

Angola – Business Unusual: a New Paradigm for Success in the Global Oil and Gas Industry

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Houston, we have a global industry



Through 1910 the United States produced 60-70% of the world's oil supply.

1919: Britain controlled 50 percent of the world's proven oil reserves.

1948: Ghawar oil field discovered in Saudi Arabia – still the largest conventional oil field in the world

1951: Nationalization of Iranian oil industry

1956: Oil discovered in Algeria and Nigeria

1960: OPEC created: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela

Later: Qatar (1961), Indonesia (1962-2009), Libya (1962), United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973-1992; 2007-), Gabon (1975-1995) and **Angola (2007-)**

1972: Nationalization of Iraqi oil industry

1975: Nationalization of Kuwaiti oil industry

1976: Nationalization of Angolan oil industry

1979: Nationalization of Saudi Arabian oil industry

Today: National oil companies worldwide demand more and more “local content”

Sources: U.S. Library of Congress (online), Business and Economics Research Advisor, Issue 5/6: Winter 2005/Spring 2006, Updated March 2010; www.opec.org; Geo-Help Inc.; Mintz, S. (2007). *Digital History*. Retrieved 24 July 2010 from <http://www.digitalhistory.uh.edu>; MBendi Information Services (Pty) Ltd

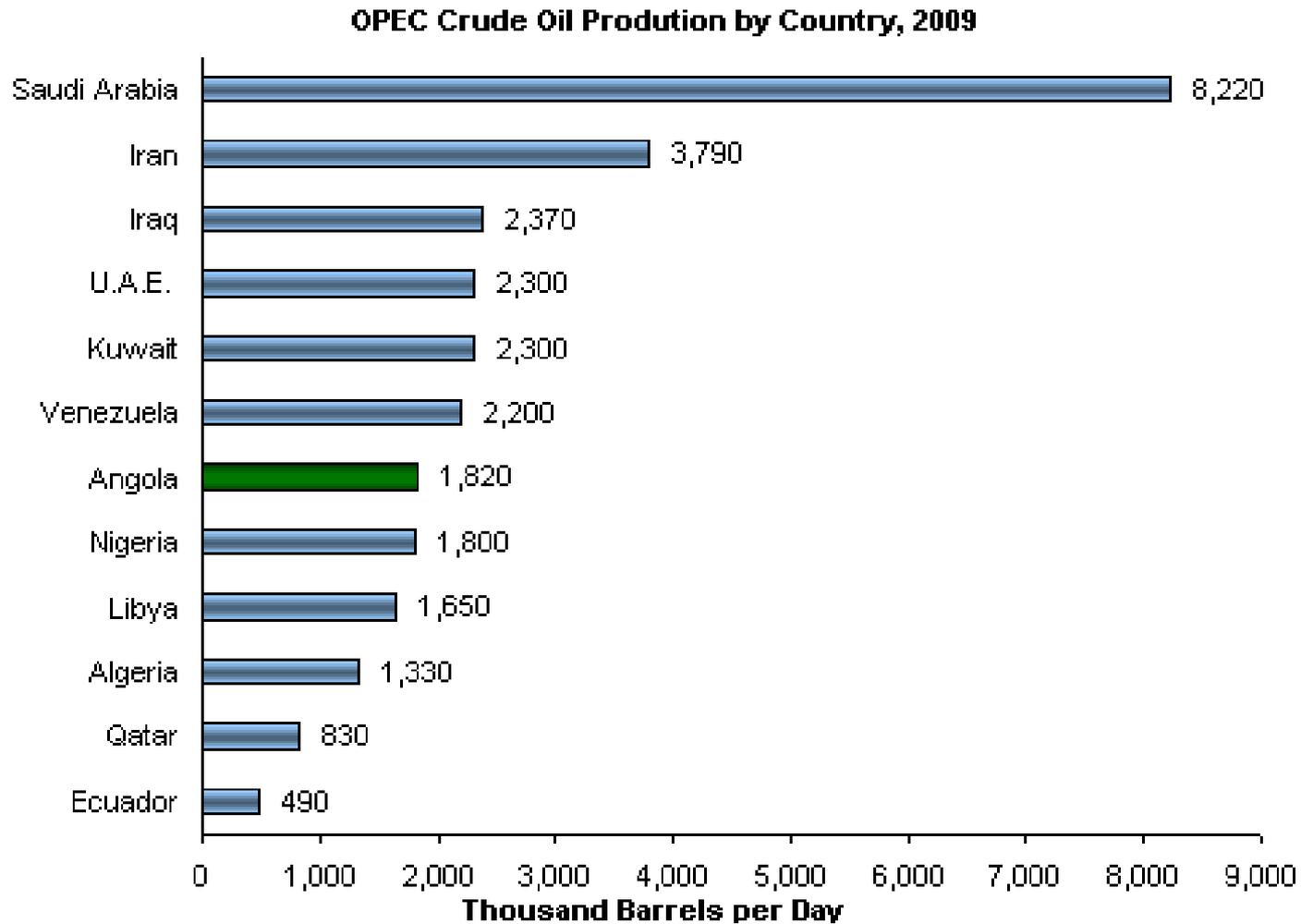
Why Angola?



