# INTERNATIONAL PAVILION

A showcase for international exploration and investment opportunities

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A SPECIAL REPORT TO

Diland Gas Investor

This Special Pepert			OVERVIEW	I-3	
Special Report is sponsored by the following companies		TGS	COLOMBIA	I-7	
			PERU	I-8	
Fhe Source for Critical Information and Insight ™	bp	Devon ENERGY CORPORATION	NOVA SCOTIA	I-9	
			GREENLAND	I-10	
			IRELAND	I-11	
			EGYPT	I-12	
	Deloitte.	Ne noble energy	TRINIDAD AND	I-13	
			TOBAGO AUSTRALIA	I-14	
			<b>SURINAME</b>	I-16	
Investor	NEWFIELD	Petroleum Corporation	GABON	I-17	
			* SENEGAL	I-18	
			MAMIBIA	I-19	
CORPORATION	MARATHON	REMORA ENERGY	KENYA	I-20	
			SOMALILAND	I-21	
			MOZAMBIQUE	I-22	
			EXHIBITORS	I-23	
Spectrum (	EGI		This report was prepared by the International Pavilion for <i>Oil and Gas Investor</i> . For more information on the International Pavillion, see www.internationalpavilion.com, email info@internationalpavilion.com or call 303.308.9100.		



## THE INTERNATIONAL PAVILION

Crossroads of the oil and gas world

dds are it has happened to you while strolling through the exhibit hall of an American Association of Petroleum Geologists (AAPG) convention or NAPE Expo. You look up and see the flags of nations from across the globe fluttering above a large section of booths. As you get closer, you see maps on the walls outlining exploration and production opportunities in a wide variety of countries. The animated discussions between government representatives and employees of oil and gas companies, both large and small, create a buzz. It feels as if you are at the crossroads

The International Pavilion introduces countries with oil and gas resources to companies looking to explore and produce them.



#### of the world, and in a sense you are: Welcome to the International Pavilion!

The International Pavilion, or IP for short, is an AAPG subsidiary that focuses on bringing together countries with oil and gas resources with the oil and gas companies looking to explore and produce them. By showcasing E&P opportunities, disseminating information, and providing an environment for meaningful discussion and negotiation, the IP helps facilitate the process of identifying and evaluating international exploration opportunities.

"The IP offers an unparalleled forum for the nations of the world to promote today's petroleum investment opportunities," says Gina Godfrey, managing director of the International Pavilion. "It promotes international exploration and development opportunities by national oil companies and government agencies. By providing information and networking opportunities to enable partnering opportunities, the IP has become a year-round source of information for the global petroleum industry."

The IP began in 1994 at AAPG's annual convention and exhibition. Held in Denver that year, the plan was that this would be a onetime event. That showcase drew 37 exhibiting countries, including well-established oil and gas producers like Indonesia and Venezuela. But it also included countries such as Equatorial Guinea and Belize, which at the time had not received much industry attention but subsequently became oil producers.

The enthusiastic response from both exhibiting countries and attendees led AAPG to hold the IP again the following year, and every year thereafter. Over 100 countries have exhibited in the IP over that time (*see inside back cover*).

Godfrey has been involved with the IP since its early years. "The International Pavilion has evolved into a worldwide showcase for countries in the promotion of exploration and investment opportunities and is a tremendous information resource for companies with an international focus. We believe the IP helps foster early interaction that results in the creation of successful business relationships," she says. "But it is the results that keep countries and companies coming back year after year."

The Marketing Group of Perupetro, the Peruvian national oil company in charge of

"IP has contributed significantly to impressive results for the company."

-Perupetro

promoting and signing oil and gas contracts, agrees. Since its involvement beginning in 2004, "IP has contributed significantly to impressive results for the company." The groiup notes that at the end of 2003, Perupetro had 27 E&P contracts, and at the end of 2007, it had 84 contracts—65 of them in exploration and 19 in exploitation phase. "We believe our participation in the IP program has contributed significantly to this success," a spokesman says.

