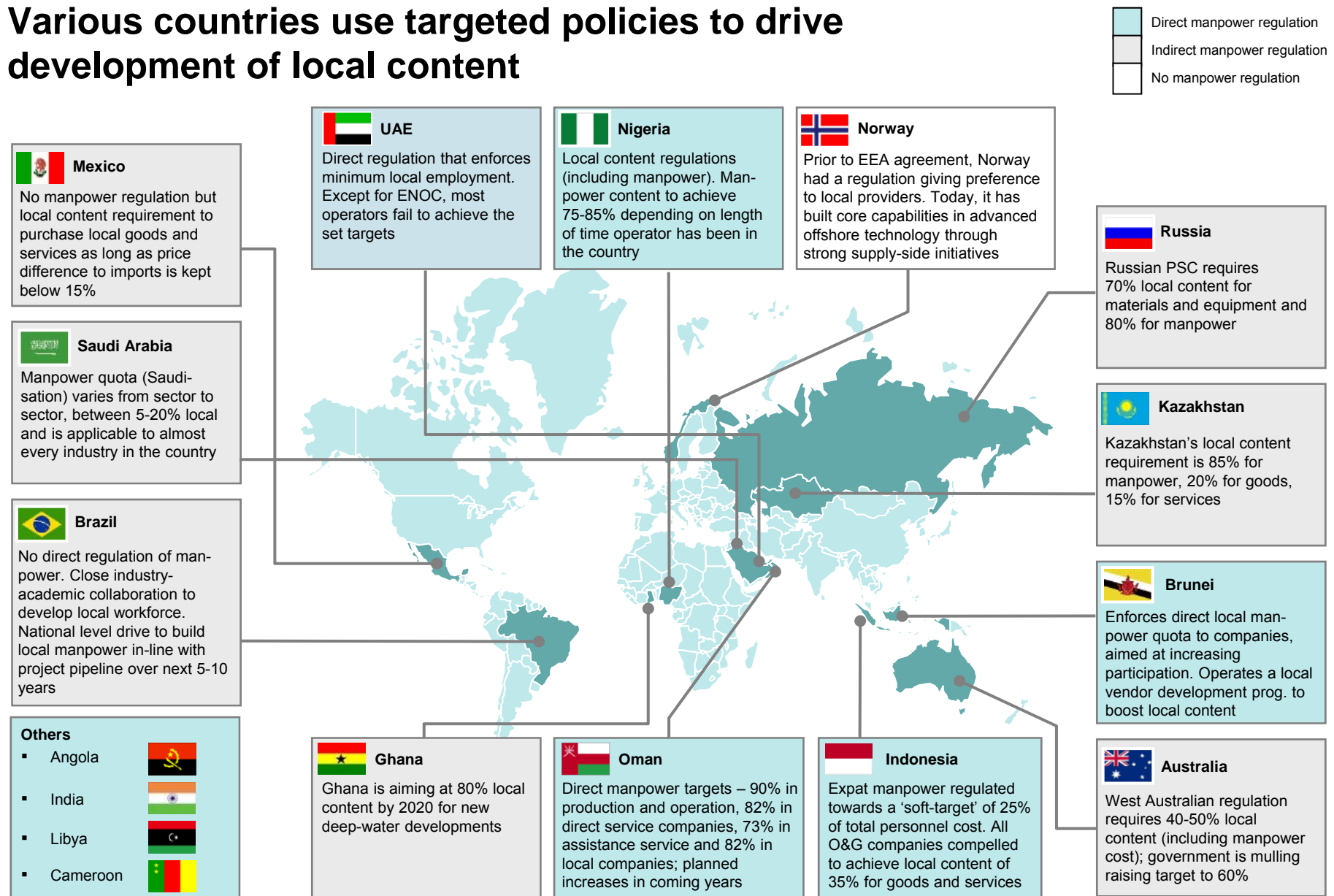
- Executive summary
- **Detailed solution implementation plans**
 - Ⓐ Infrastructure
 - Ⓑ Environment
 - Ⓒ **Localisation of supply chain**
 - Ⓓ Capability development
 - Ⓔ Institutions
 - Ⓕ Legislative
 - Governance structure
- Appendices



The localisation of the supply chain initiative reflects lab aspirations for broader South African benefit from oil and gas



Various countries use targeted policies to drive development of local content



SOURCE: Literature review; interviews; team analysis

Most local content opportunities accrue in production phase; exploration phase opportunities are limited to capacity building and support services

Operators (Tier 1)					Support services
All types of exploration, development and production companies; integrated majors, large and small independents, energy utility companies, non-operating companies, exploration companies					Opportunity for local value add capability in the Exploration stage
Tier 2: Main contractors and consultancies	Reservoirs	Wells	Facilities	Marine and subsea	Catering/facilities management Sea/air transport Warehouse/logistics Communications Recruitment Training Health, safety and environmental services Medical services Banking/finance Legal Insurance Accountancy Energy consultancies
	Opportunity for South African technical expertise participation/ capacity building from exploration phase	International services	Opportunity to build South African capacity to support these activities from development	International services	
Tier 3: Products and services suppliers, components subcontractors and sub-suppliers	Reservoir engineering/ management consultancies Seismic data acquisition and processing contractors	Wells services contractors Drilling contractors Well engineering consultancies Cement contractors	Engineering, operation, maintenance and decommissioning contractors Engineering consultancies Structure and top-sides design and fabrication	Marine/subsea contractors Heavy lift contractors Pipelay contractors Floating production storage units	
	Geoscience consultancies Data interpretation consultancies Seismic instrumentation Data storage IT hardware/software	Drilling and well equipment design and manufacture Drilling tubulars Laboratory services	Machinery/plant design and manufacture Engineering support contractors Specialist engineering services Inspection services Specialist steels and tubulars	Subsea manifold/riser design and manufacture Marine/subsea equipment Subsea inspection services	

Initiative C1: Develop upstream oil and gas local content roadmap

The development of local value add capabilities to maximise South Africa's benefit through **increased** use of local industries to support offshore oil and gas activities

Initiative concept/details/highlights

- i Detailed understanding and classification of goods and services opportunities in exploration value chain
- ii Propose measures to promote and stimulate local capabilities in the value chain
- iii Assess the potential of designating a local content procurement threshold for parts of the value chain
- iv Ensuring development of local industry capability through dedicated technological and intellectual property transfer

- South Africa aspires to maximise its benefits through local content. Despite the limited opportunities, its critical to maximise participation in value-add activities such as
 - Assembly (e.g., equipment assembly for upstream exploration – cementation, compressors, generators)
 - Professional services (technical geologists, petroleum engineers, environmental specialists)
 - Maintenance (equipment, machinery, rigs, ships)
 - Support vessels (utilities, food)

Implementing agency:

- DTI
- DFI's
- Industry & industry associations

Key stakeholders identified:

- Companies, industry associations, public entities and government departments
- DTI, DPE, DMR, DoE, National Treasury, Development Finance Institutions, EDD
- SASDC, SAGOA, OPASA

Required resources

- Public/pvt sector goodwill/collaboration

Implementation time frame

- Start date: immediate
- End date: Aug 2016

KPIs

- Minimum local participation in proportion to total value chain spend defined
- Establish enterprise and supplier training and development instruments and mechanism
- Promoting equity through socio-economic transformation across coastal provinces and localities

Budget: Initiative C1 – Develop upstream oil and gas local content roadmap

Total budget, ZAR millions

#	Initiative	2014/15	2015/16	2016/17- 2018/19	Total
1	Conduct financial analysis (baseline) of South African offshore oil and gas sector procurement	Govt: 1 Non-govt: 0	0	Govt: 0 Non-govt: 0	1
2	Set targets for minimum local production and supply in proportion to total domestic upstream oil and gas value chain spend	Govt: Non-govt: 0	0	Govt: 0 Non-govt: 0	0
3	Establish national enterprise and supplier development and training programme for upstream oil and gas	Govt: 22 Non-govt: 0	23.68	Govt: 23.68 Non-govt: 0	52.9
Total		Govt: 23 Non-govt: 0	23.68	Govt: 23.68 Non-govt: 0	52.9
					Govt: 52.9 Non-govt: 0
					99.58
					Govt: 99.58 Non-govt: 0

Note: the amounts above reflect additional budget required

KPI: Initiative C1 – Develop upstream oil and gas local content roadmap

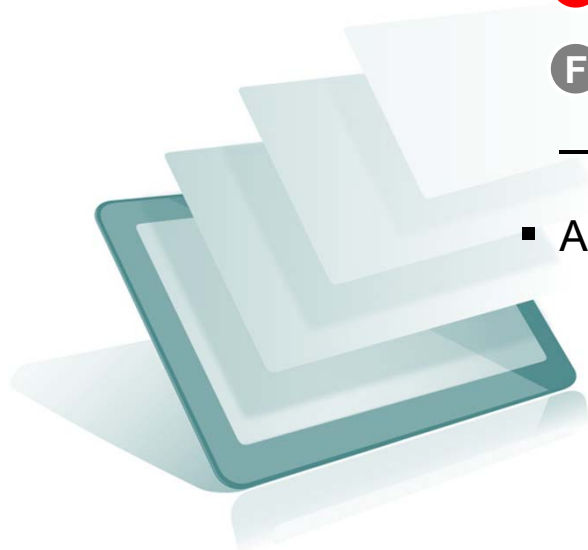
#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	Increase the number of small and medium enterprises that have access to training and development programmes	Garth Strachan, Deputy Director General	National industry-wide competitive supplier development programme not in place	TBD	TBD	TBD	TBD	TBD
Initiative C1: Develop upstream oil & gas local content roadmap								
1	Conduct financial analysis (baseline) of South African offshore oil and gas sector procurement	Garth Strachan, Deputy Director General	n/a	Commence with study: Aug 2014	Complete study: Jul 2015	Continuous updating	Continuous updating	Continuous updating
2	Set targets for minimum local production and supply in proportion to total domestic upstream oil and gas value Chain spend	Garth Strachan, Deputy Director General	PetroSA as the only state-owned company active in the upstream oil and gas sector has a procurement policy that takes into account broad-based black economic empowerment and fair and objective procurement processes ,aimed at addressing the imbalance for historically disadvantaged persons. National industry-wide local content targets not in place	Convene multi-stakeholder forums to assess and agree upon targets for local content. Also, stakeholders set objectives for socio-economic targets and measures to assess impact	Convene multi-stakeholder forums to assess and agree upon targets for local content. Also, stakeholders set objectives for socio-economic targets and measures to assess impact	Complete agreement on local content roadmap with all stakeholders by December 2016. Framework set in place for reporting, monitoring and evaluation	Continuous updating and impact assessment	Continuous updating and impact assessment
3	Establish national enterprise and supplier development and training programmes for upstream oil and gas	Garth Strachan, Deputy Director General	PetroSA has a well defined supplier development programme with targets that are evaluated and reviewed annually. National industry-wide competitive supplier development programme not in place	Establish criteria for supplier development	Establish supplier registration and certification mechanism	Put in place agreement and mechanisms with companies, industry associations, public entities and government departments on establishing training and development initiatives, programmes and facilities for supplier development	Increase the number of small and medium enterprises that have access to training and development programmes	Increase the number of small and medium enterprises that have access to training and development programmes

3-ft. plan: Initiative C1 – Develop upstream oil and gas local content roadmap

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Conduct financial analysis (baseline) of South African offshore oil and gas sector procurement						
		1.1	Determine product and service categories and spend (values)	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.08.2014	01.08.2015	52
		1.2	Compile suppliers' database	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.08.2014	01.08.2015	52
		1.3	Classify procurement (with measurement and standards criteria) in terms of domestic vs foreign value addition in final goods and services	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.08.2014	01.08.2015	52
2	Set targets for minimum local production and supply in proportion to total domestic upstream oil and gas value chain spend						
		2.1	Put in place agreement with companies, industry associations, public entities and government departments on targets	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52
		2.2	Put in place agreement on standards and measurement criteria	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52
		2.3	Put in place monitoring, reporting and evaluation system	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52
3	Establish national enterprise and supplier development and training programme for upstream oil and gas						
		3.1	Establish criteria for supplier development	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52
		3.2	Establish supplier registration and certification mechanism	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52
		3.3	Put in place agreement with companies, industry associations, public entities and government departments on establishing training and development initiatives, programmes and facilities for suppliers	EDD (lead), DTI, SASDC, SAOGA, OPASA	01.09.2015	01.08.2016	52

Contents

- Executive summary
- **Detailed solution implementation plans**
 - Ⓐ Infrastructure
 - Ⓑ Environment
 - Ⓒ Localisation of supply chain
 - Ⓓ Capability development**
 - Ⓔ Institutions
 - Ⓕ Legislative
 - Governance structure
- Appendices



D CAPABILITY DEVELOPMENT

The capability development initiatives reflect lab concerns about the root causes of local skills or lack thereof

Lack of suitably qualified and locally developed skills for the oil and gas industry

Local institutional frameworks not structured to provide the required skills

Root causes

- South African geosciences training focuses on skills for the mining sector
- The oil and gas industry is at a nascent stage of development
- No local curriculum offered for specialization in the oil and gas industry



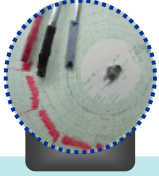
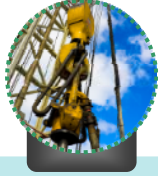
D CAPABILITY DEVELOPMENT

In order to derive the benefit of developing and utilising local skills for the offshore oil and gas industry, several questions need to be addressed



D CAPABILITY DEVELOPMENT

An integrated overview needs to be developed that captures the skills needed in the different phases

	 Exploration and appraisal	 Development
Adequate skills base in South Africa today	Needed in exploration <ul style="list-style-type: none"> ▪ Roustabout ▪ Roughneck ▪ Caterers ▪ Security ▪ Logistics (e.g., helicopter pilots) ▪ Medical ▪ Health and Safety 	Needed in development <ul style="list-style-type: none"> ▪ Same as exploration ▪ Logistics professionals ▪ Technicians
Inadequate skills base in South Africa today	<ul style="list-style-type: none"> ▪ Derrick men ▪ Reservoir engineers ▪ GeoScientists (geologists etc.) ▪ Seismic data analysts ▪ Drill workers ▪ Tool pushers ▪ Cementing ▪ Well engineers ▪ Divers (ROV) 	<ul style="list-style-type: none"> ▪ Similar to exploration, <i>however, more permanent skills will be required for the following:</i> ▪ Mechanical engineers ▪ Electrical engineers ▪ Production engineers ▪ Environmental engineers

A champion organization needs to drive the development of local skills for the offshore oil and gas industry

Steps to develop local skills

1. **Form a working group** (government, Industry and Tertiary Institutions) to **develop the skills strategy roadmap** for the Industry and Governance based on the activities related to offshore oil and gas project life cycle.
 - 1.1 The skills strategy roadmap must include the **mechanism for knowledge generation**. This can be through University Chairs, Centres of Excellence and Centres of Competencies.
 - 1.2 The skills strategy roadmap must identify the **professional associations** (e.g. Society of Petroleum Engineers SPE) to drive knowledge and skills exchange.
2. Develop the **pathway for vocational technological and engineering skills** for the oil and gas industry.

A champion organization is required

- To form the working group that will develop the skills strategy roadmap
- **To own and implement the strategies as detailed in the skills strategy roadmap**
- To ensure that the Institutes of Higher Learning have the capabilities and capacities to develop the required skills

Initiative D1: Develop skills strategy roadmap

There is a global shortage of technical skills in the offshore oil and gas industry. The aim of the skills strategy roadmap is to identify the skills required in the industry over a certain time period and propose strategies for implementation to ensure that sufficient local skills are employable in the industry

Initiative concept/details/highlights

1. Form a working group (government and industry) to develop the skills strategy roadmap for the Industry and governance based on the activities related to the offshore oil and gas project life cycle
 - 1.1 The skills strategy roadmap must include the **mechanism for knowledge generation and human capacity building**. This can be through university chairs, centre's of excellence, centre's of competencies and joint post-graduate programmes in collaboration with local universities.
 - 1.2 The skills strategy roadmap must identify the **professional associations** (e.g. Society of Petroleum Engineers SPE) to drive knowledge and skills exchange.
2. Develop the pathway for vocational technological and sub-surface engineering (petroleum geologists and petroleum engineering) skills for the oil and gas industry

Establishment of a sustainable institutional framework for the development of locally based technical and governance skills for the oil and gas industry

Implementing agency

- HRC/DST/DHET (to lead)

Key stakeholders identified

- DHET/DTI/CHIETA/DST/FET's
- SPE/ECSA/SAOGA/CGSA/universities

Required resources

- ZR 1 mn for the development of a skills and human capacity strategy roadmap

Implementation time frame

- Start date: 1 Sep 2014
- End date: Aug 2019

KPIs

- Appointment of university and development chair
- Formation of working group
- Skills and human capacity strategy roadmap document

D CAPABILITY DEVELOPMENT

Budget: Initiative D1 – Develop skills strategy roadmap

ZAR millions

#	Initiative	2014/15		2015/16		2016/17- 2018/19		Total	
1	Form a working group (government and industry) to identify the skills required for the offshore oil and gas industry and for governance	0.60	Govt: 0.30	0.64	Govt: 0.32	2.24	Govt: 1.12	3.50	Govt: 1.75
			Non-govt: 0.30		Non-govt: 0.32		Non-govt: 1.12		Non-govt: 1.75
2	Develop the skills strategy roadmap for the industry and governance based on the activities related to offshore oil and gas project life cycle	0.10	Govt: 0.10	0	Govt: 0	0	Govt: 0	0.10	Govt: 0.10
			Non-govt: 0		Non-govt: 0		Non-govt: 0		Non-govt: 0
3	Appointment of university chair (and development chair) for the oil and gas industry	1.00	Govt: 0.50	2.0	Govt: 1.0	7.50	Govt: 3.75	10.50	Govt: 5.25
			Non-govt: 0.50		Non-govt: 1.0		Non-govt: 3.75		Non-govt: 5.25
4	Implement the Centres of Excellence and Centres of Competencies to support the oil and gas industry. These centres must develop and grow the vocational technological, sub-surface engineering and governance skills for the oil and gas industry	0	Govt: 0	1.00	Govt: 0.50	3.74	Govt: 1.87	4.74	Govt: 2.37
			Non-govt: 0		Non-govt: 0.50		Non-govt: 1.87		Non-govt: 2.37
5	Launch chapters of professional associations (e.g., Society of Petroleum Engineers SPE) to drive knowledge and skills exchange	0	Govt: 0	0	Govt: 0	1.26	Govt: 0	1.26	Govt: 0
			Non-govt: 0		Non-govt: 0		Non-govt: 1.26		Non-govt: 1.26
6	Establish Vocational training centres for artisan-type skills related to local drilling, construction, production and maintenance, who are trained and assessed to international standards	0	Govt: 0	9.0	Govt: 9.0	33.71	Govt: 33.71	42.71	Govt: 42.71
			Non-govt: 0		Non-govt: 0		Non-govt: 0		Non-govt: 0
Total		1.70	Govt: 0.9	12.64	Govt: 10.82	48.45	Govt: 40.45	62.79	Govt: 52.18
			Non-govt: 0.8		Non-govt: 1.82		Non-govt: 8		Non-govt: 10.61