- 1955: Oil discovered – and produced at modest levels into the 1990s
- 1975: Gained independence after almost 500 years of Portuguese influence
- 2002: End of 27 years of civil war
- 2007: Angola is second-largest oil producer in sub-Saharan Africa, and production is growing 25% a year
- 2009: Angola is largest crude oil producer in Africa, surpassing Nigeria, where increased instability in the Niger Delta has shut-in large volumes of oil production
- 2009: Angola holds OPEC presidency; ranks seventh among OPEC countries in production

Sources: www.time.com: “Africa’s Oil Dreams,” May 31, 2007
U.S. Department of Energy, Energy Information Administration (EIA), January 2010

Why Angola?



Above and beyond OPEC quotas:

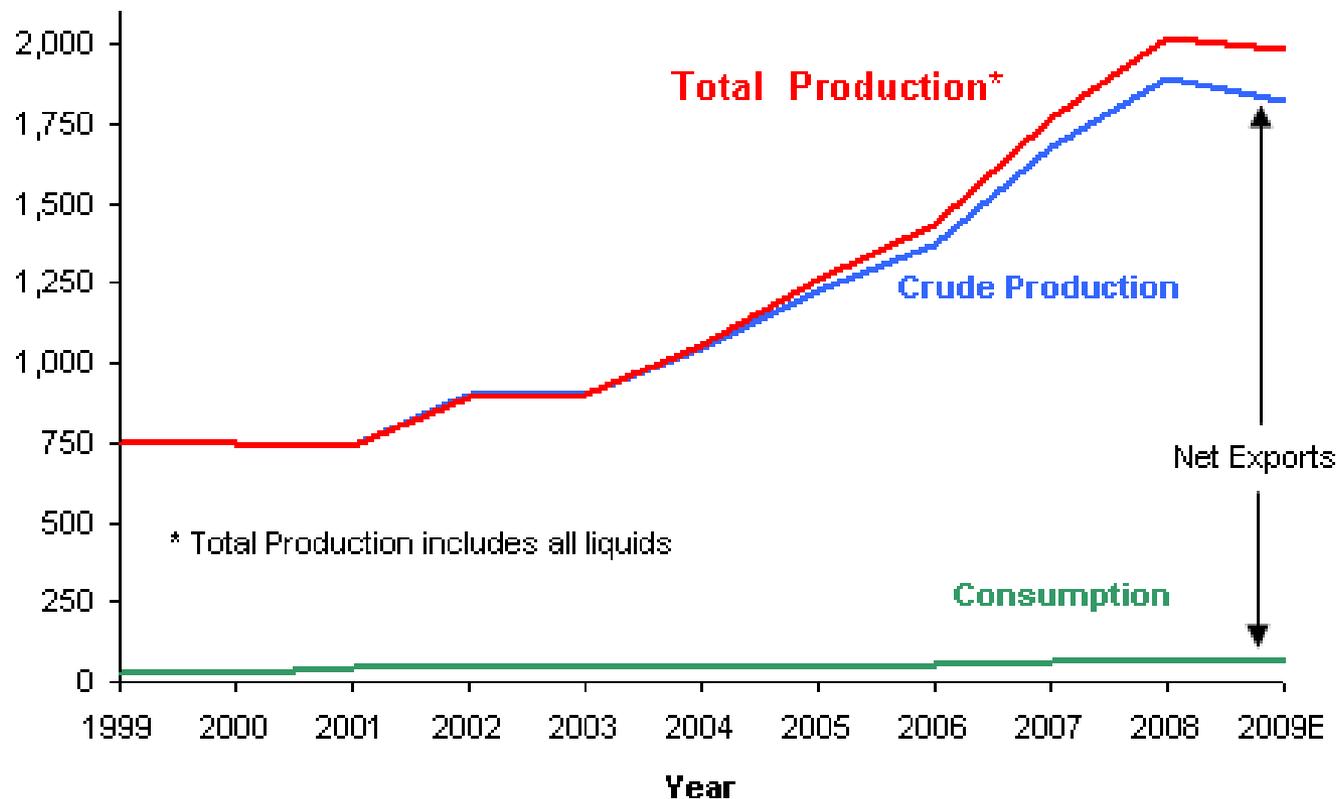
The current production quota of Angola is set by OPEC at 1.65 million barrels per day. The oil minister acknowledges that his country is producing more oil than the permitted quota for the country's reconstruction program.