The IP is a sponsor-driven program, and would not be possible without their support. Sponsors range from supermajors and service companies, to independent oil and gas companies and research institutes.







"Through the IP we enhance our ability to cultivate and maintain relationships with highlevel contacts within NOCs and ministries to further our mutual business interests," says John Adamick, Senior Vice President, TGS Geologic Products & Services, one of the IP's corporate-level sponsors.

Conferences and meetings have been a staple of IP activities since the program's successful launch in Denver. In 1997 the IP expanded its participation in exhibitions by adding the AAPG International Conference and Exhibition to its schedule, followed in 2007 with the annual AAPG APPEX meeting in London.

In 2005 AAPG spun off the IP as a subsidiary company, International Pavilion LLC. This new structure allowed it to work more closely with governments and

industry, respond quickly to market needs, and pursue new expansion opportunities.

One such expansion was the 2007 partnership agreement with the American Association of Professional Landmen, whereby the IP began exhibiting and managing the international section of NAPE Expo, the premier industry property and prospect expo held every winter in Houston. At this unique event, the participating countries exhibit alongside oil and gas companies showcasing international deals, giving attendees a wide selection of international opportunities.

This year the IP exhibited at the 2008 HGS/PESGB Africa Conference in Houston, making its first appearance at this event. Expanding IP activities to include such regional conferences meets the needs of attendees who wish to focus their international activities on a particular continent or region.

Networking is a priority at these events, going well beyond the exhibit floor. Each year the IP sponsors a reception exclusively for IP exhibitors, sponsors, and friends to encourage the important face-to-face interaction necessary for building business relationships that can lead to successful negotiations of E&P opportunities.

Another priority is the information on current opportunities provided by the countries. This high-quality content is presented in the IP Theater. Initiated in 2003, the IP Theatre has become a very popular highlight for attendees at exhibitions as well as an extremely effective communication and promotional tool for the countries. License/bidding round announcements, information on new activity and discoveries, updates on newly identified prospects and projects, as well as announcements on availability of new data have become standard "fare" in IP Theater presentations.

But at the end of these meetings, the presentations were deleted, the maps rolled

At premier industry events such as NAPE Expo, participating countries exhibit alongside oil and gas companies showcasing international deals to enhance information exchange and networking.

With conferences and meetings a staple of its activities, the International Pavilion has expanded to regional conferences to meet the needs of attendees focused on a particular continent or region. up and put away. Invariably, however, the IP staff would receive phone calls from attendees requesting copies of the presentations and other materials distributed at the event. This was valuable information!

Recognizing the opportunity to preserve this content and thereby become a year-round provider of accurate and timely information, in 2005 the IP launched *www.internationalpavilion.com*, its online division.

IP Online is a year-round source of information for the global petroleum industry. It is evolving into an incredible source of information for the promotion of hydrocarbon potential and jointdevelopment opportunities by individual countries to the international oil and gas industry. You can download copies of the presentations made by countries in the IP Theater at past meetings, and see current investment opportunities.

The IP Theater has become a popular venue for license/bidding round announcements, information on new activity and discoveries and updates on prospects and projects.

"Developing the website into a valuable information resource is a very high priority for the IP," says Godfrey. "Future plans include making the site more interactive, possibly publishing information related to licensing round announcements and related data packages, along with activity updates with a GIS interface."



"Through the IP we enhance our ability to cultivate and maintain relationship with high-level contacts..." John Adamick, Senior Vice President, TGS Geologic Products & Services

The IP continues to grow and change. In the near future the IP plans to launch an international exploration and production forum. This potential two-day event will feature formal presentations of E&P opportunities, as well as designated deal rooms.

It's been a volatile year in global oil and gas markets, making for difficult investment decisions. Standing just outside the International Pavilion you wonder if perhaps now is the time to take your company's knowledge and expertise and leverage it in a foreign country.

