1. Coega Overview
2. Building Capacity for the Energy Sector
3. Conclusion
Coega Overview

Building Capacity for the Energy Sector

Conclusion
## Coega Overview

<table>
<thead>
<tr>
<th>Coega Development Corporation (Pty) Ltd – a State owned entity</th>
<th>Coega IDZ</th>
<th>Coega Commercial Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11500 ha prime industrial estate located in Port Elizabeth</td>
<td>HCS, VACC, CCT, Business Consulting</td>
</tr>
<tr>
<td></td>
<td>182 ha NMBLP near Volkswagen SA</td>
<td>Infrastructure Implementing Agent for government</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31 Operational Investors IDZ &amp; NMBLP</th>
<th>14 International Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17 Home-grown Companies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R6.446bn Private sector investment</th>
<th>R 2.646bn Top-structures for investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 367 Jobs have been created in the IDZ thus far</td>
<td>6 175 Operational Jobs</td>
</tr>
<tr>
<td>Over 71 445 people trained to take up positions within the Coega IDZ</td>
<td>11 192 Construction Jobs</td>
</tr>
<tr>
<td></td>
<td>CCA to reduce costs for Exporters</td>
</tr>
</tbody>
</table>
Priority Sectors for Investment

- Chemicals
- Agro-processing
- Logistics
- Automotive
- Metals
- Services
- Energy
- Maritime
- Trade Solutions / Training & Development Cluster
South Africa’s Diverse Energy Mix

Coal

Bio Energy

Natural Gas

Wind

Nuclear

Solar
Coega Overview

Building Capacity for the Energy Sector

Conclusion
Eastern Cape Energy Vision

- Eastern Cape endowed with resources for a diverse energy mix
- Locate LNG & Gas-to-Power power solution at Coega
- Build socio-economic linkage to Shale Gas Prospect in province
- Central in Nuclear Readiness Programme
- Expand RE implementation in EC to drive socio-economic growth
- Leverage lessons from Dedisa PPP & REIPPPP experience
- Facilitation for enabling infrastructure
- Remain relevant to the developmental trajectory of South Africa
Coega’s Energy Sector Outlook

CDC ENERGY LOCALISATION

- **Generation**
  - Renewables
  - Gas to Power

- **Enablers**
  - Natural Gas (incl. Shale)
  - Nuclear Localisation
  - Energy Logistics/Movement

- **Manufacturing**
  - Shale Gas

- **Centre of Excellence**
  - Skills Development
  - Research & Development
  - Enterprise Development

- **Operations & Maintenance**
  - Nuclear
  - Renewables
  - Electronics
Central to supporting Energy localisation

- Coega is working closely with various entities in building readiness for Energy Localisation.
- Focus areas include:
  - Institutional readiness, clarification of roles and demystification.
  - Communication & public awareness building.
  - Local content manufacture and service provision.
  - Skills training.
  - Human capital and facilitated labour provision.
  - Coordinate ancillary infrastructure development and logistics requirements.
  - Harnessing ancillary SMME opportunities.
<table>
<thead>
<tr>
<th>Human Capital Solutions - Social Facilitation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HCS Social Facilitation Operating Model</strong></td>
</tr>
<tr>
<td>Community Baseline Assessment</td>
</tr>
<tr>
<td>Establishment of Project ER Protocols</td>
</tr>
<tr>
<td>Labour Risk Assessment</td>
</tr>
<tr>
<td>Labour Agreement negotiations</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Construction Labour Histograms</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Sequence Indicates Activities undertaken in parallel</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Project Management Activities</td>
</tr>
</tbody>
</table>
Gas Readiness
Shale Gas – Game Changer for the EC

- Current predicted spread of the shale gas predominant in the Eastern Cape and the Northern Cape
- **EC must be at the forefront of the shale gas development** through partnerships with key stakeholders
- Influence national policy decisions

- Research & Knowledge Building
- Public Awareness
- **Trigger Gas sector in the EC**
- Identification of Local industry participation & development