Angola and Nigeria have a standing request with OPEC to increase their quotas. Angola has potential to produce more than 2 million barrels of oil per day.

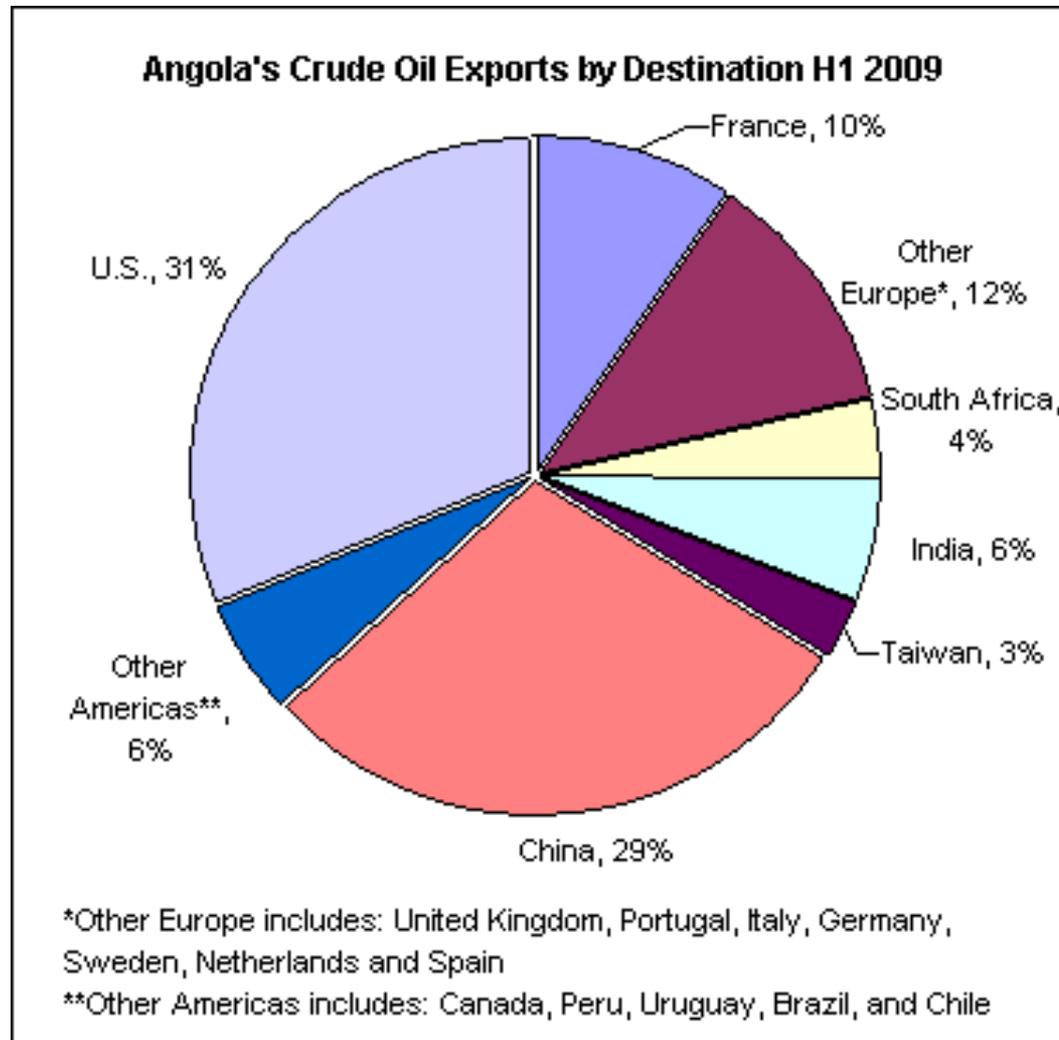
Why Angola?

Production capacity: 2.1 million bbl/d in 2009 – almost all exported
(compared to 750,000 bbl/d in 1999)

Angola's Oil Production and Consumption, 1999 - 2009



Why Angola?



Sources: Global Trade Atlas, FACTS Global Energy (Chinese import data); EIA (U.S. import data)

Why Angola?