D CAPABILITY DEVELOPMENT

Initiative D1: Develop skills strategy roadmap

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	Skills and human capacity strategy roadmap report	Dr. F Prinsloo	0	1	0	0	0	0
2	Appointment of university and development chairs	Dr. F Prinsloo	0	2	2	2	2	2
3	Number of seminars, conferences and workshops	Dr. F Prinsloo	0	1	2	3	4	4
4	Number of undergraduate students studying Petroleum GeoSciences	Dr. F Prinsloo	90	200	300	350	400	450
5	Number of petroleum geosciences graduate engineers	Dr. F Prinsloo	70	180	280	320	380	430
6	Number of petroleum geosciences engineers studying a masters degree	Dr. F Prinsloo	10	50	70	90	110	130
7	Number of petroleum geosciences masters graduates	Dr. F Prinsloo	5	25	35	45	55	65
8	Number of petroleum engineers studying a doctorate degree	Dr. F Prinsloo	2	5	7	10	12	15
9	Number of petroleum geosciences doctoral graduates	Dr. F Prinsloo	1	4	6	9	11	14

D CAPABILITY DEVELOPMENT

3-ft. plan: Initiative D1 – Develop skills strategy roadmap (1/2)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
1	Formation of a working group			HRC/DHET			
		1.1	Identify suitable candidates from government and industry to form the working group	DHET	30.10.2014	30.10.2014	1
		1.2	Set date, venue and agenda for inaugural working group meeting and invite the selected candidates	DHET	30.10.2014	07.11.2014	1
		1.3	Chairperson of the working group to be appointed	DHET	07.11.2014	31.12.2014	7
		1.4	Terms of reference and mandate of the working group to be finalised and communicated to the relevant stakeholders	DHET	07.11.2014	31.12.2014	7
2	Develop a skills strategy roadmap			HRC/DHET			
		2.1	Identify the skills required for the industry	Working group	05.01.2015	31.01.2015	4
		2.2	Determine the current skills (local) that can be supplied to the industry	Working group	05.01.2015	31.01.2015	4
		2.3	Develop a plan to provide the skills (local) for the industry	Working group	05.01.2015	31.01.2015	4
		2.3	Establish the mechanism for knowledge generation	Working group	05.01.2015	31.01.2014	4
		2.4	Identify the professional associations	Working group	05.01.2015	31.01.2015	4
		2.5	Produce the skills strategy document	Working group	05.01.2015	31.01.2015	4
3	Appointment of university and development chairs			HRC/DHET/DST			
		3.1	Short-list candidates for appointment as university chair and development chair	DHET	05.01.2015	31.01.2015	4
		3.2	Interview short-listed candidates	DHET	05.01.2015	31.01.2015	4
		3.3	Appoint preferred candidates and communicate to stakeholders role and responsibilities	DHET	05.01.2015	31.01.2015	4
4	Implement Centres of Excellence and Centres of Competencies			DST/DHET			
		4.1	Identify existing institutions that can form the centres	DHET	05.01.2015	31.01.2015	4
		4.2	Operationalise the centers	DHET	05.01.2015	31.01.2015	4

D CAPABILITY DEVELOPMENT

3-ft. plan: Initiative D1 – Develop skills strategy roadmap (2/2)

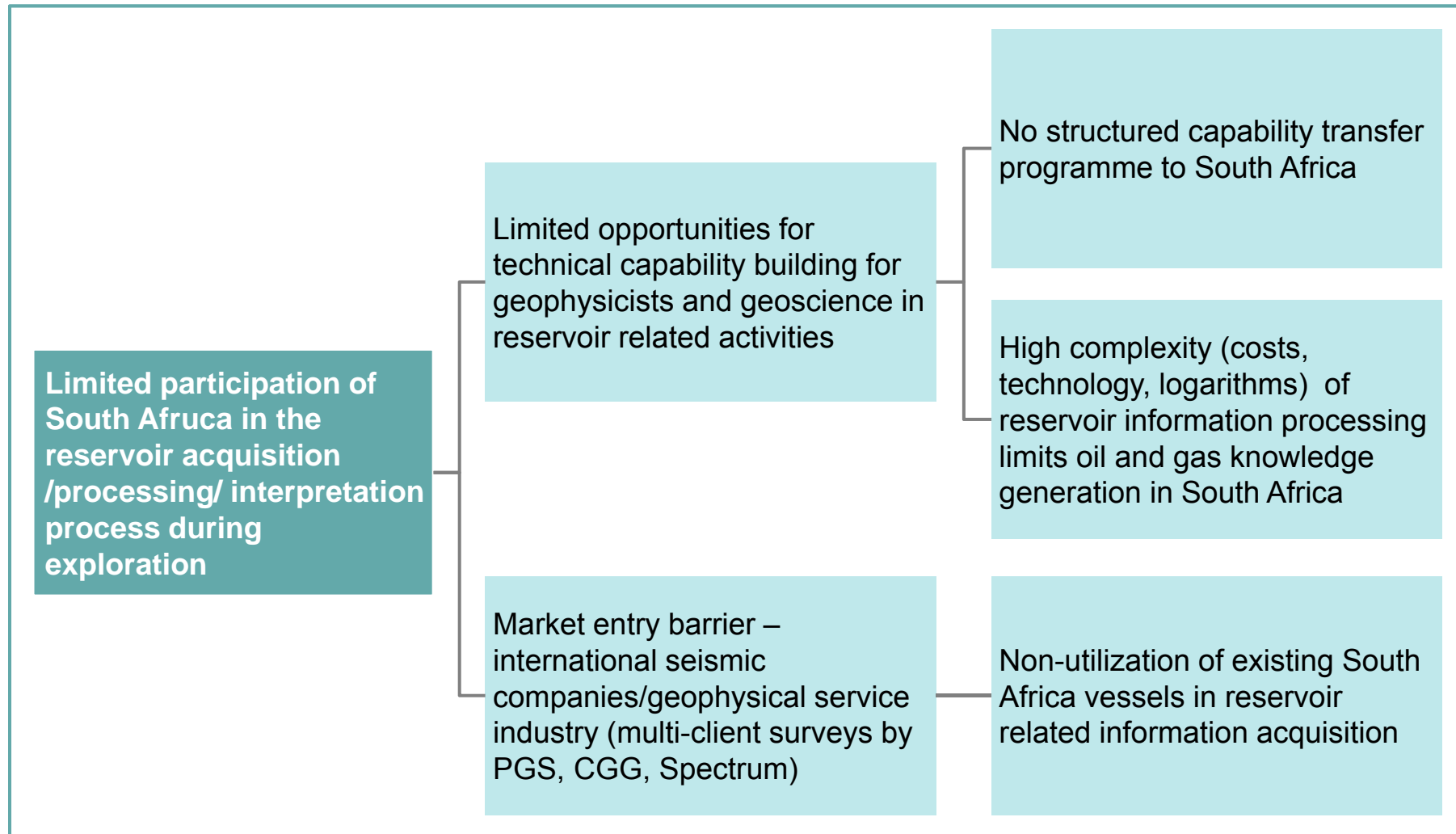
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
5	Launch chapters of professional associations			Universities			
		5.1	Host seminars, conferences and workshops	Universities	02.02.2015	31.12.2020	270
6	Establish vocational training centres for scarce and critical skills			DHET/DoL/CHIETA			
		6.1	Determine the skills that need to be developed for the industry	DHET	05.01.2015	31.01.2015	4
		6.2	Operationalise and commission training centres to provide the training	DHET	01.02.2015	31.12.2015	44

Risks to the capability/skills development initiative can be mitigated

Initiative	Assumption	Risk	Mitigation measure
Initiative D1: Develop a skills strategy roadmap	That government and industry are willing to work together as partners	High – terms and conditions are not acceptable for foreign investment in developing local skills	The information regarding skills is available in the public domain which can be used to develop a skills strategy roadmap
	That parties are willing to contribute human, technological and financial resources to support local skills development		
	The institutions of higher learning will have the required resources (equipment and teaching skills) for effective knowledge and skills transfer	High – insufficient resources at these institutions to <ul style="list-style-type: none"> • Attract suitably qualified skills for knowledge transfer through research mentorship and teaching • Attract previously HDSA especially women that can be used to leverage grants and subsidies to support the infrastructure development • Procure the necessary test and measurement equipment to enhance learning 	Promote the awareness of the offshore oil and gas industry

D CAPABILITY DEVELOPMENT

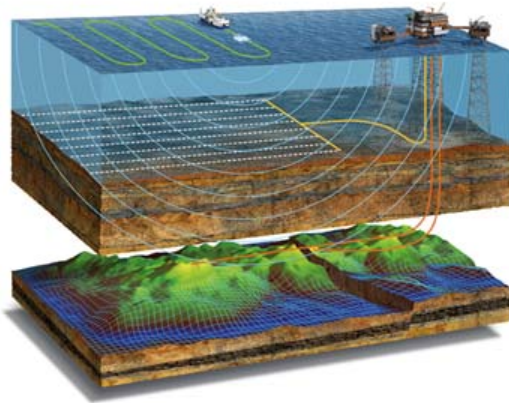
The desire to develop capabilities for sub-surface research and data gathering reflects lab aspirations for participation in high-value activities



D CAPABILITY DEVELOPMENT

In the exploration phase, reservoir information services may be an opportunity to drive local value add

- ~20% of exploration spend is attributed to reservoir information acquisition services
- This predominantly accrues to international companies, with little contribution to the local GDP



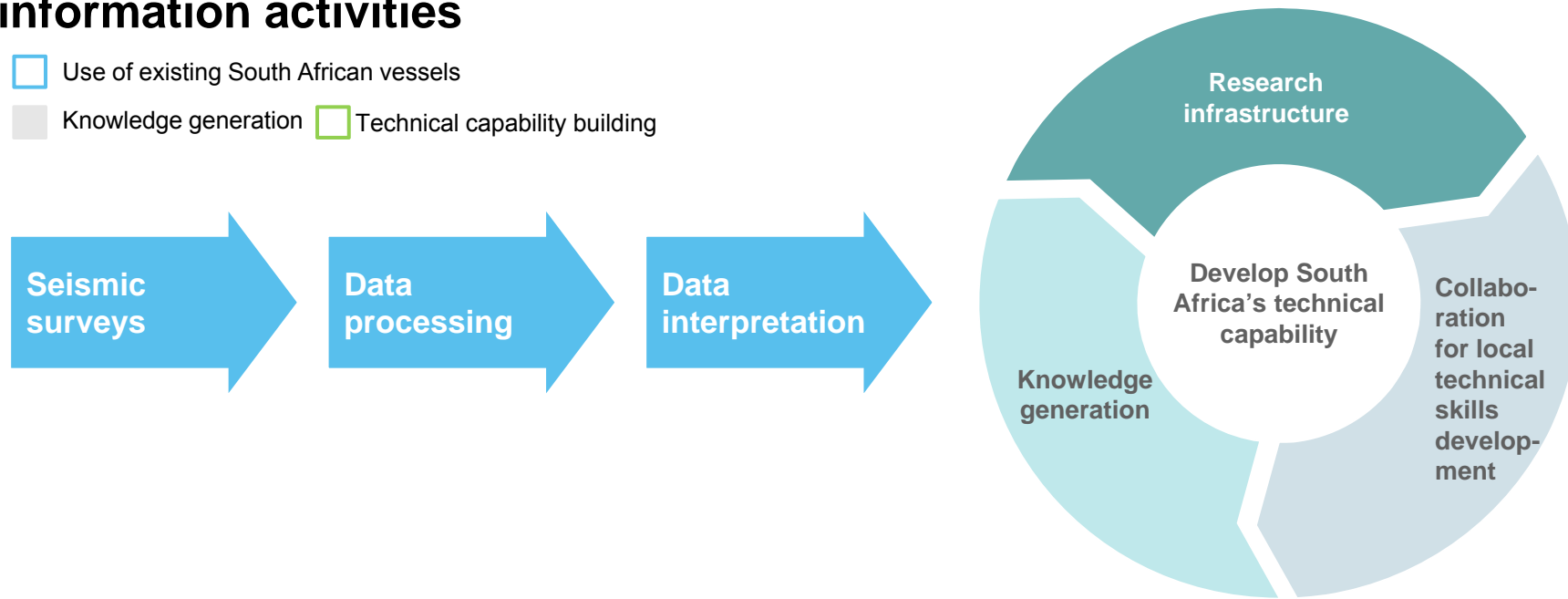
- *However, complications exist*
- Market entry barrier – international seismic companies/geophysical service industry (*multi-client surveys* by PGS, CGG, Spectrum)
- No utilization of existing South African vessels in exploration
- No structured capability transfer programme to South Africa



D CAPABILITY DEVELOPMENT

Proposed initiatives to develop South African expertise in reservoir information activities

- ☐ Use of existing South African vessels
- ☐ Knowledge generation ☐ Technical capability building



- 1 **Specify local value-add (services) requirement in the E&P rights licenses** – linked to South African technical expertise involvement
- 2 **Explore collaboration/ partnership model** geophysical services companies (PGS, CGG, Spectrum)
- 3 **Have South African experts Participate in the reservoirs information activities** conducted by the international Geophysical services company
- 4 **Develop local processing and interpretation capabilities** in order to increase the value of the data and general know-how of the ocean's potential
- 5 **Optimise ability to acquire information** from South African oceans
- 6 **Utilise South African multi-purpose research vessel for sea-bed surveys**

D CAPABILITY DEVELOPMENT

Utilising South African multi-purpose research vessel (MPRV) for sea-bed surveys is a local content solution in the exploration space



- **Optimise ability to acquire information from regional oceans – sea-bed surveys**
- **Optimise the use of existing South African vessel(s)**
- Assess existing Capacity of South African research vessels (DEA/defense)
- Market analysis: identify potential users (market) users in South Africa and regional
- Explore collaboration/partnership model (state/private sector)
- Decision to equip state-owned vessel or privately owned vessel

Initiative D2: Develop capability for sub-surface research and data gathering

Given SA intent to increase GDP contribution through transformation of the sector, reservoir information services are one of the few opportunities to drive local value add in the exploration phase

Initiative concept/details/highlights:

- i Utilise South African multi-purpose research vessel for sea-bed surveys
- ii Formalise programme to develop technical capability for sub-surface research and data gathering
- iii Drive oil and gas knowledge generation through research and development

Implementing agency:

- DST, DHET (or a dedicated government fleet operator) , PASA

Key stakeholders identified:

- DPE, DMR, DoE, National Treasury, Development Funding Institutions
- Transnet, DPE, DMR, DoE, National Treasury, the DTI, DoT (SAMSA), DEA, DST (CSIR & NRF), HEIs

Required resources

- Financial
- Training and development
- Design and engineering
- Partnership and networks
- ICT and knowledge management

Implementation timeframe

- Start date: Sep 2014
- End date: May 2016 and on-going

KPIs

- Increase number of commercial charters in oil and gas to optimise utilization of existing vessel(s)
- Increase Skills to add value in reservoir information activities(jobs creation)

D CAPABILITY DEVELOPMENT

Budget: Initiative D2 – Develop capability for sub-surface research and data gathering

ZAR millions

#	Initiative	2014/15		2015/16		2016/17- 2018/19		Total	
1	Formalise programme to develop technical capability for sub-surface research and data gathering (refer to 3ft Milestone 1 and 2)	0	Govt: 0 Non-govt: 0	0.72	Govt: 0.72 Non-govt: 0	2.70	Govt: 2.70 Non-govt: 0	3.42	Govt: 3.42 Non-govt: 0
2	Develop reservoir information acquisition hard infrastructure (refer to 3-ft. plan Milestone 3 and 4)	151.80	Govt: 151.80 Non-govt: 0	108.91	Govt: 108.91 Non-govt: 0	0	Govt: 0 Non-govt: 0	260.71	Govt: 260.71 Non-govt: 0
Total		151.80	Govt: 151.80 Non-govt: 0	109.63	Govt: 109.63 Non-govt: 0	2.70	Govt: 2.70 Non-govt: 0	264.13	Govt: 264.13 Non-govt: 0

D CAPABILITY DEVELOPMENT

KPI: Initiative D2 – Develop capability for sub-surface research and data gathering (1/2)

#	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Identify the technical capability built programmes for reservoir information activities								
1.1	Detailed checklist outlining developmental areas in the reservoir information value chain	CEO	Informal process, no documentation	Completed checklist	...	...	...	...
1.2	Academic qualification diversify (engineers & geoscientists. gender balance participation of HDI candidates	CEO	...	Academic qualification diversify (engineers & geoscientists gender balance participation of HDI candidates	...	...	...	...
1.3	M&E plan	CEO	...	M&E plan	...	...	...	...
Review and assess the mechanism to formalise the reservoir technical capability								
2.1	Position paper providing recommendation on the preferred instrument	CEO	...	Position paper providing recommendation on the preferred instrument	...	...	...	...
2.2	...	CEO	...	...	...	...	...	...
2.3	Clause effected on the E&P licensing rights	CEO	...	...	Clause effected	...	...	...

D CAPABILITY DEVELOPMENT

KPIs: Initiative D2 – Develop capability for sub-surface research and data gathering (2/2)

No.	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Develop reservoir information acquisition infrastructure								
3.1	Capability specification report of existing SA vessels in relation to oil & gas exploration activities	...	...	Capability specification report of existing SA vessels in relation to oil & gas exploration activities	...	...	...	...
3.2	Industry specification report in relation to oil & gas reservoir activities	...	...	Industry specification report in relation to oil & gas reservoir activities	...	...	...	...
3.3	Business case report for vessel modification	...	...	Business case report for vessel modification	...	...	...	...
3.4	Budget allocation	...	...	Budget allocation	...	...	...	...
3.5	Signed commissioning handover documentation	...	...	...	Signed commissioning handover documentation	...	...	...
Utilisation arrangements								
4.1	Market report – outline of potential users and requirements	...	...	Market report – outline of potential users and requirements	...	...	...	...
4.2	Develop multipurpose vessel utilisation model/plan	...	...	Develop multipurpose vessel utilisation model/plan	...	...	...	...
4.3	...	...	...	...	...	...	...	...