Shale Gas prospect
### Main Economic Benefits from Shale Gas

#### based on Econometrix deposit estimates

<table>
<thead>
<tr>
<th></th>
<th>Scenario A</th>
<th>Scenario B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource TCF</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Total project turnover Rm</td>
<td>4,031,773</td>
<td>9,520,268</td>
</tr>
<tr>
<td>Average annual turnover Rm</td>
<td>161,271</td>
<td>380,811</td>
</tr>
<tr>
<td>Total project value added Rm</td>
<td>2,006,046</td>
<td>5,015,116</td>
</tr>
<tr>
<td>Average annual value added Rm</td>
<td>80,242</td>
<td>200,605</td>
</tr>
<tr>
<td>Total project government revenue Rm</td>
<td>886,808</td>
<td>2,223,494</td>
</tr>
<tr>
<td>Average annual government revenue Rm</td>
<td>35,472</td>
<td>88,940</td>
</tr>
<tr>
<td>Total project employment - man years</td>
<td>7,328,608</td>
<td>17,600,846</td>
</tr>
<tr>
<td>Average annual employment</td>
<td>293,144</td>
<td>704,034</td>
</tr>
</tbody>
</table>
Towards an Integrated Natural Gas Industry

Extracted from **SAOGA**: Assessing the Opportunities in South Africa’s Hydrocarbons Industry
Crude Oil Refinery
Crude Oil Refinery

2025
Crude Oil Refinery

27 000 jobs (direct and indirect) at the height of the construction

Job Creation: 18 500 jobs (direct and indirect) through the refinery’s operation

Processing 300 000 barrel per day refinery

$10-billion investment + $1-billion utility island

Key to South Africa’s liquid fuel supply security

3.7% increase in GDP of E.Cape

Preliminary Schedule:

Pre-Feasibility: completed March 2008
Feasibility (incl. basic engineering): End 2017
Front end engineering: Duration 2 years
Construction: Duration 3-4 years
Start of operations 2025.
Crude oil to be imported and piped to refinery.

Infrastructure required:
- 1000 ha
- 20 Ml/d Industrial water
- 7 Ml/d Potable water
- 165 MW
Crude Oil Refinery– Petrochemical Value Chain

Refinery

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Component</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20°C</td>
<td>C₉ to C₁₂ naphtha</td>
<td>liquefied petroleum gas</td>
</tr>
<tr>
<td>120°C</td>
<td>C₁₀ to C₁₅ kerosene (paraffin oil)</td>
<td>petrol for vehicles</td>
</tr>
<tr>
<td>170°C</td>
<td>C₁₄ to C₂₀ diesel oils</td>
<td>jet fuel, paraffin for lighting and heating</td>
</tr>
<tr>
<td>270°C</td>
<td>C₂₀ to C₃₀ lubricating oil</td>
<td>diesel fuels</td>
</tr>
<tr>
<td>600°C</td>
<td>C₆₀ to C₇₀ fuel oil</td>
<td>lubricating oils, waxes, polishes</td>
</tr>
<tr>
<td>&gt;C₇₀</td>
<td>bitumen for roads and roofing</td>
<td>fuels for ships, factories and central heating</td>
</tr>
</tbody>
</table>

Petro-chemicals

- Raw material sector:
  - Employment: 6,000

- Converters sector:
  - Employment: 35,000
Labour Absorption

1. Up to 30,000 people will be required on site at the peak of construction – can be spread via modularized construction.

2. Between 5,000 and 10,000 highly skilled artisans will be required during the construction phase.

3. About 1,000 permanent jobs in the refinery will be created.

4. About 15,000 permanent jobs in associated industries will be created.

5. Recruitment process will cover all Provinces.

6. Establishment of a large training facility in Coega similar to the highly successful Centre of Excellence (COE) of Mossel Bay. Other facilities will be upgraded.