The IP is removing the barriers to consideration of this option. Flip through the following pages highlighting information from a few of the current IP participants. Visit the IP online. Attend an upcoming IP exhibit and spend time talking to countries about the opportunities they have available. Step into the International Pavilion, where the oil and gas world awaits.

### International Pavilion LLC Management Team

Gina Godfrey / petroWEB *IP Managing Director* 

Matthew Davis / Deloitte *IP Country Coordinator* 

Jim McNeil / TGS-NOPEC IP Country Coordinator

Jeff Lund / Corridor Resources *IP Sponsorship Coordinator* 

Brian Clingan / petroWEB IP Marketing Coordinator

# **COLOMBIA**



The Agencia Nacional de Hidrocarburos (ANH) was created by the Colombian government to manage the nation's hydrocarbon resources. The ANH does not operate fields; its function is exclusively to license areas for hydrocarbon exploration and production to international and national companies.

The ANH's primary objective is to find the perfect balance between generating income for the state and benefiting society as a whole, while allowing investors that provide technology and assume the costs and risks of exploration and production to obtain an attractive return of investment.

The ANH has three procedures by which areas are licensed:

• Direct contracting: In areas that are free according to the current land map, areas are assigned to the first proposal that fulfills the minimum requirements set by the ANH, in accordance with the "first come, first served" principle.

• Competitive process: By means of tendering processes, the ANH will allocate the areas that have been returned to the ANH. The competitive processes are designed according to the characteristics of the areas.



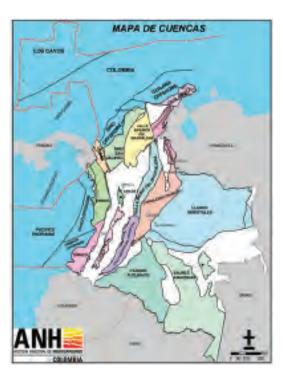
## Agencia Nacional de Hidrocarburos



Map provided by Deloitte. Petroleum Services

• Invitation to tender: ANH extends invitations to tender to companies fulfilling the requirements needed to operate special areas that due to their conditions and characteristics have been reserved by the ANH board of directors. The company presenting the most competitive offer will be awarded the contract.

For more information see www.anh.gov.co



**Bottom left:** Transport network.

**Bottom right:** Map of Cuencas.



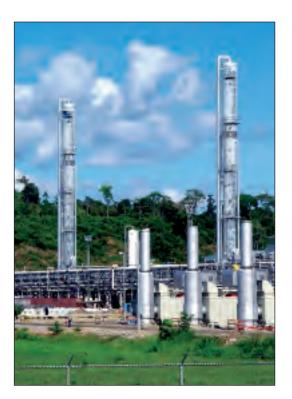
### PERU Perupetro



Map provided by Deloitte. Petroleum Services

Peru has an open-door policy towards international oil companies. Besides a prospective and challenging geology, Peru offers an excellent working climate and very competitive terms.

In Peru all upstream petroleum and natural gas exploration and production activities are carried out by companies who sign contracts with Perupetro



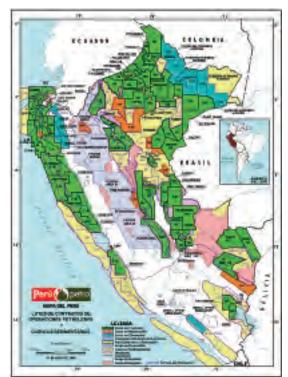
S.A., which represents the Peruvian state. Perupetro S.A. offers open acreage for exploration in Peru's most promising jungle, continental shelf and continental slope areas.

Technical information covering these areas includes geophysical seismic surveys, as well as a number of technical evaluations and geological field studies that help to determine the potential of hydrocarbons in these areas.

Under the license contract, the contract holder acquires ownership of the hydrocarbons produced in the contracted area and pays a royalty to the State. The contract holder assumes the exploration risk and provides all technical, economic and financial resources to carry out the contract.