D CAPABILITY DEVELOPMENT

3-ft. plan: Initiative D2 – Develop capability for sub-surface research and data gathering (1/3)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
1	Identify the technical capability-built programmes for reservoir information activities						
		1.1	Documentation of the technical capability development areas – mapped to reservoir information gathering activities	PASA	01.09.2014	01.10.2014	4
		1.2	Define the selection criteria for suitable candidates (incorporate academic, transformation [policy of addressing previous inequalities – HDIs])	PASA (lead)/DMR/DST/CoG	02.09.2014	02.10.2014	4
		1.3	Develop monitoring and evaluation process for capability development indicators	PASA (lead)/IOC	01.10.2014	01.11.2014	4
2	Review and assess the mechanism to formalise the reservoir technical capability						
		2.1	Identify effective instrument (prescriptive/incentivise) to effect amendment/new clause for exploration rights – how to frame and reference existing policies	PASA (lead)/DMR	01.10.2014	15.01.2015	12
		2.2	Submission of position paper/motivation for the formalisation of technical capability building in the oil & gas reservoir information activities	PASA (lead)/DST	01.03.2015	31.03.2015	10
		2.3.1	PASA board approval	PASA	01.04.2015	31.05.2015	8
		2.3.2	DMR approval	DMR	01.06.2015	31.07.2015	8
		2.4	Effect clause for technical capability building into E&P licensing terms to allow graduates/young professionals to acquire on-the-field skill and knowledge on vessels and in processing facilities	DMR (lead)/PASA	01.08.2015		0

D CAPABILITY DEVELOPMENT

3-ft. plan: Initiative D2 – Develop capability for sub-surface research and data gathering (2/3)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
3	Develop reservoir information acquisition hard infrastructure						
		3.1	Assess existing capacity of South Africa's research vessels to conduct sub-surface surveys for offshore oil & gas exploration	DST/DEA/DMR/DoT	01.09.2014	01.10.2014	4
		3.2	Assess the capability/functionality required to do sufficient reservoir-related surveys for oil & gas exploration	PASA (lead)/DMR/DST/OPASA	01.09.2014	01.11.2014	8
		3.3	Cost-benefit analysis of equipping existing South African research fleet vs. utilising the specialised seismic research vessels	DST/DEA/DMR/PASA/OPASA/DoT/DoD	01.11.2014	01.02.2015	10
		3.4	Decision to equip state-owned vessel or privately-owned vessel	DST/DoT/DMR/DEA	01.02.2015	01.03.2015	4
		3.5	Equip multipurpose vessel	DST/DoT/DMR/DEA	01.04.2015	01.04.2016	52
		3.6	Commission multipurpose vessel	DST/DoT/DMR/DEA	01.04.2016	01.05.2016	4
4	Confirm utilisation arrangements						
		4.1	Market analysis-identify potential (market) users in South Africa and region	DST/DoT/DMR/DEA	01.09.2014	01.10.2014	4
		4.2	Develop multipurpose vessel utilisation model/plan	DST/DoT/DMR/DEA	01.10.2014	01.02.2015	14
		4.3	Model and optimise the vessel utilisation plan	DST/DoT/DMR/DEA	01.03.2015	01.04.2015	4

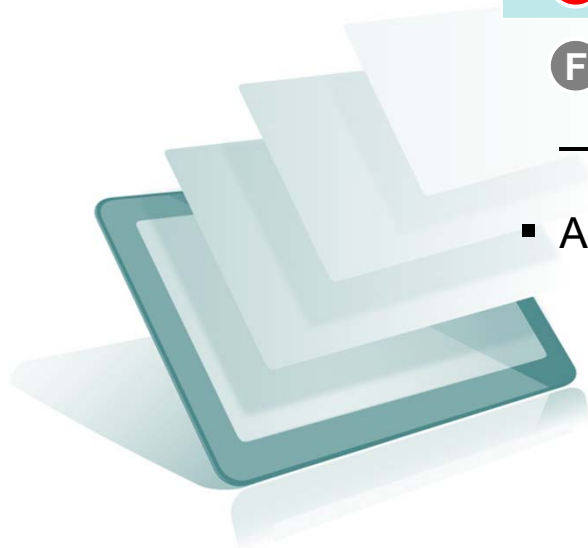
D CAPABILITY DEVELOPMENT

3-ft. plan: Initiative D2 – Develop capability for sub-surface research and data gathering (3/3)

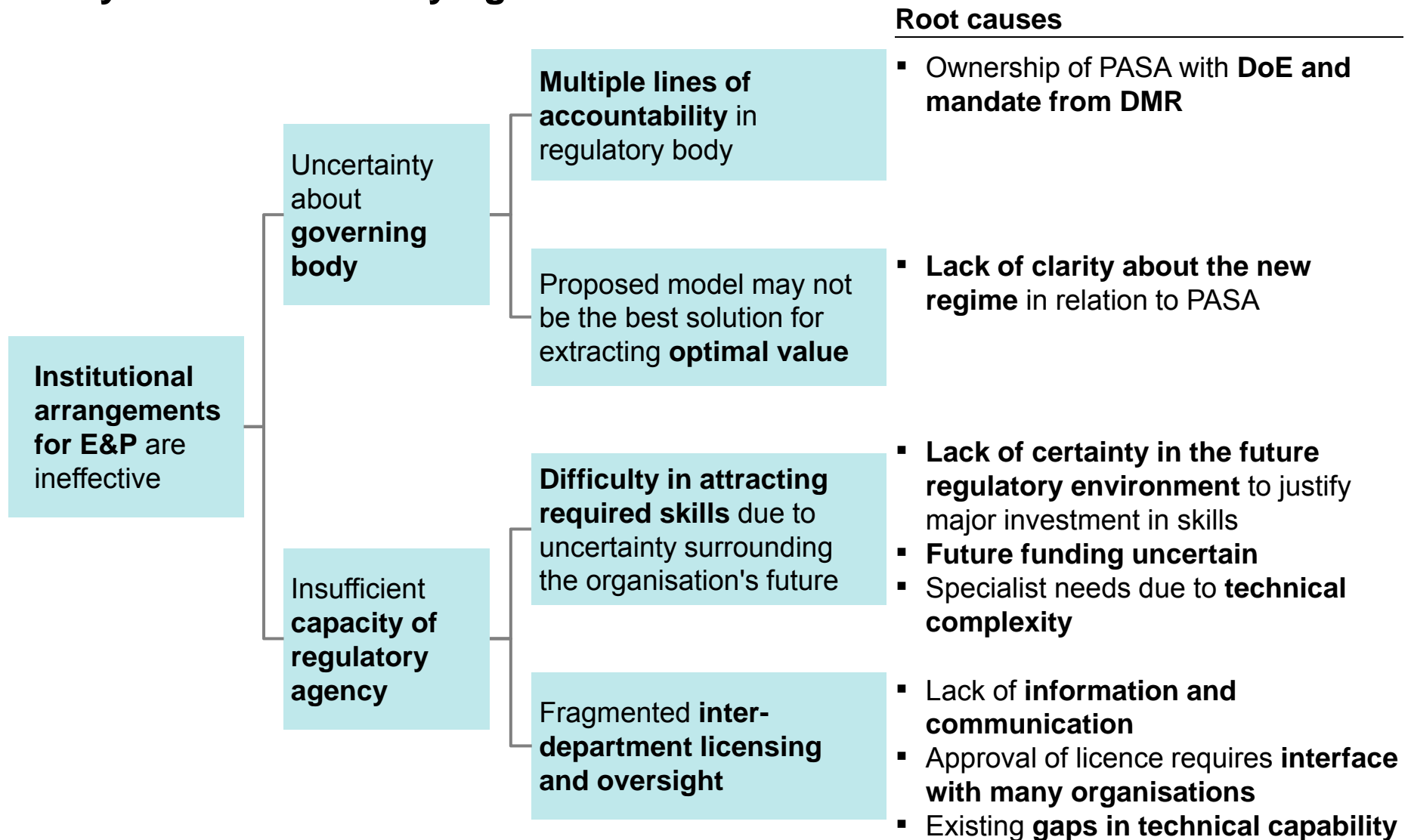
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
5	Establish a multi-agency ocean R&D strategy and implementation programme			A2			
		5.1	Review the current institutional structure, infrastructure (including technology) and approach to marine geological, oceanographic, hydrographic, geophysical and geochemistry research	DST/DoT/DMR/DEA	09.01.2014	10.01.2014	4
		5.2	Design an institutional framework for implementing a comprehensive national marine geoscience research and development programme	PASA (lead)/CoG/DST	09.02.2014	10.02.2014	4
		5.3	Develop a collaborative marine R&D strategy in collaboration with the local and international oil and gas industry	DST/DEA/DMR/loC	10.01.2014	11.01.2014	4
		5.4	Develop a strategy to attract new local marine geoscience researchers from other fields (math, physics and engineering) to participate in offshore oil and gas R&D activities	DST/DHET/CoGPASA	01.11.2014	01.03.2015	12
		5.4.1	Approve a new attractive salary structure for researchers that ensures keeping outstanding staff from moving to other industries or sectors	DST/DoT/DMR/DEA/DPSA			
		5.6	Align and integrate the national oceans R&D strategy to the process of developing a national maritime research and development roadmap	DST	01.03.2015	01.06.2015	12
		5.7	Facilitating the localisation and transfer of new technology for application in the South African and regional oil and gas industry	DST/the DTI			
		5.8	Audit current oil and gas academic research and teaching programmes at all South African universities and research institutions	DST (lead)/DHET/CoGPASA	01.10.2014	01.04.2015	20

Contents

- Executive summary
- **Detailed solution implementation plans**
 - A** Infrastructure
 - B** Environment
 - C** Localisation of supply chain
 - D** Capability development
 - E Institutions**
 - F** Legislative
 - Governance structure
- Appendices



Recommendations for institutional arrangements arise from root cause analyses of the underlying issues



* See also oil and gas environment issue analyses

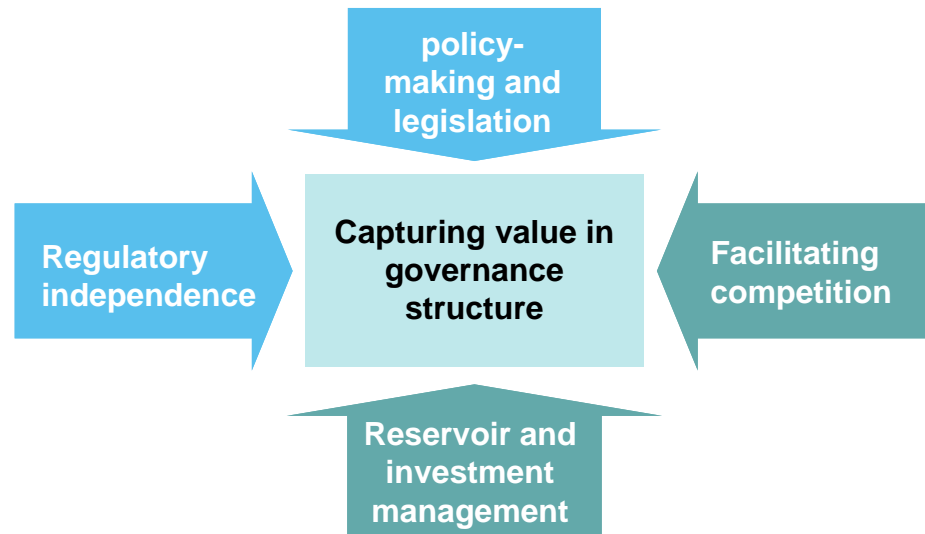
The ideal regulator should perform the following functions in order to realise optimum value for the country

- Promote onshore and offshore exploration and production
- Receive, evaluate and recommend award of applications
- Review, evaluate and recommend decision on work programmes
- Monitor compliance
- Maintain and add value to database
- Acquire reconnaissance data
- Review, evaluate and recommend decision on environmental impact assessments
- Review, evaluate and recommend decision on technical and economic aspects of development and production plans

Is “award of applications” a term?
Should it just be applications?

Optimised institutional arrangements can support South Africa in capturing more value from its oil and gas resources

Value framework



Key risks to not pursuing a value framework

- Reduction in state's ability to attract exploration investment, e.g., high quality interpretation/promotion of geological data
- Increased lead times in granting applications due to multiple entry points
- Increased complexity of licensing process due to multiple interpretations of law/regulations
- Reduction in the ability for a co-ordinated emergency response to oil spill incidents (including through shipment), increasing the risk of negative environmental impact

Focus areas

- International best practice indicates that value for a country can be generated from focusing on the following areas through ministerial oversight and regulation

1. Reservoir management

- Development plans
- Work plans
- Promoting tieback fields and ownership transfers

2. Licensing process

- Attracting top candidates (competitive)
- Awarding blocs in keeping with long-term strategy

3. Long-term planning

- Licensing strategy
- E&P strategy

4. Data collection and dissemination

5. Selective auditing to monitor compliance



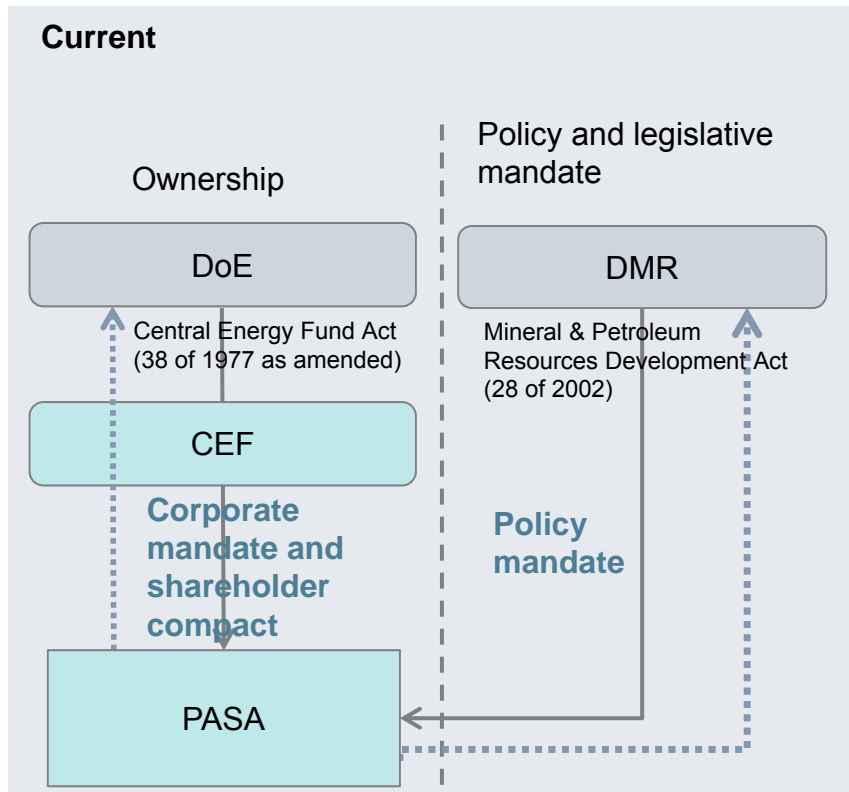
Regulatory simplicity and specialisation can assist in capturing value for the nation

RECOMMENDATION: governments should initially create 1 regulatory agency to take on all the regulatory functions to maximise value

OBSERVATION: furthermore ... operators base investment decisions on the following 5 factors

1. Stability
 2. Fiscal regime
 3. **Perceived transparency in regulatory system**
 4. **Speed and complexity of licensing**
 5. Demonstrated level of prospectivity
- } Factors directly impacted by institutional arrangements

The current oil and gas regulatory structure creates complications in maximising value for South Africa



Corporate reporting

Operational reporting

Issue statement

DoE minister through the CEF approves the PASA shareholder compact, while policy/legislative mandate emanates from DMR

Pros

- Single entry point
- Integrated technical and oversight
- Efficient implementation

Cons

- Multiple lines of accountability (DoE-DMR)
- Unfunded
- Misaligned policy implementation

Unpacking the issue: PASA shareholder compact (value driver)

- PASA implements its institutional mandate to the letter of the law (MPRDA, NEMA etc.)
- Due to dual reporting systems, there has been a gap in policy implementation

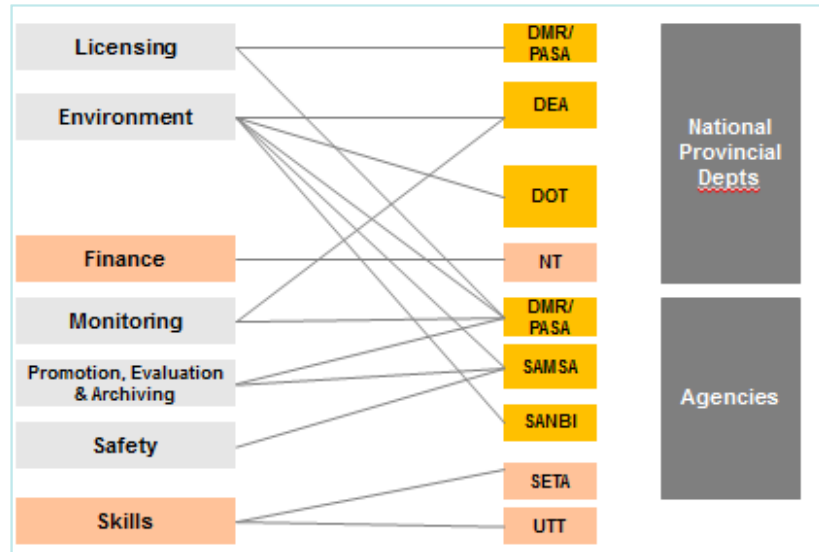
Implementation

- Wall-to-wall licensing in 3 – 4 years
- 2/3 of granted ERs are foreign controlled

Policy priorities

- Local participation
- BBBEE
- Licensing strategy – bidding

The current licensing, oversight and regulatory structure process is complex and does not optimise value