7. CSDP will be run across all Provinces.
Nuclear Localisation
Nuclear Build & Localisation Success Factors

9.6 GW of additional generation - nuclear energy; IRP2010

Thyspunt, 80km from Coega - earmarked as location for Fleet 1

Projections:
Over 15000 construction jobs
Over 1500 operational jobs

Political

Community & public awareness

Technology & quality standards

Enabling Infrastructure

Localisation & Economic development

Education & Training

Environment

Nuclear Component manufacturing & Advanced Manufacturing
Opportunities to develop a local nuclear industry

**Nuclear**
- Reactor Pressure Vessel
- Reactor Internals

**Mechanical**
- Steam Turbine
- Condenser
- Heat Exchangers
- Pumps
- Valves

**Electrical**
- Generator
- Transformers
- Switchgear

**Construction & Operational Logistics**

**Civil Works:**
- Supplier storage and offices
- Vehicle parks
- Temporary fences
- Topographic controls

**Mechanics:**
- Building site necessities:
  (pumping, various piping, provisory water supply)
- Cranes and other utility vehicles

**Power Supply:**
- Temporary power supply

**Services:**
- Security
- Cleaning and other office maintenance
- Handling and transportation on site
- Overhead cranes operation
- Building waste management

**Chemical**
- Radioactive Waste
- Nitrogen & CO2 Storage

**Misc.**
- Fire Protection Systems
- HVAC Systems
- Cranes & Hoists
- Elevators

**Equipment Modules**
- Nuclear & non-nuclear

**Mechanical**
- Steam Turbine
- Condenser
- Heat Exchangers
- Pumps
- Valves
Thyspunt Occupational Forecast

<table>
<thead>
<tr>
<th>Job type</th>
<th>Peak Average Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craft labour</td>
<td>4,140</td>
</tr>
<tr>
<td>Boilermakers</td>
<td>150</td>
</tr>
<tr>
<td>Carpenters</td>
<td>410</td>
</tr>
<tr>
<td>Electricians / instrumentation</td>
<td>750</td>
</tr>
<tr>
<td>Iron workers / Fitters / Welders</td>
<td>750</td>
</tr>
<tr>
<td>Insulators / Thermal insulators</td>
<td>80</td>
</tr>
<tr>
<td>Labourers</td>
<td>410</td>
</tr>
<tr>
<td>Masons</td>
<td>80</td>
</tr>
<tr>
<td>Millwrights</td>
<td>130</td>
</tr>
<tr>
<td>Operating engineers / Crane operators</td>
<td>340</td>
</tr>
<tr>
<td>Painters</td>
<td>80</td>
</tr>
<tr>
<td>Pipefitters</td>
<td>700</td>
</tr>
<tr>
<td>Sheetmetal workers</td>
<td>130</td>
</tr>
<tr>
<td>Teamsters / Code 14 truck drivers</td>
<td>130</td>
</tr>
<tr>
<td>Craft supervision</td>
<td>210</td>
</tr>
<tr>
<td>Site indirect labour</td>
<td>410</td>
</tr>
<tr>
<td>Quality control inspectors</td>
<td>100</td>
</tr>
<tr>
<td>NSSS vendor and subcontractor staffs</td>
<td>360</td>
</tr>
<tr>
<td>EPC contractor’s managers, engineers and schedulers</td>
<td>260</td>
</tr>
<tr>
<td>Start-Up Personnel</td>
<td>150</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>5,630</strong></td>
</tr>
</tbody>
</table>

Figures required per year are based on annual requirements up to a projected peak demand.
Coega Skills Development activities

• Coega Recruitment and Induction Centre
• Coega Skills Development Centre located on IDZ:
  ✓ Apprenticeship training centre (construction, manufacturing and MEI)
  ✓ Tool, die and moulding-making programme
  ✓ Short skills programmes
• Incubation and enterprise (business) development unit
• Simulation training environment (plant and driving simulators)
• Driver training academy operating from Colleges and Universities, and at Coega RIC
• “Skills on Wheels” mobile skills training facilities
Coega Overview

Building Capacity for the Energy Sector

Conclusion
EC Energy Frontier – a Socio-Economic Driver

• EC endowed with resources for a diverse energy mix
• Stimulate local content manufacturing for Energy sector
• Leverage innovation and business ecosystems to enhance competitiveness and attractiveness as location of choice
• Remain relevant to the developmental trajectory of SA
THANK YOU

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