Perupetro S.A. is open to negotiate flexible work programs for each period of the exploration phase that is agreed on in the contract. The work program is established in Exploratory Working Units (Unidades de Trabajo Exploratorio—UTE)—under which the contract holder is free to execute a work program in order to fulfill the agreed number of UTEs.

For more information see www.perupetro.com.pe



Bottom left: Liquids separation plant at Malvinas, Camisea.

Bottom right: Map of Peru's licensing blocks.

### NOVA SCOTIA Nova Scotia Department of Energy



Looking for the perfect spot for offshore or onshore exploration? Look to Nova Scotia. The energy resource potential is just emerging, and now the province is making it easier to capitalize: streamlining approval and regulatory processes, and investing heavily in geoscience research.

The petroleum resource potential is out there-off the shores of Nova Scotia. It's already been tapped, with the Sable Offshore Energy Project producing about 450 million cubic feet (MMcf) per day into the Maritimes and Northeast Pipeline, most of it heading to the northeastern United States. The Deep Panuke offshore gas project, which includes a second pipeline to landfall, will be under development in the Sable sub-basin area and is expected to begin producing in 2010. Nova Scotia is close to the major North American energy markets, making it a stable place to do petroleum business.

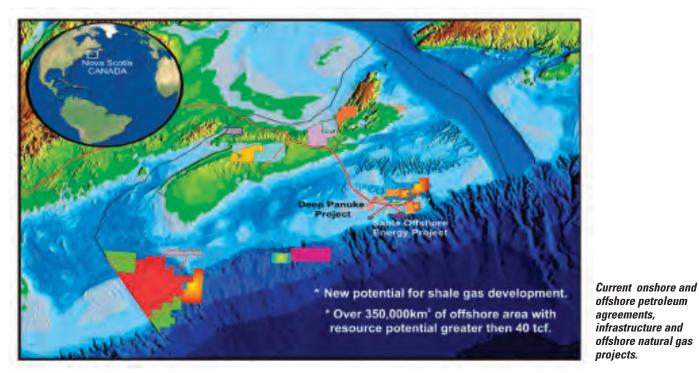
Some of the same lands that were once mined for coal are now being explored for natural gas potential. Coalbed methane and shale-gas exploration are making the onshore the new frontier for Nova Scotia's energy industry. Salt caverns are also being explored as potential storage sites for significant amounts of natural gas. The establishment of the Sable pipeline and other petroleum-related infrastructure and expertise has helped draw attention to new exploration opportunities in Nova Scotia.



Map provided by Deloitte. Petroleum Services

Nova Scotia's energy resources-both offshore and onshore-represent a frontier area of Canada that is very much under-explored. The Nova Scotia Department of Energy is working hard with partners in industry and research institutes to further advance petroleumexploration knowledge in the province.

For more information see www.gov.ns.ca/energy





### **GREENLAND** Bureau of Minerals and Petroleum



Map provided by Deloitte. Petroleum Services

In March 2009, the Bureau of Minerals and Petroleum (BMP) will make a decision regarding the possible implementation of a license call in the Baffin Bay area, offshore northwest Greenland.

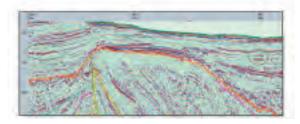
The license call will hold no preferential rights but is open to everyone. It will include a procedure for prequalifying companies that wish to be operator of licenses granted in the licence call. In preparing the area for license call, the BMP has initiated a series of fiscal, environmental and ice studies.

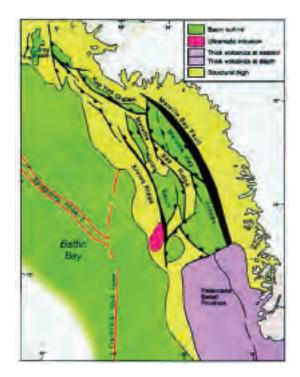
Seismic companies have shown significant interest in the area in recent years. All together, 19,119 kilometers of seismic line have been acquired. Furthermore, aerogravity and magnetic data have been collected.