U.S. Crude Oil Imports (Top 15 Countries) (Thousand Barrels per Day)

Country	Jun-10	May-10
CANADA	2,197	1,997
SAUDI ARABIA	1,348	1,093
MEXICO	1,066	1,290
NIGERIA	1,066	1,004
VENEZUELA	850	1,011
IRAQ	630	394
RUSSIA	437	358
ANGOLA	425	423
COLOMBIA	387	295
ALGERIA	375	352
BRAZIL	307	312
KUWAIT	217	219
ECUADOR	211	160
U.K.	117	67
AZERBAIJAN	90	67

Source: US Energy Information Administration

Logistically Attractive

- Most of the crude production is sweet (low sulfur content) and of moderate density (25-35 API gravities) although there may be significant paraffin deposits in the production equipment
- Gas/oil ratios are fairly high, and there are sufficient gas reserves to support LNG export
- Geopolitical accessibility and direct routes to market (US Gulf Coast and Western Europe)

A Technical Frontier

- Angolan offshore reservoirs first developed more than 40 years ago were in shallow water and very prolific. There are still undeveloped fields in shallow water, but the highly prolific fields are in deep water.
- There is now a move towards producing from the subsalt formations as producers are beginning to do in Brazil. These will be deep water and relatively more complex than shallow water development.
- Companies should be able to leverage knowledge gained in Brazilian waters into these new production horizons.

Why Angola?

Country Facts



- 1,600 kilometers of coastline
- 2010 estimated population: 12,799,293
- Estimated labor force: 7,769,000
- Median age: 18
- Birth rate: 43.69 births/1,000 population (2010 est.)
- Death rate: 24.08 deaths/1,000 population (July 2010 est.)
- Life expectancy at birth, total population: 38.2 years
- Literacy: definition: age 15 and over can read and write
 - Total population: 67.4%
 - Male: 82.9%
 - Female: 54.2% (2001 est.)
- Education expenditures: 2.4% of GDP (2005)

A Natural Gas Frontier:

Angola is likely to emerge as a global power in natural gas. Sonangol plans to support large amounts of LNG production by 2012 with a 5 million metric ton per annum capacity. Much more is possible.

Source: Energy Tribune. July 27, 2010. www.energytribune.com

Sustainable relationship with Sonangol is the key to this future.

Historical highlights:

- 1976: National oil company (NOC) Sociedade Nacional de Combustiveis de Angola (Sonangol) created
- 1978: Sole concessionnaire for oil and gas exploration and production
- 1983: Establishment of first international subsidiary, Sonangol Limited, in London, England
- 1991: Attribution of the first oil concession in deep water (Block 16)
- 2003: Sonangol begins operating as an oil company with grant of offshore Block 3

From Sonangol's website:

Over the past three decades Sonangol... became Angola's leading distributor of refined products and promoter of **social and human resources development**.

The absence of qualified nationals for the local oil industry forced Sonangol to begin paying special attention to the **training and professional development of its employees**. The first group of students was sent to Italy with scholarships co-aided by ENI-Italian Oil Group. A second, larger group went to Algeria. The first sponsored students graduated and returned to Angola by the end of 1970s. They became **the driving force behind a more modern Sonangol**.

Focusing on diversifying its business activities, Sonangol has developed joint-ventures and established companies that promote both **the social development of Angola** and the expansion of Sonangol. Prioritizing the **management of hydrocarbons, environmental protection and industrial safety**, Sonangol has created a diversified business that is centered around oil.

AMEC enters Angola



1999: Houston-based Paragon Engineering Services embarks on strategy to support countries that seek to maximize “local content” in oil and gas projects to bolster their economies and standards of living.

2002: Paragon begins front-end work on Chevron affiliate Cabinda Gulf Oil Company’s Area “A” Gas Management Project (AAGM)

2004: Paragon forms Paragon Angola, a joint venture with Prodoil, a subsidiary of Prodiaman, a diversified Angolan corporation with experience in the oil and gas, mining, and related support industries.



To support the next phases of AAGM, Paragon Angola hires local engineers, sends them to Houston for on-the-job training.

2005: Paragon acquired by AMEC, provider of engineering and project management services for the world’s natural resources, nuclear, clean energy, water and environmental sectors. AMEC brings global resources to support new Angolan-based projects.

- Oil boom has steeply inflated the price of everything but the bare essentials.
- Most costly country for expats – most goods cost at least twice what they would in the U.S.
- Availability of goods is unpredictable due to overloaded ports and bureaucratic import procedures. It is essential to keep a large inventory of office supplies
- Non-Angolan companies cannot own property – Paragon Angola's staff houses and office rental must be paid for up-front.
- Turn-key office accommodations are rare.
- Telecommunication, data, electrical, and water/sewer facilities typically require expansion and modification.
- Implementation of electronic work processes is hindered by lagging technology, limited bandwidth for communications.
- Location - traffic congestion in Luanda leads to extended travel times.