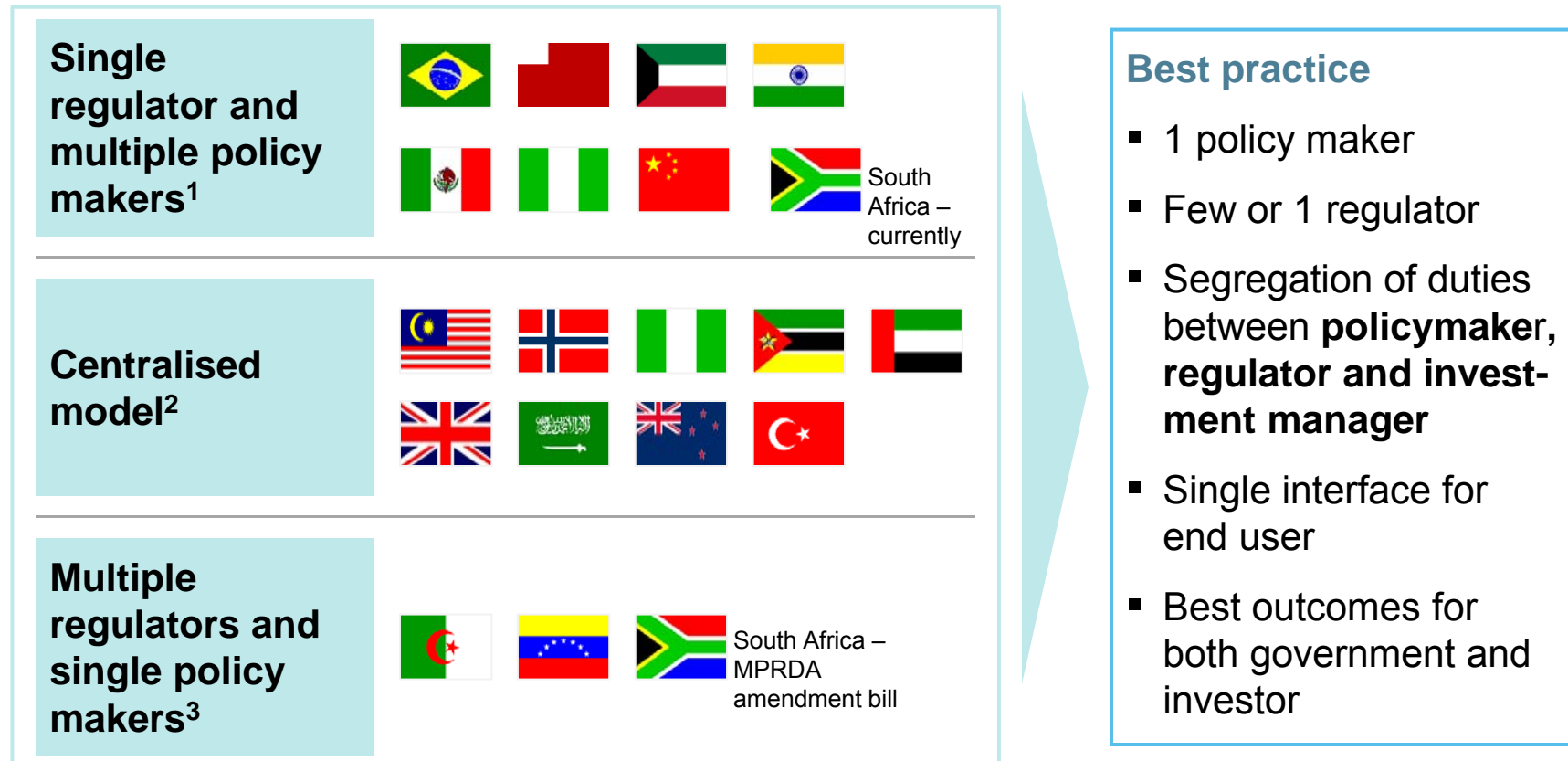


- The current licensing and regulatory structure is complex, with multiple points of accountability for the regulator
- Multiple interfaces for the operators
- End-to-end process not benchmarked against global best practice

According to an Operation Phakisa end-user survey

- Time frames are too long and inconsistent, varying between 8 and 36 months
- Regulator not fully in control of the time frames due to EMPR process
- There are inconsistencies across the different institutions in the licensing process
- Preferred single point of entry for oil and gas
- Clear rules of licensing

The lab has considered different options from other countries in order to recommend a best-practice solution



¹ Brazil, Abu Dhabi, Kuwait, India, Mexico, Nigeria, South Africa – currently, China

² Malaysia, Norway, Nigeria, Mozambique, the UAE, the UK, Saudi Arabia, New Zealand, Turkey

³ Algeria, Venezuela, South Africa proposed as per MPRDA amendment bill

The lab explicitly recognises that best-practice institutional arrangements must be specific to the South African context

**“The lesson from the
INTERNATIONAL study is that the
ideal institutional arrangement is
based on desired outcomes of the
country in question”**

In line with the desired outputs of the lab process, the following criteria were used in evaluating the ideal structure

Criteria for evaluating options

- Control by executive authority
- Segregation of duties
- Integrated view of sector
- Efficiency of processes
- Ease of implementation
- Retention of skills and knowledge base
- Functions coverage

The lab considered several options in detail

Institutional arrangements



- **Achieve a streamlined and efficient end-to-end institutional structure** for regulation of oil and gas exploration for South Africa by
 - **Detailing design options** for decentralised/centralised (“one-stop shop”) oil and gas regulatory oversight
 - **Evaluating design options**, analysing gaps and detailing implementation

Option evaluation

Identify most suitable model for the January 2016 implementation

Achievable within proposed MPRDA amendments

**DMR + CGS
(decentralised
model)**

Option 1

**DMR one-stop-
shop**

Option 2

Requires further MPRDA legislative amendment and new act for regulator

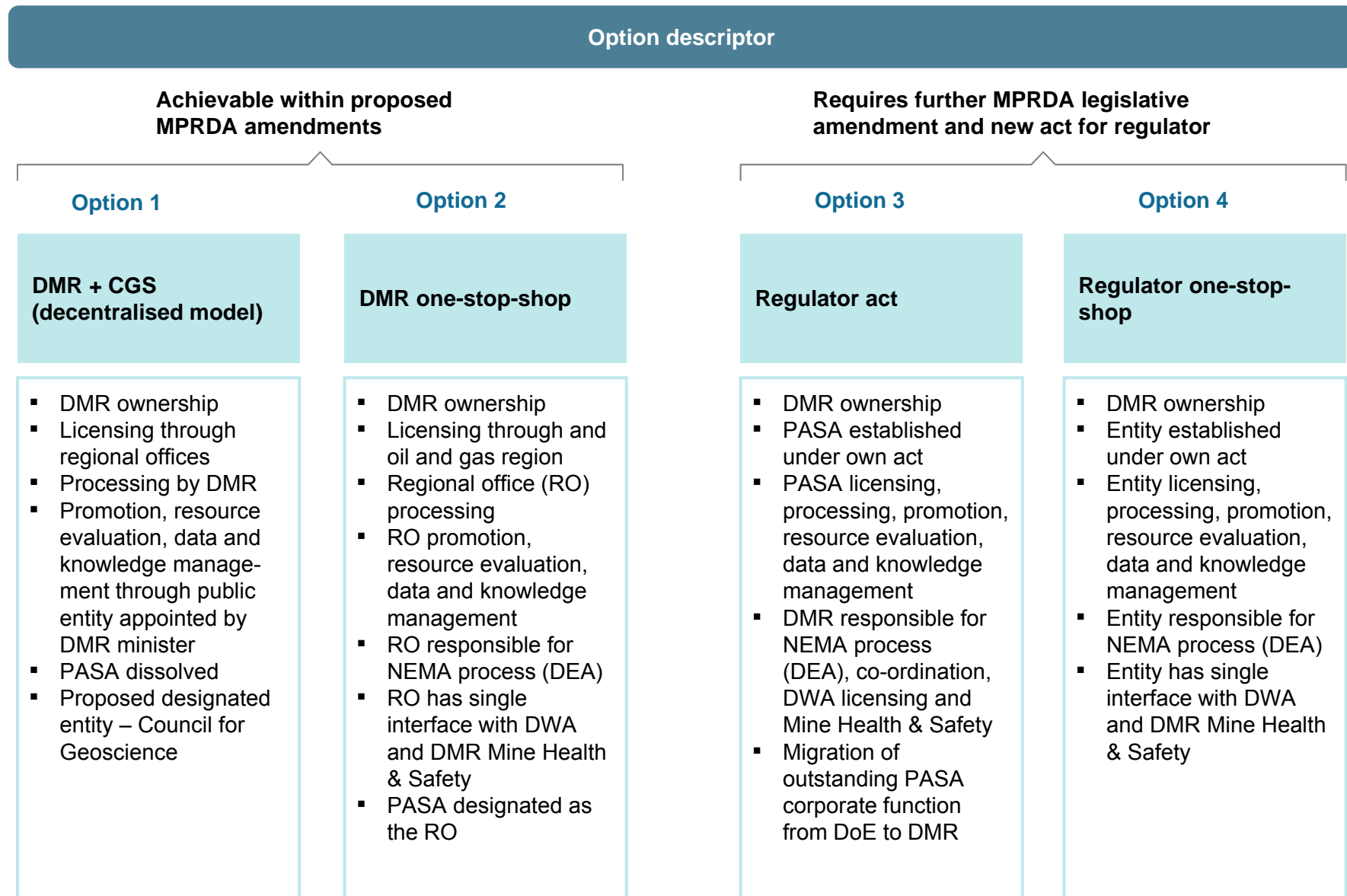
Regulator act

Option 3

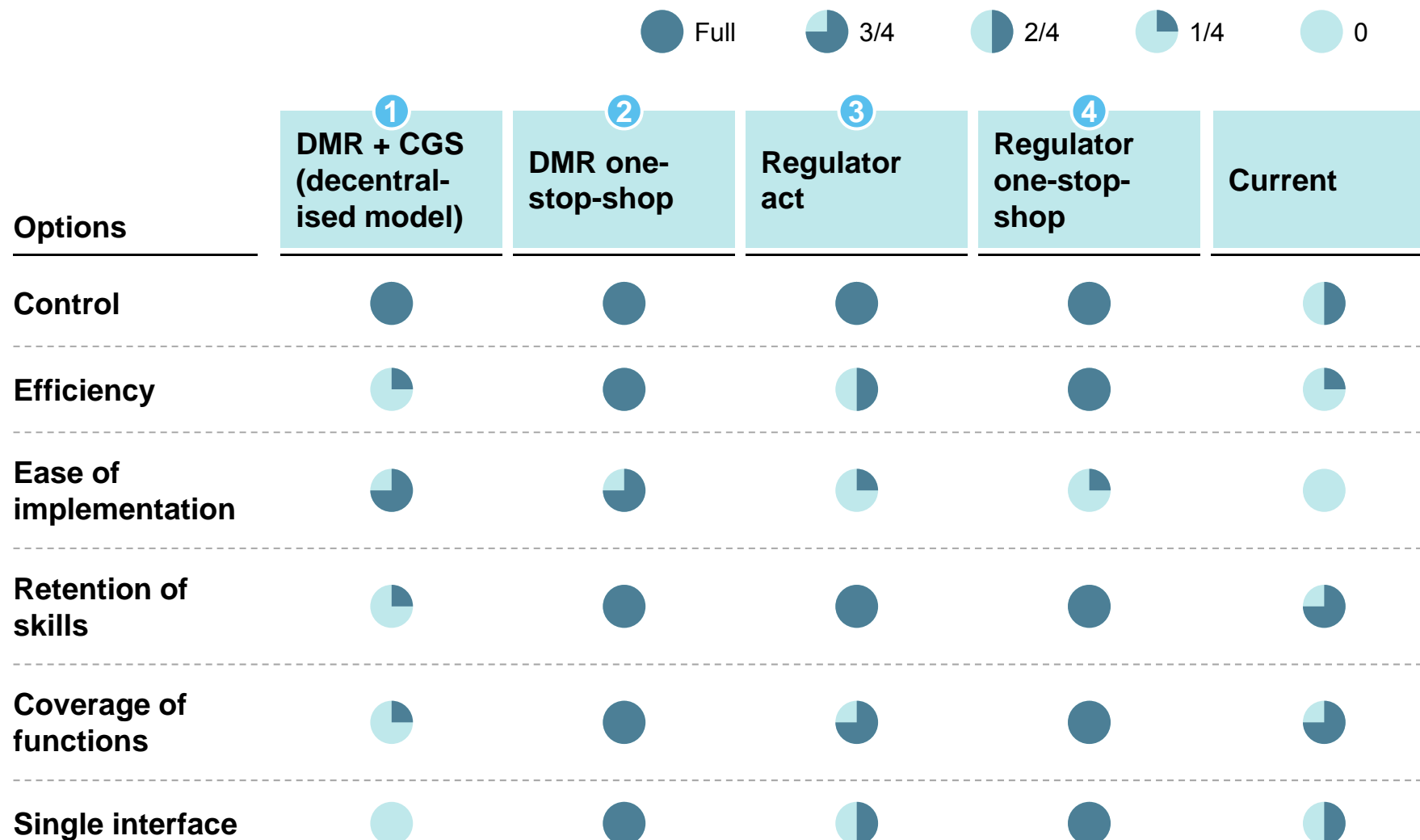
**Regulator one-
stop-shop**

Option 4

Proposed solutions at a high level



Evaluation of the options compared to identified criteria



Evaluation of the options compared to identified criteria (detailed)

Option	1	2	3	4	Current
Control	Full control – regional manager and public entity (CGS) under DMR control DMR appoints board and approves shareholder compact	Full control – public entity (PASA) under DMR control DMR appoints board and approves shareholder compact	Full control – public entity under DMR control. DMR appoints board and approves shareholder compact	Full control – public entity under DMR control DMR appoints board and approves shareholder compact	Corporate mandate and shareholder compact – DoE Policy mandate – DMR
Efficiency	Fragmentation of functions, multiple regional managers, multiple interpretations of regulations	One-stop shop with single entry point. NEMA and water licensing processes within entity. Delegated by DMR minister	NEMA and water licensing process not within entity. DMR ministry function	One-stop shop with single entry point. NEMA and water licensing processes within entity	EMPR and water licensing processes not within entity
BFR	As per amendment, requires functional relocation, CGS up-skilling and OD, reconfigure OD for DMR. Medium to long term	Can be accommodated under amendment through regulation or abeyance of relevant clauses and corporate migration of existing entity plus change management process. Immediate	Requires separate legislation – long term	Requires separate legislation	n/a
Retention of skills and knowledge base	Relocation of function could lead to possible loss of skills, dilution of specialisation. DMR budget for CGS	Current skills and knowledge base retained, entity capacity improved to handle additional functions. DMR budget allocation	Current skills and knowledge base retained, entity capacity improved to handle additional functions. Resolved budget	Current skills and knowledge base retained, entity capacity improved to handle additional functions. Resolved budget	Current skills and knowledge base retained. Funding challenges hamper acquiring further capacity
Functional coverage	Duplication of function, spread of skills base over regions Environmental process outside of structures Promotion and data separated from technical compliance	Functions fully covered under one-stop shop. Licensing, promotion, resource evaluation, database, monitoring and compliance, NEMA, water licensing	Functions partially covered. Licensing, promotion, resource evaluation, database, monitoring and compliance. NEMA and water licensing not within entity	Functions fully covered under one-stop shop. Licensing, promotion, resource evaluation, database, monitoring and compliance, NEMA, water licensing	Functions partially covered. Licensing, promotion, resource evaluation, database, monitoring and compliance. NEMA and water licensing not within entity
Single interface for investors	No	Yes	No	Yes	No

The lab recommends empowering a 1one-stop-shop regulator via a smooth transition process

Step 1: implement option 2

DMR one-stop-shop

BFR
Within 1 year

In the short term, option 2 fulfils the selection criteria and can be accommodated in the proposed MPRDA amendment if upstream oil and gas is established as a separate region or clauses 47 to 64 and 66 to 69 are kept in abeyance

Step 2: transition to option 4

Regulator one-stop-shop

Long term
> 5 years

In the long term, as commercially viable deposits are discovered, a better option is to establish upstream oil and gas under separate legislation, which also establishes the regulator in its own right

The impact of the options

- DMR-endorsed and cabinet-approved model that can be immediately implemented
- Operational institutional structure for regulating and licensing of the upstream oil and gas sector
- Efficient institutional systems and processes
 - Regulate timelines and service-level agreements between role players
 - Clarify pre-qualification criteria for prospective licensees
- Institutional capability across all exploration and production technologies as well as economic modelling, environmental and operational oversight and enforcement

The successful implementation of the institutional arrangement will depend upon stakeholder agreement regarding several critical issues

Dependencies

1. The funding model
2. Migration of SOC to DMR
 - Agreement between DoE and DMR (CEF Group)
 - Reinforcement of environmental MOU with data management MOU
 - Organisational design
 - Financial
 - Retaining capacity and skills
3. The establishment models
 - Declaration of an oil and gas region (or abeyance of clauses)
 - SOC (short term) and statutory body (long term)
4. Augmenting capability gaps

Initiative E1: Build end-to-end institutional structure

- Institutional arrangements are inefficient and inadequately resourced
- Uncertainty around institutional framework for industry regulation and licensing
- Perception of insufficient capacity to regulate and licence

Initiative concept/details/highlights

- i Finalise decision on optimal structure
- ii Migrate PASA from CEF Group to DMR-public entity
- iii Designate DMR-public entity for data management and promotion
- iv Capacitate the designated DMR-public entity with the necessary skills to deliver on all its functions
- v Implement a change management programme
- vi Go live!!!

Achieve a streamlined and efficient E2E institutional structure for the regulation of oil and gas exploration and production for South Africa

Implementing agency

- DMR DDG responsible for oil and gas

Key stakeholders identified

- **National:** DMR, DoE, DEA, NT, DAFF, DoT
- **Agencies:** PASA, SAMSA, SANBI
- **Operators:** OPASA (IOCs and NOC)

Required resources

- Currently funded from internal surplus but would require direct funding from fiscus

Implementation time frame

- Start date: 18 August 2014
- End date: 1 January 2016

Key performance indicators (KPIs)

- Globally competitive process for oil and gas licensing and regulation

Budget: Initiative E1 – Build end-to-end institutional structure

All figures in ZAR mn

No.	Initiative	2014/15		2015/16		2016/17 - 2018/19		Total	
1	Operational institutional structure for regulating and licensing of the upstream oil and gas sector	125.9	Govt: 125.9 Non-govt: 0	147	Govt: 138 Non-govt: 0	336	Govt: 336 Non-govt: 0	483	Govt: 598 Non-govt: 0
Total		125.9	Govt: 125.9 Non-govt: 0	147	Govt: 138 Non-govt: 0	336	Govt: 336 Non-govt: 0	483	Govt: 598 Non-govt: 0

KPIs: Initiative E1 – Build end-to-end institutional structure

No.	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Achieve a streamlined and efficient end-to-end institutional structure for regulation of oil and gas exploration and production for South Africa Inc.								
1.1	Finalise decision on optimal structure	DG Ramontja	Centralised model, but may change on signature of MPRDA bill	DMR-endorsed and cabinet-approved model by March 2015	...	...	...	...
1.2	Migrate PASA from CEF Group to DMR-public entity	DG Ramontja or CEO of new entity	PASA with licensing directly in DMR with MPRDA amendment bill	...	Functioning licensing and regulating entity by January 2016	...	...	...
1.3	Designate DMR-public entity for data management and promotion	CEO of new entity	8 to 24 months	...	...	Efficient institutional systems and processes by March 2017	...	...
1.4	Capacitate the designated DMR-public entity with the necessary skills to deliver on all its functions	CEO of new entity	Fully capable for licensing, oil and gas, interpretation, data archiving, monitoring of work programme, environmental inspection and (health and safety?)	Institutional capability and forecasting aligned with upstream oil and gas industry maturity	Institutional capability and forecasting aligned with upstream oil and gas industry maturity	Institutional capability and forecasting aligned with upstream oil and gas industry maturity	Institutional capability and forecasting aligned with upstream oil and gas industry maturity	Institutional capability and forecasting aligned with upstream oil and gas industry maturity
1.5	Implement a change management programme	DG Ramontja and CEO of new entity	Optimally functioning oil and gas regulatory body	Agreement of DMR and institutional leadership on strategic direction of new regulator; implementation on track as per change plan	Implementation on track as per change plan; optimally functioning oil and gas regulatory body	Implementation on track as per change plan; optimally functioning oil and gas regulatory body	Implementation on track as per change plan; optimally functioning oil and gas regulatory body	Implementation on track as per change plan; optimally functioning oil and gas regulatory body
Go live!!!		...	...	...	...	...	...	...