In 2007, a license call was successfully closed in the Disko West area just south of Baffin Bay.

Bureau of Minerals and Petroleum www.bmp.gl Email: bmp@gh.gl Phone: 00299 346800

For more information see www.bmp.gl

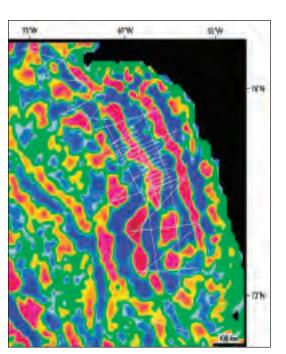




Bottom left: Gravity map from the northeastern part of the Baffin Bay (Danish National Space Center).

*Top right: Example of DHIs in Baffin Bay* (*BMP00-209*).

Bottom right: Map of tectonic elements of Baffin Bay from Whittaker & Hansen (1995).



### IRELAND Department of Natural Resources

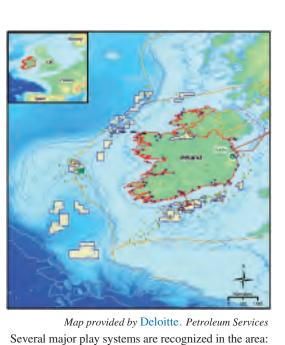


The Atlantic basins of Ireland are an under-explored frontier petroleum province with proven working hydrocarbon systems, as demonstrated by a large number of hydrocarbon shows and other observed indicators (seeps, gas chimneys, etc.) Discoveries in the area include the Dooish gas condensate find in the Rockall Basin, the Corrib gas field in the Slyne Basin, and the Connemara oil and Spanish Point gas condensate accumulations in the Porcupine Basin. Recent petroleum system studies\* for the area, which were sponsored by the Petroleum Affairs Division of Ireland's Department of Natural Resources, estimate a risked potential yet-to-find of 10 billion barrels of oil equivalent.

Plate reconstruction of the North Atlantic shows a juxtaposition of the Rockall and Porcupine basins with the Orphan and Flemish Pass basins offshore Newfoundland. This enables integration of the Atlantic Ireland play trends with the more mature petroleum provinces offshore eastern Canada, and also provides fresh insight into the depositional environments and sediment transport directions in the area.

Gross depositional environment models combined with existing well data indicate the presence of both Upper and Lower Jurassic regional world-class source rocks. Regional 3-D basin modeling shows the potential for the generation and expulsion of significant hydrocarbon volumes from these source horizons (over 130 billion barrels of oil and approximately 50 trillion cubic feet of gas expelled from the Lower Jurassic alone), with generation continuing to the present day.





• Permo-Triassic play (proven by the Corrib and Dooish discoveries)

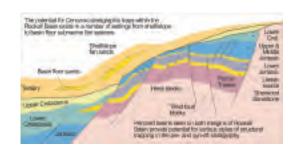
- Middle-Upper Jurassic deltaic and shelf plays (Connemara and Spanish Point discoveries)
- Lower Cretaceous syn-rift shelf and basinal plays (Burren discovery)
- Tertiary shelf and basinal plays (Benbecula in the U.K. sector).

This year the Department of Natural Resources will open the frontier Rockall Basin for licensing with a closing date for applications of second-quarter 2009. For more information on this licensing round and other exploration opportunities offshore Ireland, visit our website.

#### \*References

Petroleum Systems Analysis of the Rockall and Porcupine Basins Offshore Ireland. PAD/DCENR Special Publication 3/06.
Petroleum Systems Analysis of the Slyne, Erris and Donegal Basins Offshore Ireland. PAD/DCENR Special Publication 1/05

#### For more information see www.pad.ie



Bottom left: Mid-Aptian reconstruction showing juxtaposition of the Rockall and Porcupine basins with the Orphan and Flemish Pass basins offshore Newfoundland.

Bottom right: Rockall Basin play structural trapping.