“China has engaged impressive investments into Angola, which have been used for infrastructure development. \$211 million has been injected into the transport industry to rebuild the road system and \$100 million has been allocating to the rehabilitation of hospitals and the building of new hospitals in the Huambo province. **China's loans have granted the country priority allocation of oil and natural resources and a major proportion of public sector projects in the country.**”

World Bank and IMF investment in Angola is encumbered with many conditions.

- Government policies for visas change frequently and are inconsistently applied. Constant recruitment is required just to retain numbers of expat workforce.
- If not anticipated and handled correctly, complications can lead to costly fines, throw off rotation schedules, and jeopardize the timely completion of projects.
- Expats expect significant uplifts, per diems, generous rotational schedules.
- Ex-pat selection must take account of their cultural awareness and their ability to train local personnel.
- Luanda offers little to remind expats of home; after-hours entertainment is extremely limited.
- Expats will spend their lives together 24/7, so positive personality interface is very important.

Challenges: local staffing

- Sonangol expects companies to train and develop local workforce.
- Existing pool of qualified locals is limited.
- Working culture of Angolan personnel may not align to company expectations.
- University Agostinho Neto (UAN) in Luanda produces about 40 engineering graduates each year, but they are usually earmarked for Sonangol or major oil companies.
- No consistent benchmarked educational qualifications – difficult to gauge skill level from resume.



Meeting the challenges



- Commitment to invest time and money: AMEC and partner Prodoil's faith in future rewards justified their long-term commitment
- Flexibility to collaborate in ways that make sense for individual projects: Paragon Angola is not an EPCI contractor, must align with other contractors, fabricators, etc.
- Negotiation of banking and tax arrangements – wire transfers, payment in US dollars
- Direct flights from Houston to Luanda



In-House Training:

- Engineering and design trainees receive several hours of technical instruction per week.
- Mentors assigned, training and development plans in place, and performance reviews conducted quarterly for Angolan trainees.
- English lessons given by bilingual staff three times per week, one hour each. Personnel also sent to English language courses – total immersion method.

Meeting the challenges



Training: Long-Term Sustainability of Local Workforce

In 2009, AMEC established an innovative program of collaboration between University of Houston and UAN to increase the quality of technical training in Angola.

- Cross-training opportunities
- Curriculum development
- Student transfer and adjunct professor opportunities.

Committed participants include Sonangol, Chevron, Prodiaman, BP, Esso Exploration, Total, Eni, Schlumberger, Endiama and Paragon Angola.

In addition, working with the US Embassy in Luanda and UAN for sustainable English language skill development program for UAN graduates.



Working to maintain a *real* company – not just a storefront

- Angolan personnel assigned to work on projects in Houston for extended periods.
- Adapting to Angolan cultural norms as they differ from US standards:
 - Greater emphasis upon personal relationships in business dealings.
 - Greater reliance on hierarchy in overall management and day-to-day project execution.

Growth trend – People:

- March 2008: Paragon Angola employed 12 personnel.
- Sept. 2010: In-office employees have grown by more than 400% with more than 50% local Angolan content.



Growth trend – Projects:

- Paragon Angola has completed over 150,000 man-hours on the Kizomba Satellites project. We remain on target to meet the commitment to achieve 25% Angolan man-hour content.
- Area “A” Gas Management work continues with expansion of onshore gas plant
- Raised AMEC’s profile locally and globally - local presence instrumental in award of several large projects
- Mafumiera Sul project awarded 2010 – new offshore development
- More project opportunities on the horizon, often with customers new to Paragon Angola

The US and British Ambassadors to Angola recently commended AMEC's local content and sustainability initiatives.



Looking ahead

- Aim to continue increasing percentage of local content on future jobs
 - 35% of large projects like Kizomba Satellites
 - 75% of small brownfield projects
 - Succession plans to reduce dependency on expatriate personnel
- In five years goal is for office to be limited only by size, not technical capability



Conclusion: what we've learned



Expand on the strengths and corporate values that led to your success to date – don't compromise them as you move into a new country. For example:

Core Value	In Houston	In Angola
Local education	Active support of local school districts through mentoring, tutoring	Collaboration between University of Houston and UAN
Community support	United Way, Rebuilding Together Houston, Ronald McDonald House, many others	Donations to orphanage and local school; seeking out further opportunities
Career development	Innovative cross-training and multi-office enrichment opportunities for young technical personnel	Comprehensive in-house training program as well as on-the-job training in other locations

Bottom line – Cultural Understanding creates Sustainable Growth

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