Is this a company name?

3-ft. plan: Initiative E1 – Build end-to-end institutional structure (1/2)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
1	Finalise decision on optimal structure			DMR			
		1.1	Ministers have an in-principle agreement on the migration	DMR (lead)/DoE	01.09.2014	30.09.2014	4
		1.2	Prepare business case for migration	DMR (lead)/DoE	01.09.2014	01.12.2014	12
		1.3	Signed off by all effected parties	DMR (lead)/DoE	08.12.2014	15.12.2014	1
		1.4	Finalise agreement between DoE and DMR	DMR (lead)/DoE	15.12.2014	15.12.2014	0
2	Migrate PASA from CEF Group to DMR-public entity						
		2.1	DoE ministerial directive to CEF board	DoE	16.01.2015	16.01.2015	0
		2.2	Board resolution by CEF approval	CEF	16.01.2015	15.02.2015	4
		2.3	Transfer of shares from CEF to DMR	CEF	15.02.2015	20.02.2015	1
		2.4	Section 54 approval to PFMA	DMR	20.02.2015	20.02.2015	0
		2.5	Assess budget and financial implications for DMR	DMR	16.01.2015	31.01.2015	2
		2.6	Assess HR implications including job evaluation process	DPSA	16.01.2015	31.01.2015	2
		2.7	Motivate according to legislative requirements	DMR	16.01.2015	31.01.2015	2
		2.8	Prepare migration plan	DMR	16.01.2015	16.02.2015	4
		2.9	DPSA feasibility study	DPSA	16.01.2015	31.01.2015	2
		2.10	Obtain release from DoE, acceptance and recommendation by DMR, concurrency by DPSA	DoE (lead)/DMR/DPSA	31.01.2015	31.01.2015	0
		2.11	Incorporate function/entity into DMR strategic plan, APP and administrative structure	DMR (lead)/DPSA	31.01.2015	31.01.2015	0
		2.12	Designate PASA as the licensing entity (regional office)	DMR	16.01.2015	31.01.2015	2

3-ft. plan: Initiative E1 – Build end-to-end institutional structure (2/2)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
3	Designate DMR-public entity for data management and promotion						
		3.1	Gazette PASA as public entity for data management and promotion – Section 71A	DMR	16.01.2015	31.01.2015	2
4	Implement a change management programme						
		4.1	Leadership agreement	DMR (lead)/PASA	15.12.2014	15.06.2015	26
		4.2	Operational alignment (alignment with performance management system)	DMR (lead)/PASA	15.12.2014	15.06.2015	26
		4.3	Change initiatives	DMR (lead)/PASA	15.12.2014	15.06.2015	26
		4.4	Internal and external communication	DMR (lead)/PASA	15.12.2014	15.06.2015	26
		4.5	Monitoring and evaluation of rollout	DMR (lead)/PASA	16.06.2015	Ongoing	
5	Go live!!!						
		5.1	Ceremonial handover	DoE (lead)/DMR	31.01.2015	31.01.2015	0

Initiative E2: Enhance environmental governance capacity of oil and gas regulator

World-class environmental governance structures, systems, skills, strategies, incentives and interrelationships make a significant contribution to the efficient and effective avoidance, mitigation and/or management of the potentially significant environmental impacts of offshore oil and gas operations¹

Initiative concept/details/highlights

- i Carry out an international capacity benchmarking exercise to establish what capacity is required for world-class environmental governance
- ii Carry out a governance capacity review and compile report with findings and recommendations
- iii Design and implement a co-ordinated capacity development and maintenance project that addresses shortfalls, inadequacies and/or gaps in governance structures, funding, systems, skills, strategies, incentives and interrelationships¹
- iv In parallel to (iii), secure international governance and industry experts to contribute to the capacity development initiatives through lectures, seminars, conferences etc.
- v Establish, monitor and report governance capacity success indicators and carry out a follow-up capacity review within 2 years of the completion of (iii)

Implementing agency

- DEA with the oil and gas environmental regulator (DMR and PASA replacement)

Key stakeholders identified:

- National departments, e.g., DMR, DEA, NT, DWA, DPME, DAFF, DST
- SOEs, e.g., SANBI, PetroSA, PASA,
- IOCs and effected associations, e.g., OPASA
- Interested and effected NGOs, e.g., WWF, EWT, SANCCOB

Required resources

- Local input funded through MTEF and interested international donors
- International input funded by international donors and IOCs

Implementation time frame

- Start date: immediate
- End date: end of 2017

Key performance indicators (KPIs)

- Capacity building project initiated by mid-2016
- Measurable improvement in governance capacity success indicators by 2018

¹ Refer to the 6S model of organisational capacity

Budget: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator

All figures in ZAR mn

No.	Initiative	2014/15		2015/16		2016/17 - 2018/19		Total	
1	Scoping project complete	0.03	Govt: 0.03 Non-govt: 0	0.30	Govt: 0.30 Non-govt: 0	0	Govt: 0 Non-govt: 0	0.33	Govt: 0.33 Non-govt: 0
2	Performance indicators and review	0	Govt: 0 Non-govt: 0	0.11	Govt: 0.11 Non-govt: 0	0.26	Govt: 0.26 Non-govt: 0	0.37	Govt: 0.37 Non-govt: 0
3	Capacity building project complete	0	Govt: 0 Non-govt: 0	0.09	Govt: 0.09 Non-govt: 0	10.30	Govt: 10.30 Non-govt: 0	10.39	Govt: 10.39 Non-govt: 0
Total		0.03	Govt: 0.0279 Non-govt: 0	0.50	Govt: 0.50 Non-govt: 0	10.57	Govt: 10.57 Non-govt: 0	11.10	Govt: 11.10 Non-govt: 0

KPIs: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator

No.	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	Environmental authorisation quality indicator (see “unsuccessful appeals” indicator below	Linda Garlipp, Chief Director: Legal Services, DEA	n/a – NEMA appeal process not yet in effect	...	80%	90%	95%	95%
2.1	Turnaround time compliance index – the number of offshore oil-and-gas-related environmental authorisations processed and issued within legislated/published turnaround times	Head of the regulatory entity (PASA and its successor)	n/a – no legislated/ published turnaround times	50%	50%	75%	90%	98%
2.2	Unsuccessful appeals – based on the logic that appeals against high-quality authorisations are less likely to be upheld, this indicator measures the number of appeals against environmental authorisations that fail	Linda Garlipp, Chief Director: Legal Services, DEA	n/a – NEMA appeal process not yet in effect	...	80%	90%	95%	95%
2.3	Compliance with standard operating procedures – standard operating procedures (SOPs) must contain performance standards and indicators like correspondence turnaround times etc. This indicator measures performance against these standards	Head of the regulatory entity (PASA and its successor)	n/a – SOPs not yet in place	...	...	50%	90%	98%
2.4	Compliance monitoring indicator – the percentage of total environmental authorisations subjected to formal compliance inspections	Head of the regulatory entity (PASA and its successor)	0%	0%	5%	8%	9%	10%

3-ft. plan: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator (1/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
1	Project design			DEA (O&C)/DMR/PASA	23.07.2014	08.10.2014	11
		1.1	Oil and gas lab details intervention	Operation Phakisa	22.07.2014	18.08.2014	4
		1.2	Any necessary approvals and/or endorsements required	DEA (O&C)/DMR/PASA	19.08.2014	01.09.2014	2
		1.3	Compile standard project ToR and tender documentation	DEA (O&C)	02.09.2014	15.09.2014	2
		1.4	Submit for DG approval to tender	DEA (O&C)	16.09.2014	13.10.2014	4
		1.5	DG approval to tender	DEA DG	14.10.2014	14.10.2014	0.1
2	Tender process and contracting			DEA (O&C)			
		2.1	Advertise tender	DEA (O&C)	15.10.2014	28.10.2014	2
		2.2	Tenderers compile bids	Tenderers	29.10.2014	25.11.2014	4
		2.3	Bids evaluated	DEA (O&C)/DMR/PASA	26.11.2014	16.12.2014	3
		2.4	Preferred bidder presented to DAC	DEA (O&C)/DEA DAC	17.12.2014	13.01.2015	4
		2.5	SLA drafted and negotiations with bidder	DEA (O&C)	14.01.2015	27.01.2015	2
		2.6	Legal services vetting	DEA LS	28.01.2015	17.02.2015	3
		2.7	SLA signed with successful tenderer	DEA/service provider	18.02.2015	24.02.2015	1
3	Scoping project inception			DST			
		3.1	Service provider compiles detailed implementation plan	Service provider	25.02.2015	17.03.2015	3
		3.2	Project inception meeting	DEA (O&C)/DMR/PASA/Service provider	18.03.2015	24.03.2015	1
		3.3	Final implementation plan agreed upon	DEA (O&C)/DMR/PASA	25.03.2015	31.03.2015	1

3-ft. plan: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator (2/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
4	International benchmarking			DEA (O&C)/DMR/PASA/service provider			
		4.1	Carry out desktop study	Service provider	01.04.2015	05.05.2015	5
		4.2	Compile draft report	Service provider	06.05.2015	19.05.2015	2
		4.3	Present draft report and recommended study tour destinations	DEA (O&C)/DMR/PASA/service provider	20.05.2015	26.05.2015	1
		4.4	Compile final report	Service provider	27.05.2015	09.06.2015	2
5	Status quo report			DEA (O&C)/DMR/PASA/service provider			
		5.1	Conduct status quo survey (research, interviews etc.)	Service provider	27.05.2015	07.07.2015	6
		5.2	Compile draft report	Service provider	08.07.2015	28.07.2015	3
		5.3	Present draft report and recommendations	DEA (O&C)/DMR/PASA/service provider	29.07.2015	04.08.2015	1
		5.4	Revise draft report	Service provider	05.08.2015	18.08.2015	2
6	Stakeholder engagement			DEA (O&C)/DMR/PASA/service provider			
		6.1	Compile key stakeholder analysis and database	Service provider	01.04.2015	21.04.2015	3
		6.2	Organise workshop venue	Service provider	10.06.2015	24.06.2015	2
		6.3	Send out initial "heads-up" and referral request	Service provider	22.04.2015	05.05.2015	2
		6.4	Update stakeholder database	Service provider	06.05.2015	12.05.2015	1
		6.5	Compile workshop programme	Service provider	17.06.2015	24.06.2015	1
		6.6	Send out workshop invitations	Service provider	24.06.2015	01.07.2015	1
		6.7	Prepare workshop presentations	Service provider	19.08.2015	25.08.2015	1
		6.8	Hold stakeholder workshop	DEA (O&C)/DMR/PASA/service provider	26.08.2015	27.08.2015	0.1

3ft plan: Initiative E2 – Enhance environmental governance capacity of the oil and gas regulator (3/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date (dd.mm.yyyy)	Planned end date (dd.mm.yyyy)	Length (in weeks)
7	Final Scoping Report			DEA (O&C), DMR, PASA, Service prov .			
		7.1	Draft Capacity Building Scoping Report	Service Provider	28.08.2015	17.09.2015	3
		7.2	Present draft report	DEA (O&C), DMR, PASA, Service provider	18.09.2015	24.09.2015	1
8	Environmental Governance Performance Monitoring and Reporting			DPME, DEA (O&C), DMR, PASA			
		8.1	Analyse Status Quo report and identify performance indicator	DPME, DEA (O&C), DMR, PASA	19.08.2015	01.09.2015	2
		8.2	Fully describe the performance indicator and establish current value	DPME, DEA (O&C), DMR, PASA	02.09.2015	15.09.2015	2
		8.3	First performance review	DPME	02.03.2016	15.03.2016	2
		8.4	Second performance review	DPME	31.08.2016	13.09.2016	2
		8.5	Third performance review	DPME	01.03.2017	14.03.2017	2
		8.6	Forth performance review	DPME	30.08.2017	12.09.2017	2
9	Project Design			DEA (O&C), DMR, PASA	23.07.2014	08.10.2014	11
		9.1	Project Design Workshop based on Scoping recommendations	DEA (O&C), DMR, PASA	23.10.2015	19.11.2015	4
		9.2	Any necessary approvals and/or endorsements required	DEA (O&C), DMR, PASA	20.11.2015	17.12.2015	4
		9.3	Compile standard project ToR and tender documentation	DEA (O&C)	18.12.2015	31.12.2015	2
		9.4	Submit for DG approval to tender	DEA (O&C)	01.01.2016	28.01.2016	4
		9.5	DG Approval to tender	DEA DG	29.01.2016	29.01.2016	0.1

3 ft. plan: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator (3/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
7	Final scoping report			DEA (O&C)/DMR/PASA/service prov .			
		7.1	Draft capacity building scoping report	Service provider	28.08.2015	17.09.2015	3
		7.2	Present draft report	DEA (O&C), DMR, PASA, service provider	18.09.2015	24.09.2015	1
8	Environmental governance performance monitoring and reporting			DPME/DEA (O&C)/DMR/PASA			
		8.1	Analyse status quo report and identify performance indicator	DPME/DEA (O&C)/DMR/PASA	19.08.2015	01.09.2015	2
		8.2	Fully describe the performance indicator and establish current value	DPME/DEA (O&C)/DMR/PASA	02.09.2015	15.09.2015	2
		8.3	1st performance review	DPME	02.03.2016	15.03.2016	2
		8.4	2nd performance review	DPME	31.08.2016	13.09.2016	2
		8.5	3rd performance review	DPME	01.03.2017	14.03.2017	2
		8.6	4th performance review	DPME	30.08.2017	12.09.2017	2
9	Project design			DEA (O&C)/DMR/PASA	23.07.2014	08.10.2014	11
		9.1	Project design workshop based on scoping recommendations	DEA (O&C)/DMR/PASA	23.10.2015	19.11.2015	4
		9.2	Any necessary approvals and/or endorsements required	DEA (O&C)/DMR/PASA	20.11.2015	17.12.2015	4
		9.3	Compile standard project ToR and tender documentation	DEA (O&C)	18.12.2015	31.12.2015	2
		9.4	Submit for DG approval to tender	DEA (O&C)	01.01.2016	28.01.2016	4
		9.5	DG approval to tender	DEA DG	29.01.2016	29.01.2016	0.1

3 ft. plan: Initiative E2 – Enhance environmental governance capacity of oil and gas regulator (4/4)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
10	Tender process and contracting			DEA (O&C)			
		10.1	Advertise tender	DEA (O&C)	01.02.2016	12.02.2016	2
		10.2	Tenderers compile bids	Tenderers	15.02.2016	11.03.2016	4
		10.3	Bids evaluated	DEA (O&C)/DMR/PASA	14.03.2016	01.04.2016	3
		10.4	Preferred bidder presented to DAC	DEA (O&C)/DEA DAC	04.04.2016	29.04.2016	4
		10.5	SLA drafted and negotiations with bidder	DEA (O&C)	02.05.2016	13.05.2016	2
		10.6	Legal services vetting	DEA LS	16.05.2016	03.06.2016	3
		10.7	SLA signed with successful tenderer	DEA/service provider	06.06.2016	10.06.2016	1
11	Capacity building project inception			DEA (O&C)/DMR/PASA/service provider			
		11.1	Service provider compiles detailed implementation plan	3 workers (?)	13.06.2016	01.07.2016	3
		11.2	Project inception meeting	DEA (O&C)/DMR/PASA/service provider	04.07.2016	08.07.2016	1
		11.3	Final implementation plan agreed upon	DEA (O&C)/DMR/PASA/service provider	11.07.2016	15.07.2016	1
12	Capacity building project implementation			DEA (O&C)/DMR/PASA/service provider			
		12.1	Implement project including study tour	DEA (O&C)/DMR/PASA/service provider	18.07.2016	03.11.2017	68

Initiative E3: Promote awareness of oil and gas industry

Raising public awareness about the risks and potential impacts of offshore activities on the marine and coastal environments and coastal economies through the establishment of a credible and appropriate function

Initiative concept/details/highlights

- i** Initiate the creation of the public awareness function from a structural, capacity, and governance point of view and develop a mandated responsibility
- ii** Collate and gather of appropriate information and identically key public concerns to promote a realistic picture of the sector (risks and benefits)
- iii** Develop the most appropriate and comprehensive public consultation and awareness platforms (marketing campaigns, awareness campaigns etc.)
- iv** Nationally launch the information function – generate hype and awareness

Contributing to the promotion of exploration and offshore activities through the development of a credible information function that improves public awareness and understanding

Implementing agency

- "The entity"

Key stakeholders identified

- Information from IOCs, DMR, SAMSA, PASA, DEA, effected provinces and local authorities, DAFF, SANCCOB etc.

Required resources

- Information collection and sharing
- Public-sector funding
- Policy/legislative support?