### EGYPT

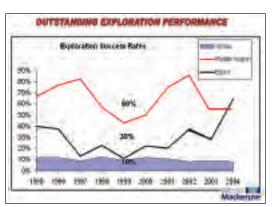
In Egypt, several sedimentary basins are present. The availability of source rock, the necessary seal and a reservoir, plus structural and stratigraphic traps, have resulted in the discovery of hydrocarbons in sediments as old as the Paleozoic period to as young as the Pleistocene age.

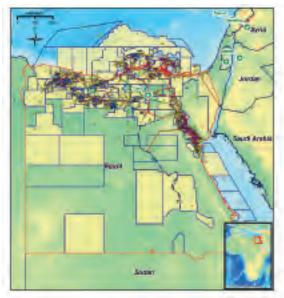
More than 162 exploration and development agreements, involving 75 international oil companies, are currently active in Egypt. Activity is wide-spread, covering about 40% of the country's total area.

Egypt's liquid and natural gas reserves are steadily increasing, reaching 17.8 billion barrels of oil equivalent. This is despite the increase in production to satisfy local demand and export, out of which 4.2 billion barrels of oil and condensate represent the highest oil reserve achieved in the country's history. The last few years reflect a gas boom in regards to the numbers of discoveries and the reserves added in the Nile/Mediterranean region. These discoveries raised remaining reserves from 36.4 trillion cubic feet in June 1999, to 76 trillion cubic feet at the end of June 2008, despite the fact that 13 trillion were produced during the same period.

The expectation for Egypt's future hydrocarbon potential from yet-to-find (YTF) analysis, is estimated at about 23 billion barrels of oil equivalent (4.1 billion barrels of oil and condensate and 107 trillion cubic feet of gas). The majority of this YTF is expected to occur in the Mediterranean area, where significant gas potential remains in deep Oligocene turbidites; in the deep Jurassic play of the Western Desert; and in the Paleozoic basin in the Gulf of Suez.

Frontier areas such as the Red Sea, the Paleozoic basin along the western Egypt border, and in the upper Egypt Rift system provide additional potential for adding more reserves. Last year the first commercial oil discovery in upper Egypt was made at El Barka oil field.





Map provided by Deloitte. Petroleum Services

Egypt's competitiveness in terms of its potential for exploration in the deepwater Mediterranean area compares favorably to like areas worldwide (Wood Mackenzie consultant report, 2006). Egypt has achieved success rates three times the international rate of 10%-15%. The country ranks fourth in the international arena with its deepwater success rate of 57%. It ranks fifth in the amount of average reserves added per gas discovery, at about 600 billion cubic feet in deep water and a finding cost of about half the global average. In value added through exploration in deep water, Egypt ranks sixth worldwide.

The Egyptian Natural Gas Holding Co. has announced its bid round for seven blocks in the offshore Mediterranean region. For more details, visit the EGAS website.

For more information see www.egas.com.eg



Bottom left: Egypt has registered outstanding exploration performance.

Bottom right: The 2008 international bid round involves these blocks.

## TRINIDAD AND TOBAGO

The Ministry of Energy and Energy Industries



The Ministry of Energy and Energy Industries is the government agency in Trinidad and Tobago that is responsible for monitoring, controlling and regulating the energy and mineral sectors. Its early years began in 1904 with the establishment of the Mines Department to manage manjak production. In 1948 the Mines Department was re-designated the Petroleum Department.

Trinidad and Tobago is a twin-island state at the southernmost point of the Caribbean island chain (see map), which extends from Florida on the North American mainland to eastern Venezuela on the South American mainland. It occupies a central position in that it is ideally located for egress to and from the North American and South American mainlands and is also easily accessible from Europe. The Republic of Trinidad and Tobago is celebrating its 100th anniversary as a commercial producer of oil and gas this year. The energy sector has been and continues to be the main driver of the economy; therefore, its importance can never be underestimated.