Implementation time frame

- Start date: tbd
- End date: tbd

Key performance indicators (KPIs)

- Improved public awareness
- Reduce risk of perceptions created by lack of communication and information
- Central data repository

Budget: Initiative E3 – Promote awareness of oil and gas industry

All figures in ZAR mn

No.	Initiative	2014/15		2015/16		2016/17 - 2018/19		Total	
7	Design the outreach component of the regulator	0.08	Govt: 0.08 Non-govt: 0	0.19	Govt: 0.19 Non-govt: 0	0	Govt: 0 Non-govt: 0	0.27	Govt: 0.27 Non-govt: 0
2	Outreach component development, establishment and launch	0	Govt: 0 Non-govt: 0	0.06	Govt: 0.06 Non-govt: 0	1.53	Govt: 1.53 Non-govt: 0	1.59	Govt: 1.59 Non-govt: 0
3	Ongoing operation of the outreach unit	0	Govt: 0 Non-govt: 0	0	Govt: 0 Non-govt: 0	6.36	Govt: 6.36 Non-govt: 0	6.36	Govt: 6.36 Non-govt: 0
Total		0.08	Govt: 0.08 Non-govt: 0	0.25	Govt: 0.25 Non-govt: 0	7.89	Govt: 7.887 Non-govt: 0	8.22	Govt: 8.2 Non-govt: 0

KPIs : Initiative E3 – Promote awareness of oil and gas industry

No.	KPI description	KPI owner	Baseline	Target				
				2014/15	2015/16	2016/17	2017/18	2018/19
Overall KPI								
1	Improved public awareness of the oil and gas sector and its governance (based on annual survey results)	Head of the Regulatory entity (PASA and its successor)	n/a	n/a	Establish baseline awareness levels	Improved awareness levels	Significantly improved awareness levels	High levels of awareness maintained
3.1	Established task team with the mandate to develop the public awareness function	Head of the Regulatory entity (PASA and its successor)	Department of Mineral Resources (Mineral Statistics), PASA	Establish the task team with functions and resources International best-practice report on public awareness campaigns	Vision, mission and objectives charter. Key awareness outputs and implementation plan, e.g. Website resource plan (key items, budget)	...	...	...
3.2	Gap & needs analysis report	Head of the regulatory entity (PASA and its successor)	PASA's public advertising/ awareness unit	...	Initiate data collection on all information relating to offshore oil and gas – draft report Draft conceptual design on key issues	Final report: existing and required information on offshore exploration awareness. Final report: public concerns and matters of interest	...	...
3.3	Output information platforms	Head of the regulatory entity (PASA and its successor)	...	...	...	1 to 2 public awareness campaigns on key public concerns – Create Website with functional information links and contact details	Develop a document repository system that is accessible by public users	...
3.4	National launch	Head of the regulatory entity (PASA and its successor)	...	...	...	...	Launch date: public awareness unit	...

3 ft. plan: Initiative E3 – Promote awareness of oil and gas industry (1/2)

No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
1	Design the outreach component of the regulator			DMR and task team	01.01.2015	31.12.2015	52
			Developing a world-class public awareness function in South Africa				
		1.1	Establish a task team to formulate the development of a credible, world-class public awareness function	DMR (DDG Mineral Policy & Promotion; Directorate: Mineral Economics)	01.01.2015	31.01.2015	4.5
		1.2	Global best practice – international public awareness campaigns and global benchmarking of how/what/when it was established e.g. APPEA's "Our Natural Advantage" campaign	DMR lead Task team (OPASA, SAPIA, DMR, DoE, SAOGA, DEA, NGOs)	01.02.2015	31.03.2015	8
		1.3	Formulating the organisational structure within the regulator to meet the targets of increased public awareness and provision for a central information repository and minimising the risks of delaying projects due to a lack of information and communication – including vision, mission and objectives	Key Lead: DMR task team (see above)	01.04.2015	31.05.2015	8.5
		1.4	Identifying resources (financial, human capital, capacity, infrastructure) to enable the public awareness function	Key lead: DMR task team (see above); National Treasury	01.06.2015	31.08.2015	13
		1.5	Developing the mandate and focus/area of responsibility in support of the structure/framework of the development of the public awareness function – is there a need for legislative/regulatory support, e.g., South African Weather Service	Key lead: DMR/DEA/National Treasury	01.09.2015	30.11.2015	13
		1.6	Launch the development of the outreach component of the regulator	Key lead: DMR	01.12.2015	31.12.2015	5

3 ft. plan: Initiative E3 – Promote awareness of oil and gas industry (2/2)

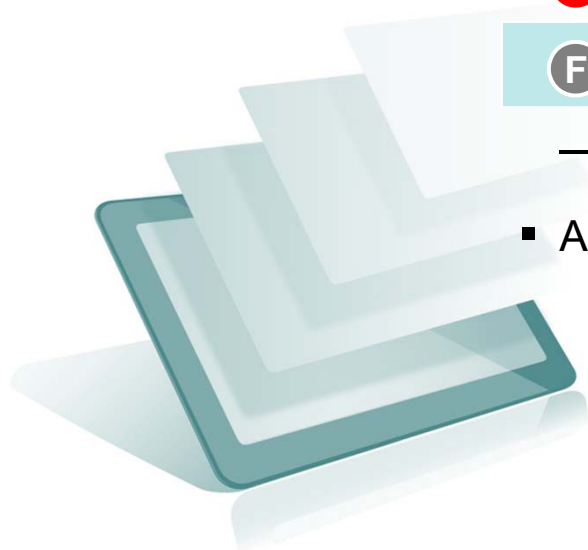
No.	Milestone	No.	Detailed activity	Responsibility	Planned start date dd.mm.yyyy	Planned end date dd.mm.yyyy	Length Weeks
2	Outreach component development, establishment and launch			A1/A2/A3	01.01.2016	31.01.2018	52
			Gap & needs analysis				
		2.1	Data collection on all information relating to the offshore oil and gas industry in South Africa <ul style="list-style-type: none"> Governance, environmental management and legislation matters IOC/private sector data on activities, non-confidential research New and emerging matters of public interest 	Lead: task team Other: IOCs/StatsSA/PASA, DEA/National Treasury	01.01.2016	30.09.2016	39
		2.2	Identification of key public concerns and matters of interest and where the public is the least informed (public consultation)	Lead: task team Other: public consultation	01.06.2016	31.12.2016	30
			Establishing the functions of "the regulator"				
		3.1	Develop appropriate awareness and public marketing campaigns <ul style="list-style-type: none"> Making South Africans feel that these are their resources, for their benefit Awareness about environmental concerns and mitigation procedures 	Lead: task team (marketing) Support: DMR/IOCs	01.01.2017	30.04.2017	17
		3.2	Establish a Website	Lead: task team (IT services)	01.09.2017	31.12.2017	30
		3.3	Develop a data/information repository with documents, legislative, news, and company policies etc.	Lead: task team (IT services)	01.01.2017	31.12.2017	52
		3.3	Staff and capacitate the function within the regulator	Lead/task team/National Treasury/DMR	01.09.2017	31.12.2017	12
			National launch				
		4.1	Host a national launch to generate hype and awareness of the function to the public	Lead: CEO of entity/DMR Support: OPASA/SAPIA/DEA	01.01.2018	31.01.2018	4
3	Ongoing operation of the outreach unit			Lead: entity/DMR	01.02.2018	Ongoing	...

Additional risk mitigation considerations

Initiative	Assumption	Risk	Mitigation measure
Initiative E2: Enhance environmental governance capacity of oil and gas regulator	That institutional issues about the oil and gas regulator are clarified and the new organisational arrangements are implemented efficiently and effectively	Low – the oil and gas lab has specifically detailed an initiative to address this risk, which is broadly supported by all key stakeholders	None, although the project should be aligned with the implementation of the agreed-upon organisational arrangements to ensure that the capacity building initiatives have the greatest positive and sustained impact
	That DEA and DMR are able to work as true partners	Low – current work around the implementation of the ministers' mining and environment agreement demonstrates the potential of a true DEA-DMR partnership	None, although ministerial intervention can be requested in the unlikely event that this assumption is not met
	That suitable oil-and-gas related environmental experts are available to assist in capacity building	Low – even though the IOCs have committed expert support, the government can also call on international expertise through various existing bilateral agreements where appropriate	None, although IOCs have committed to establishing local chapters of associations, which can further contribute to improved technical capacity within the sector
Initiative E3: Promote awareness of oil and gas industry	That the information provided is regarded as unbiased and factual, not industry propaganda	Medium – the general public may be suspicious of any information provided by an agency whose mandate is to promote the exploitation of oil and gas resources	The outreach strategy must specifically ensure that all outreach materials and events provide balanced views based on accurate, complete and current information informed by all interested and effected parties

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- **Detailed solution implementation plans**
 - Ⓐ Infrastructure
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 - Ⓕ **Legislative**
 - Governance structure
- Appendices



Legislative work stream: background



A historical mineral extraction context where benefits were not equitably distributed, leading to negative perceptions of investor intentions



Government desire to change value distribution for oil and gas while still promoting sector development and broadening participation in order to address country challenges like poverty, unemployment and social inequality



Issues and uncertainties about process, contractual stability/clarity and understanding the value proposition for all parties

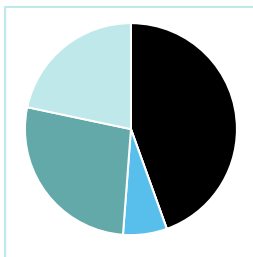
Recognising the current state of the industry and takeaways from other countries, the lab paid attention to 3 key points



In the early phase, it is necessary to have a win-win legislative and fiscal regime that can **encourage investors to take significant exploration risks** to drill wells in order to gather information about oil and gas prospects



To drill a well, there is a need for **clarity and stability of terms** that apply to the **lifetime of the project**



As the industry matures, it is key to maintain the option to **calibrate the regime** by creating a new win-win situation in respect to future projects in order to maximise future benefits for South Africa. This could include **differentiation between plays**

The legislative work stream identified 5 key issues

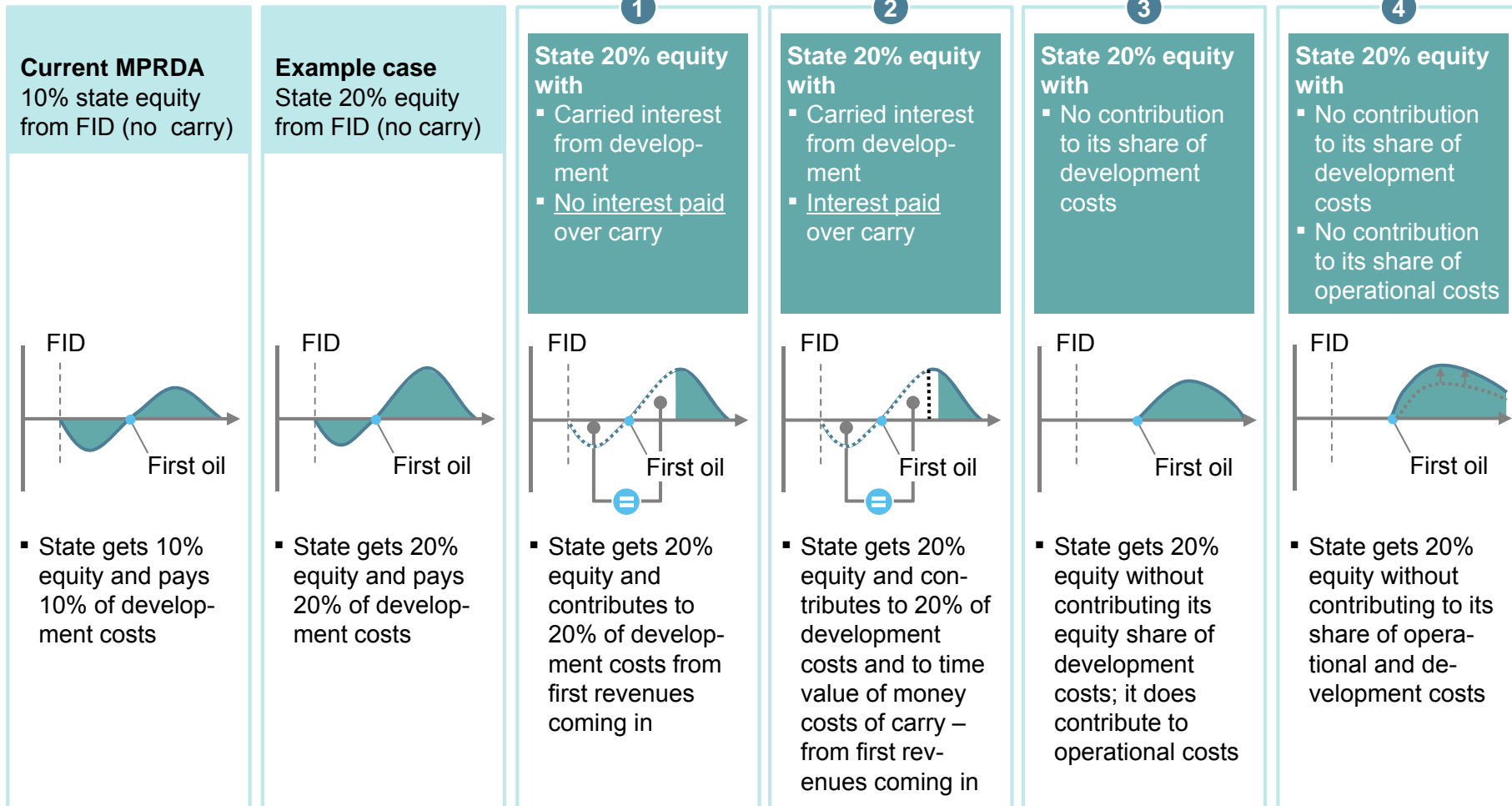
	Description
1 Interpretation of "free carried interest"	<ul style="list-style-type: none"> ▪ Multiple interpretations of the amendment possible are: "20% free carried interest without any financial obligation to the state"
2 Level of BEE participation	<ul style="list-style-type: none"> ▪ All parties strongly support BEE; however, it is unclear what percentage to assume, given the liquid fuels charter and the mining charter mention different percentages (10% and 26%)
3 ER/PR terms	<ul style="list-style-type: none"> ▪ Some elements in the current amendment need linkage/ stability between ER and PR: free carried interest, additional state participation and HDSA equity ▪ The stability of the ER and PR terms needs to be provided via a combination of regulations, contract amendment and specific contracts between the government and industry potentially in combination with affirming relinquishment terms ▪ The enabling mechanism for these contracts to hold power still needs to be defined
4 Additional state participation	<ul style="list-style-type: none"> ▪ Additional state participation is not clearly defined in the MPDRA amendment bill, e.g., if and when it applies and at what level
5 Process uncertainty	<ul style="list-style-type: none"> ▪ The statutory timelines stated in MPDRA have been removed in the amendment bill and provided for in regulation ▪ (Institutional issues are covered by the institutions' work stream)

1 "Free carried interest without any financial obligation" can be interpreted in different ways

ILLUSTRATIVE

Cash flow to state

Interpretation of amendment: "20% free carried interest without any financial obligation to the state"

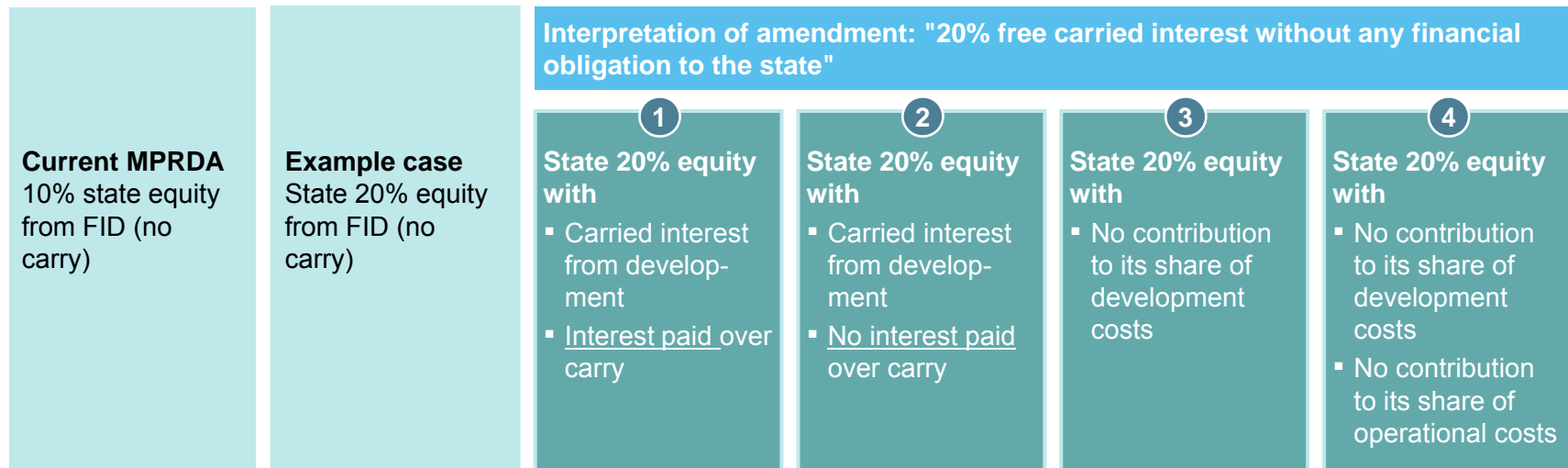


1 Depending on the interpretation of "free carried interest" the value to investors can be significantly reduced

ILLUSTRATIVE –
BEING VALIDATED

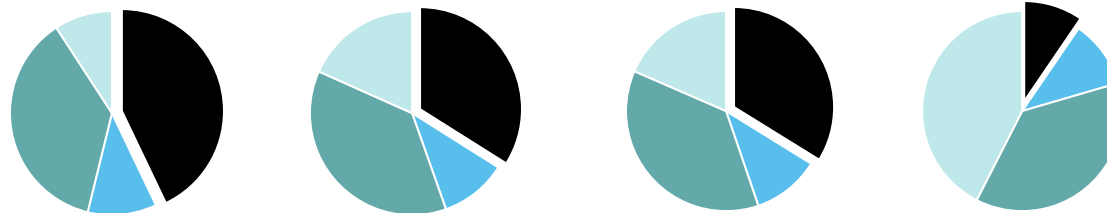
Normalised NPV of company cash flows – success case based on example field

■ Company take ■ Taxes
■ Royalties ■ Equity



Example results¹

Capex
USD
30/boe
Opex
USD
15/boe

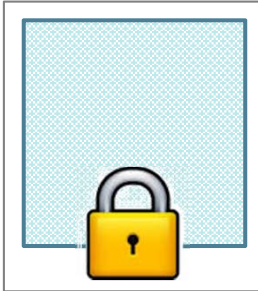


Negative returns

¹ Example case is not necessarily representative of the actual cost situation in South Africa's deep water offshore

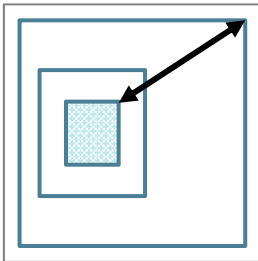
SOURCE: South African regime cashflow model; team analysis

To prevent locking in current terms for blocs that are too large, relinquishment terms should be carefully considered



State has reduced control of our relinquishment of ERs

- Majority of ER contracts include clause that **relinquishment can be negotiated and is voluntary**
- So far, this has not led to operators clinging on to acreage
- However, in the longer term it could **reduce the state's ability to calibrate fiscal terms** if the block proves to be highly prospective

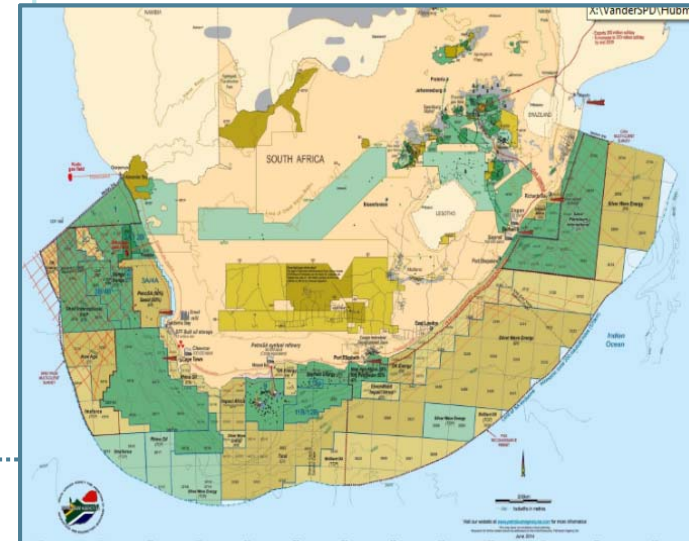


License blocks are too large

- This leads to **reduced focus and exploration intensity** per bloc
- The issues also arise with TCPs, where very large areas (expiring after 1 year) may be granted

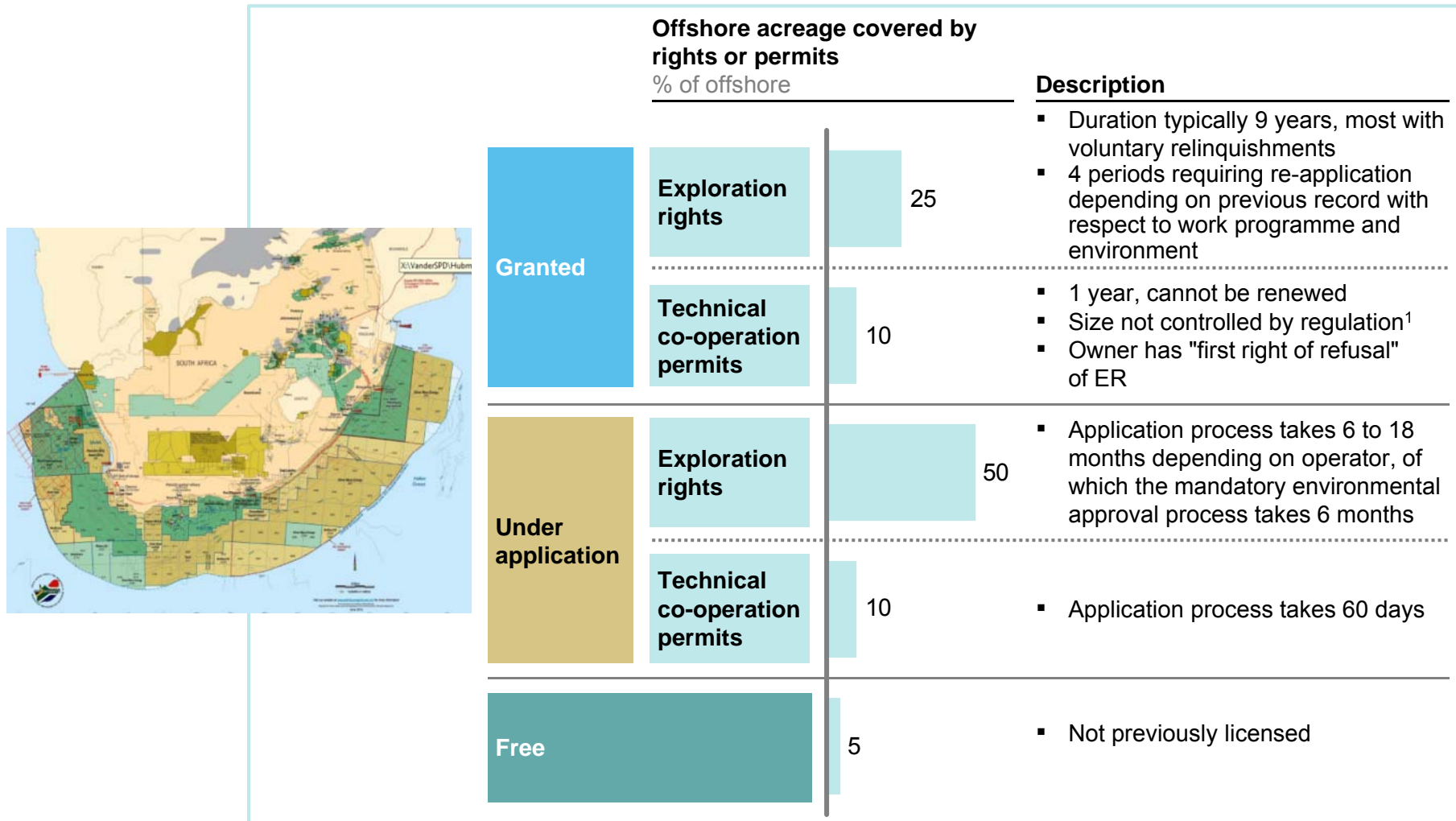


- **South Africa has a strong track record of contract sanctity**, which it will prevent from breaking, even if very favourable terms are maintained



The proposed MPRDA amendment aims to resolve these issues for blocs that are awarded after the bill is approved, but it is unclear what changes can be incorporated in the large number of applications currently in progress

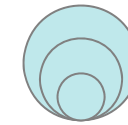
Roughly 75% of South Africa's offshore acreage is not yet subject to a granted exploration right



¹ Based on current MPRDA

Countries that want to attract investments in unproven plays typically have more favourable regimes

Government take vs. resources produced; South Africa data based on USD 30/boe capex and USD 15/boe opex¹



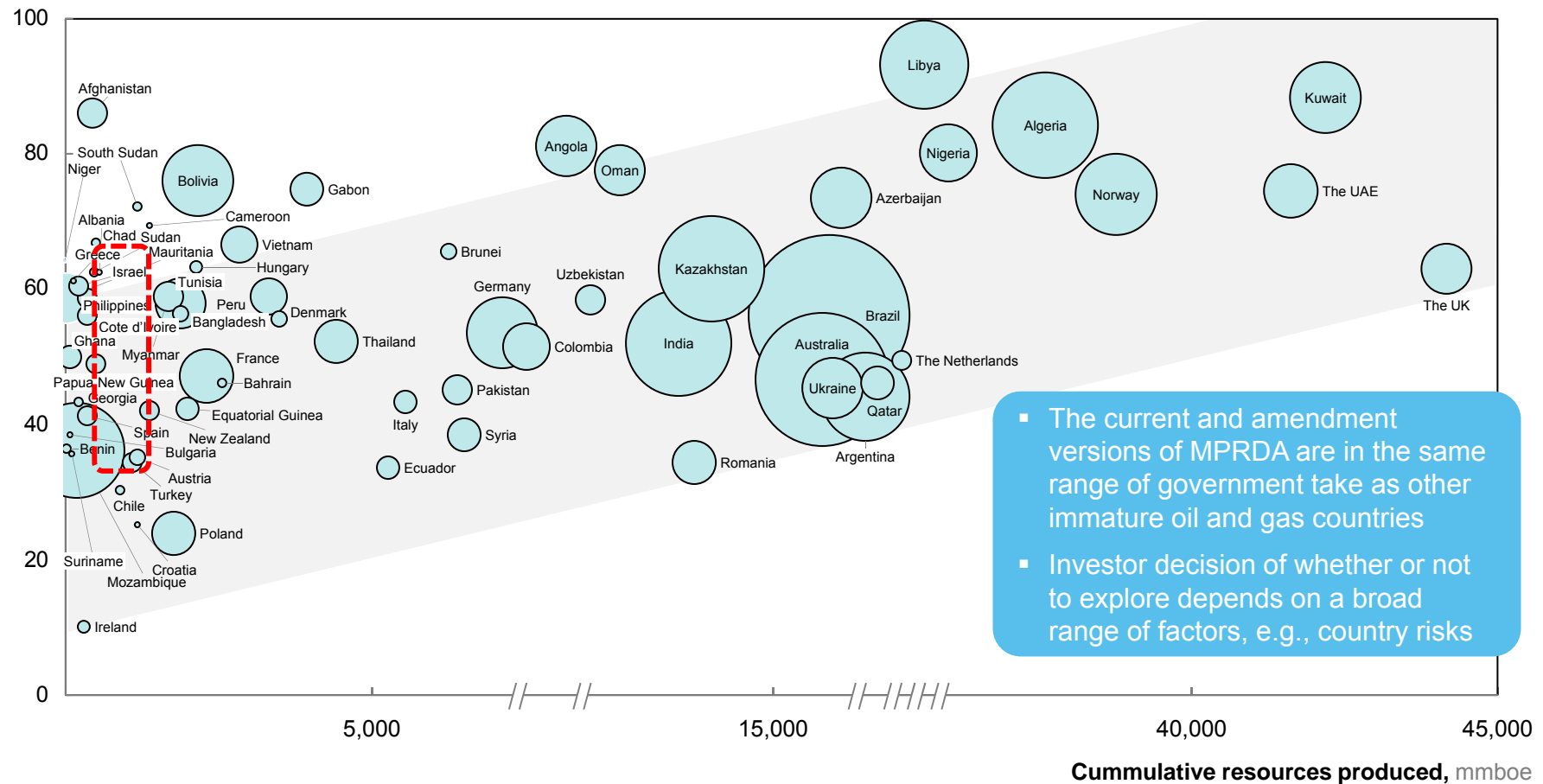
Bubble size represents yet-to-find reserves



South Africa¹ today

Government take¹

% of PV delivered to Govt at 10% discount rate



¹ For the South Africa model value used, which includes state equity share; example case is not necessarily representative of the actual cost situation in South Africa's deep-water offshore

SOURCE: Wood Mackenzie, Rystad U-Cube, team analyses

Recommendations: although the draft regulations provide clarification, some legislative changes are required

✓ Solution
✗ No solution

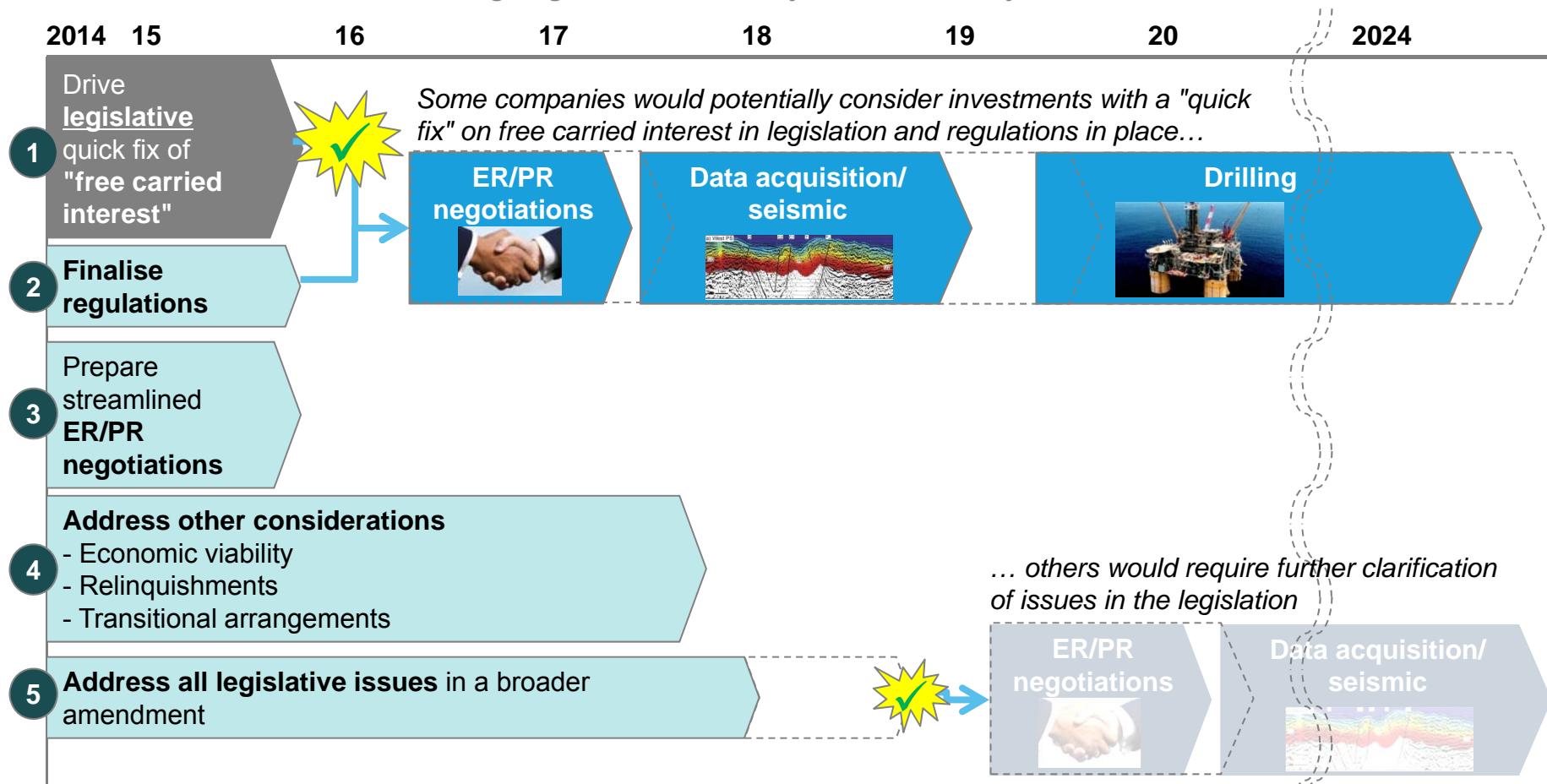
	Bill signed and enforced	New legislation drafted
Interpretation of "free carried interest"	✗ Regulations will not provide an adequate solution – misaligned	✓ Legislation aligned with intent
Level of BEE participation	✓ Regulations and Mining Charter, to provide a cap on BEE	✓ Legislation and Mining Charter amended
ER/PR terms	✗/✓ ER addendum clause to S102 provides contractual recourse; statute to give stability	✓ Empowerment provision in the legislation/statute
Additional state participation	✓ Clarified in regulations	✓ Legislation amended
Process uncertainty	✓ Process timing in regulations	✓ Process timing in regulations
Transitional arrangements	✓ Current TCP holders and ER applicants be granted stability	✓ Empowerment provision in the legislation/statute
Differential terms (per project)	✓ Proposed for long term only	✓ Proposed for long term only

F LEGISLATIVE

5 work streams should start now; without a "quick fix" in legislation for free carried interest, achieving the lab's aspiration is unlikely

NOT EXHAUSTIVE

Illustrative timeline of creating legislative stability and certainty



- Picture assumes projects that are technically and economically viable
- Assuming no delays from e.g., conflicts with marine protected areas

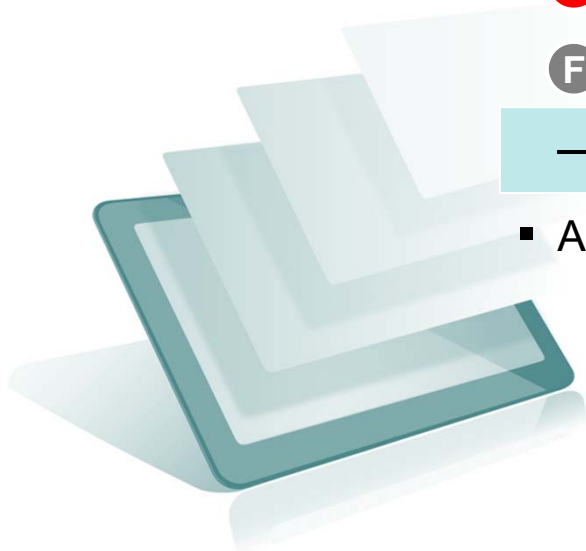
F LEGISLATIVE

A project team should be established to manage legislative issues in the future led by the government, e.g., DMR



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Proposed oil and gas governance structure

Steering committee: meeting once a month

- Initiative owners to provide progress updates
- Make decisions and provide guidance/direction to the team
- Resolve conflicts
- Oversee all other matters related to work stream

Steering committee Chair: lead minister

Members

- DG of DMR
- DG of DoE
- DG DEA
- DTI
- DG Water and Sanitation
- Deputy President's Office (HR Council)
- Head of Oceans Secretariat
- CEO of CEF
- CEO PASA
- Coastal Provinces

Secretariat: delivery unit

Outcome facilitator (DPME)

Working level: meeting more frequently (i.e. bi-weekly)