In 2008, the government of the Republic of Trinidad and Tobago was to sign nine production-sharing contracts for six onshore/nearshore and three offshore blocks, which were offered in 2005. At the end of 2008, the government embarked on a round of competitive bidding for five offshore blocks. These blocks are in the East Coast Marine Area and North Coast Marine Area and include Block 4(b), Block 5(d) and North Coast Marine areas 3, 4 and 5.

**Trinidad and Tobago Deep Atlantic Area (TTDAA)** Eight TTDAA blocks were offered in 2006. One bid, submitted by Statoil, was received for Block TTDA 5.

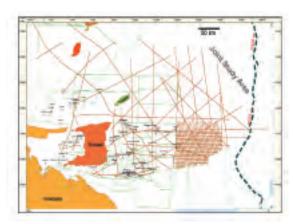




Map provided by Deloitte. Petroleum Services

In response to limited success of the Trinidad Deep Atlantic bid round, the Ministry of Energy and Energy Industries, through its technical consultants Dynamic Global Advisors (DGA), acting on behalf of GXTechnology, has just completed a study aimed at technically derisking the area. The study is called "A New Look at Eastern Deep Water Trinidad; Seismic Interpretation and Exploration Review." The results of the study to date have been encouraging. A second phase to the study, also being conducted by DGA, is focused on the "Integrated Petroleum Systems of the TTDAA." Before it offers the acreage, the ministry is reviewing other parameters which contributed to the previous limited success, but it intends to offer the acreage in 2009.

For more information see www.energy.gov.tt



Bottom left: Six onshore/nearshore and three offshore blocks were offered in the 2008 bid round.

Bottom right: Joint study area, offshore eastern Trinidad.



AUSTRALIA Geoscience Australia

Australia has established itself as a reliable supplier of hydrocarbons, especially with respect to liquefied natural gas (LNG), and continues to attract explorers to its producing oil and gas provinces. Australia is also well known for its vast under- and unexplored onshore and offshore frontier areas, which many believe may hold the keys for future exploration successes.

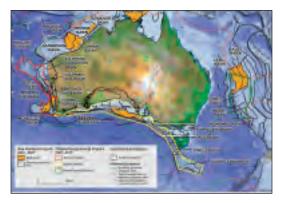
#### **Geoscience Australia (Federal)**

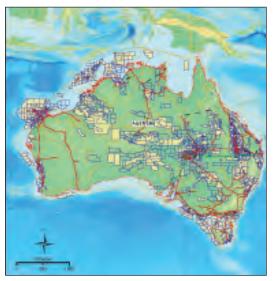
Geoscience Australia is the federal agency that researches and advises government and industry on the nation's petroleum prospects, reserves and potential. Its work is used by the Australian government to attract international exploration investment to search for new energy resources and hence, sustain Australia's indigenous fuel supply into the future. The various State government departments are responsible for onshore exploration programs and data management. A close working relationship exists between Geoscience Australia and the States, as is regularly demonstrated by the TEAM AUSTRALIA presence at NAPE Expo.

From a federal perspective, exploration in frontier basins is encouraged by the Australian government's Energy Security Program (2007-2011), which funds major new data acquisitions by Geoscience Australia, both onshore and offshore. Moreover, Australia has achieved a significant milestone by becoming the world's first nation to introduce legislation regarding the capture and storage of carbon dioxide.

Being the world's largest coal exporter, the Australian government has been eager to take on a leadership role in the research areas of carbon capture and geosequestration.

For more information see www.ga.gov.au





Map provided by Deloitte. Petroleum Services

### Department of Industry and Resources (Western Australia)

Western Australia's economy is powering ahead, and the \$19.4-billion petroleum sector is leading the charge as its most lucrative resources investment opportunity. In 2008, there were significant gas discoveries in the Carnarvon Basin by companies such as Apache Energy and Hess Corp. In the Browse Basin, Inpex Browse discovered hydrocarbons close to the giant Ichthys gas field.