- Liaise directly with delivery unit and respective DPME outcome facilitator

A1) Develop phased gas pipeline network	B1) Conduct joint emergency response drills	B2) Operationalise IOPC Funds	B3) Exploit broader research opportunities presented by offshore oil and gas exploration	C1) Develop/ implement local content roadmap	D1) Develop/ implement skills strategy roadmap	D2) Develop capability for sub-surface research capability	E1) End-to-end institutional structure	E2) Enhance environmental governance capacity of oil regulator	E3) Promote awareness of oil and gas industry	F1) legislative clarity and stability
Owner <ul style="list-style-type: none"> Ompi Aphane (DDG: DoE) Other key implementors <ul style="list-style-type: none"> Landi Themba (DoE), Neville Ephriam (iGas) S. Ncemanane (CDC) Dee Fischer (DEA) 	Owner <ul style="list-style-type: none"> Mondi Mayekiso, DDG: Oceans & Coasts, DEA Other key implementors <ul style="list-style-type: none"> Yazeed Peterson (DEA) A. Molden (SAPIA) TNPA Sean Lunn (OPASA) David Garnett (NAT JOINTS) Collins Makhado (SAMSA) 	Owner <ul style="list-style-type: none"> DDG (DoT) Other key implementors <ul style="list-style-type: none"> J. Bednar-Giyose (NT) D. van Niekerk (SARS) Sipho Mbatha (SAMSA) Yazeed Peterson (DEA) Sandia de Wet (DIRCO) A. Moldan (SAPIA) 	Owner: <ul style="list-style-type: none"> Thomas Auf de Hyde, DDG: DST Other key implementors <ul style="list-style-type: none"> Peter Lukey and Ashley Naidoo (DEA) Sean Lunn (OPASA) NRF Kerry Sink (SANBI) Thembakazi Mali (SANEDI) Sean Johnson (PASA) CSIR and NRF Russ Berkoben (Exxon) 	Owner <ul style="list-style-type: none"> Garth Strachan (DDG: DTI) Other key implementors <ul style="list-style-type: none"> A. Mukandila (DTI) Sean Lunn (OPASA) M. Xiphu (SAOGA) IDZs (CEOs) S. Ncemanane (CDC) Jacky Molisane (DPE) Mmabatho Matiwane (PetroSA) Lunga Saki (CEF/SASDA) 	Owner <ul style="list-style-type: none"> Florus Prinsloo (DHET) Other key implementors <ul style="list-style-type: none"> Mpumi Mnconywa (DoL) Sean Lunn (OPASA) M. Xiphu (SAOGA) A. Singh (Eskom) Docoure (NMMU) Dr Siphon Senabe (DPASA) CEOs (SETAs/FETs) 	Owner <ul style="list-style-type: none"> Dave vander Spuy (PASA) Other key implementors <ul style="list-style-type: none"> Ian Calvert (SAMSA) Gilbert Siko / Somila Xosa (DST) Florus Prinsloo (DHET) Sean Lunn (OPASA) Musa Mabuza (DDG/DMR) Moctar Doucoure (NMMU) 	Owner <ul style="list-style-type: none"> Musa Mabuza (DDG: DMR) Other key implementors <ul style="list-style-type: none"> T. Zungu (DoE) Y. Chetty (CEF) Greg Botha (CGS) Sizwe Dube (SAMSA) N. Tantsi (PetroSA Legal) 	Owner <ul style="list-style-type: none"> Alf Wills, DDG: Environmental Advisory Services, DEA Other key implementors <ul style="list-style-type: none"> Musa Mabuza (DDG: DMR) Dee Fischer and Alan Boyd (DEA) Khethiwe Dlamini (Ugu Municipality) Head of the end-to-end institutional structure for oil and gas regulation (see E1) 	Owner <ul style="list-style-type: none"> Musa Mabuza (DDG DMR) Other key implementors <ul style="list-style-type: none"> Dave vander Spuy (PASA) Sean Lunn (OPASA) M. Xiphu (SAOGA) 	Owner <ul style="list-style-type: none"> Futhi Msimang (NT)/Musa Mabuza (DDG:DMR) Other key implementors <ul style="list-style-type: none"> Musa Mabuza (DDG:DMR) Tseliso Maqubela (DoE) N. Tantsi (PetroSA/ Legal) B. Ncanywa (DoE Legal) M. Xiphu (SAOGA) Andre Andreas (DMR Legal) Sean Lunn (OPASA)

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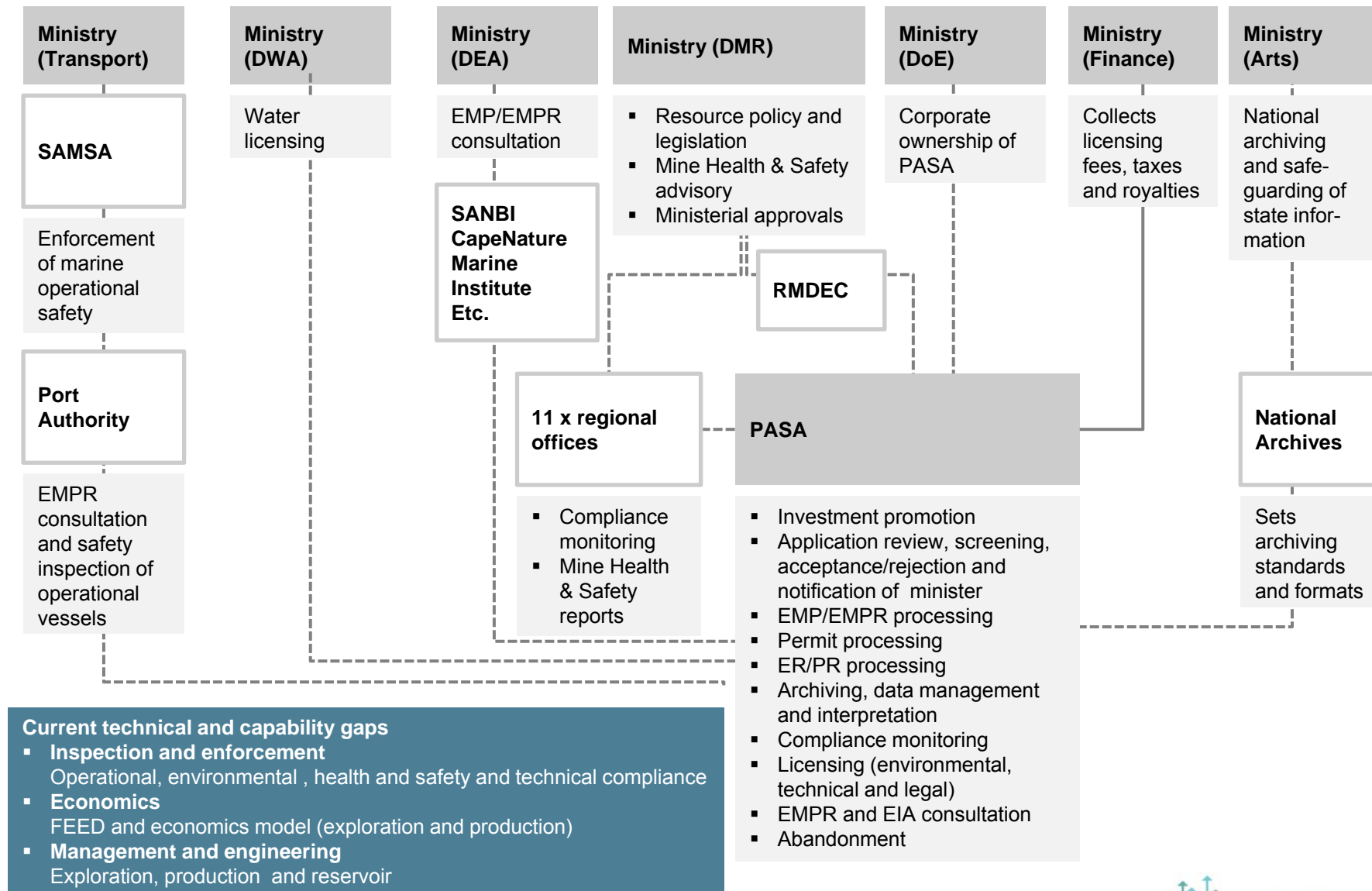
- Executive summary
- Detailed solution implementation plans
- **Appendices**



Syndicated parties

Initiative	Responsible department branch	Head of department
Environment		
Build capacity for environmental governance	▪ DEA – Chief Directorate, Oceans and Coastal	▪ Andre Share
Conduct joint industry/government emergency response drills	▪ DEA – Chief Directorate, Integrated Coastal Management/DoT Safety, Security and Marine Environmental Protection	▪ Andre Share ▪ Nasipha Sobekwa
Operationalise the IOPC Funds	▪ DEA – Oceans and Coastal	▪ Yazeed Peterson
Benefits/infrastructure		
Exploit joint research opportunities arising from exploration activity	▪ DEA – Chief Directorate, Oceans and Coastal Research ▪ Department of Science and Technology (Research and Dev Svcs)	▪ Ashley Naidoo ▪ Dr Thomas auf der Heyde
Lay foundation for local value-add capabilities	▪ Department of Trade and Industry (Industrial Development Policy Development Division)	▪ Garth Strachan
Develop a collaborative skills strategy roadmap	▪ Department of Trade and Industry (Skills for Economy)	▪ Jocelyn Vaas
Institutional arrangements		
Achieve a streamlined end-to-end institutional structure	▪ DMR (Mineral Policy and Promotion)	▪ DDG Mabuza Mosa
Improve awareness of oil and gas in South Africa	▪ DMR (Mineral Policy and Promotion)	▪ DDG Mabuza Mosa
Legislative certainty		
Provide industry with certainty about fiscal/contractual terms	▪ DMR (Mineral Policy and Promotion)	▪ DDG Mabuza Mosa

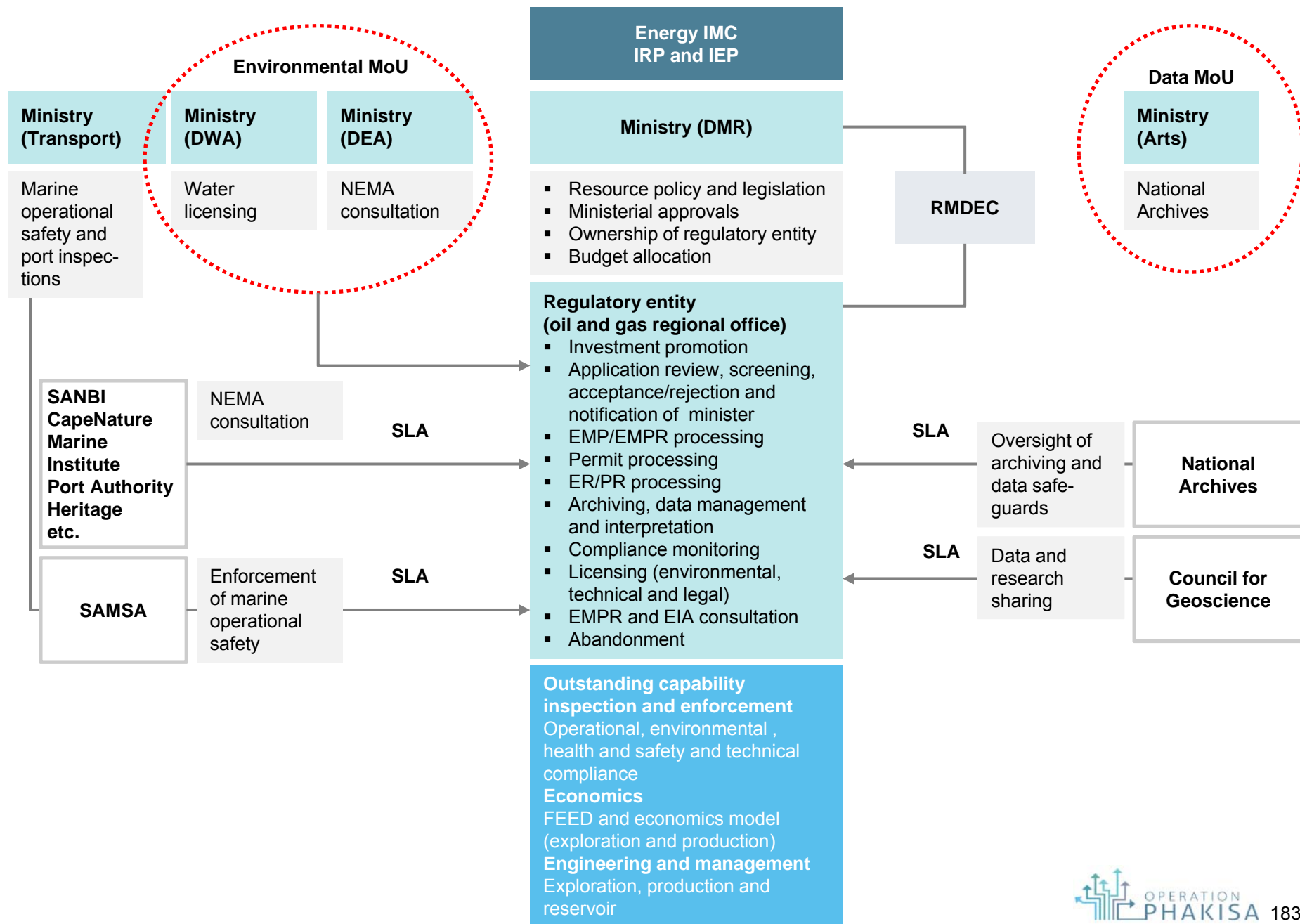
Current institutional arrangements take 8-36 months to issue licences, while the current MPRDA amendments remove time frames



Staffing at select ministries worldwide

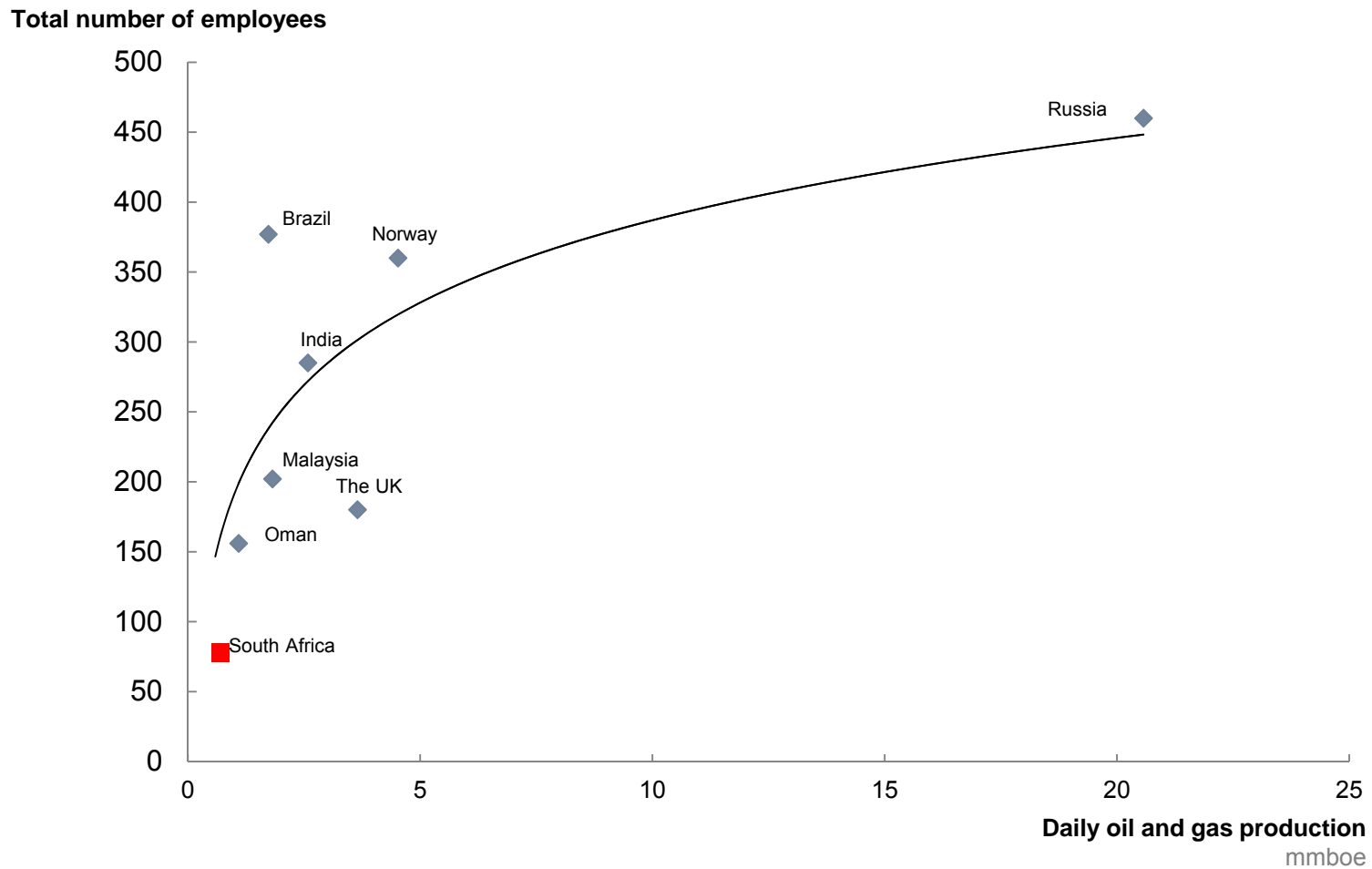
	Number of personnel	Demographics
The UK	DTI: 180 employees	Minimum of 6 years industry experience required for technical personnel
Brazil	ANP: 377 employees (276 fulltime) MME: 2,361 employees (663 active)	ANP: 2.6% P.E, 20% S.E.; 51.7% university; 14.1% postgrad; 9.2% Master's; 2.6% PhD;
Norway	NPD: 350 personnel and 10 managers	A great percentage of NPD employees have a technical background
Mexico	ERC: 137 employees Energy Ministry: 890 employees	Primary specialties: engineering; economics, accounting, law
Oman	Ministry of Oil & Gas: 156 employees	15% technical education
Malaysia	PMU: 202 employees	Around 50% of staff are technical personnel
Russia	MNR in relevant agencies: 240 employees Federal Energy Agency: 220	R&I estimates over 80% have technical backgrounds
India	Ministry of Petroleum & Natural Gas: 285 employees	n/a
South Africa	PASA: 75 employees	Capability gaps (40 specialists): Inspection & enforcement Economics Engineering & management

SOURCE: Interviews; team analysis



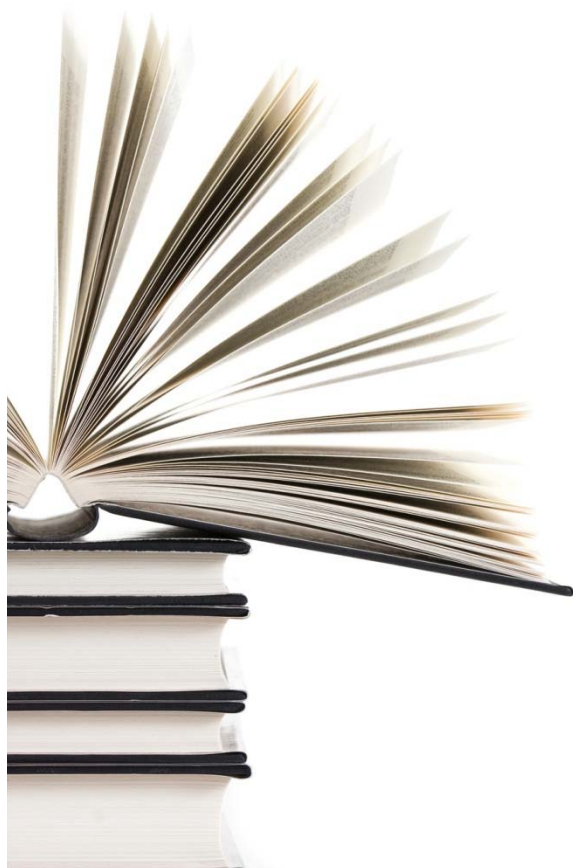
Benchmark of staffing levels for national regulatory bodies

Number of total employees vs. daily oil and gas production



PASA's current staffing levels reflect historical industry activity

Glossary



bbl – barrels

bn – billion

boe – barrels of oil equivalent

CCGT – closed cycle gas turbine

E&P – exploration and production

ER – exploration right

GTL – gas to liquids

IPP – independent power producer

LNG – liquified natural gas

mn – million

MW – megawatts

OCGT – open cycle gas turbine

O&G – oil and gas

ROV – remote operated vehicle

PR – production right

tcf – trillion (standard) cubic feet

TCP – technical cooperation permit

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