The Department of Industry and Resources (DoIR) works with organizations large and small and has played a key role in Western Australia's emergence as a global business hub for oil and gas. As well as petroleum acreage releases, the Western Australian government has had two acreage releases in 2008 for onshore geothermal exploration with plans for other releases.

For more information see www.doir.wa.gov.au



#### Bottom left: Australia's Offshore Energy Security Program.

Bottom right: Regional deep seismic data acquisition is part of Australia's Onshore Energy Security Program.

### Department of Primary Industries and Resources (South Australia)

The petroleum potential of South Australia is considered to be at least as significant as discoveries made to date. World-class success rates have been sustained in the Cooper Basin, and flank areas remain under-explored. Offshore basins and the onshore Officer Basin are considered to have potential for giant new discoveries. The potential of the State's coal-seam methane and high-risk, high-reward Cambrian and Neoproterozoic plays remain under-explored, so there is definitely more to explore in South Australia.

For more information see www.petroleum.pir.sa.gov.au

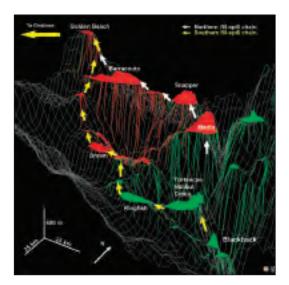
#### **Department of Primary Industries (Victoria)**

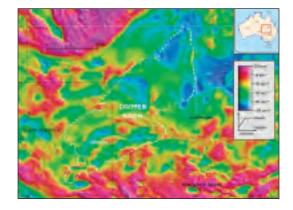
Petroleum from the Gippsland and Otway basins has been a major driver in Victoria's wealth and continues to provide opportunities for explorers and producers. Gippsland Basin average gas production is more than 700 million cubic feet per day. In the 2007-08 fiscal year, gas production in offshore Otway Basin averaged 400 million cubic feet daily, while in the onshore region, smaller gas discoveries were made and being produced.

Victoria also has active exploration for coalbed methane and geothermal resources across the state, including in the onshore parts of the Gippsland and Otway basins.

#### For more information see www.dpi.vic.gov.au/dpi/

**Department of Mines and Energy (Queensland)** Queensland's mining and petroleum industries contributed \$26 billion to the State's economy in 2007-08. Coal-seam gas was a key growth sector, with the more than 600 wells drilled being an increase of more





than 50% over the year previous. Reserves are also increasing steadily, reaching 10,680PJ at the end of June 2008, a 78% increase on the previous year.

Administration of petroleum and mining activities in Queensland is undertaken by the Department of Mines and Energy. Access to petroleum exploration tenure is through a tender process. The department maintains an extensive geoscience data set and provides ready access to the results of company exploration activity.

#### For more information see www.dme.qld.gov.au





Top right: Gravity image showing the onshore Cooper Basin.

Middle right: A recent gas discovery at Halyard-1, Carnarvon Basin, NW Shelf (photo courtesy of Apache Energy).

Bottom left: Simulation of present-day oil and gas migration and top-Latrobe accumulation, offshore Gippsland Basin.

Bottom right: Arrow Energy's Moranbah Gas Project, Bowen Basin (photo courtesy of Arrow Energy Ltd).



### SURINAME Staatsolie

Staatsolie's petroleum operations began onshore in the Saramacca District, 55 kilometers west of the capital city of Paramaribo. The company's crude production at year-end 2007 totaled 5.4 million barrels from the Tambaredjo and Calcutta oil fields, which had original oil in place of 900 million barrels. The majority of production comes from Tambaredjo Field, which was brought into production in 1982. In neighboring Calcutta Field, full-scale production activities began in March 2006.

Staatsolie's exploration strategy is driven by its objective to increase onshore crude production to 16,000 barrels of oil per day by 2012. The planning period from 2007 to 2010 calls for onshore exploration to focus on areas outside of Tambaredjo and Calcutta. Exploration of coastal areas outside the current fields will also be stepped up.

In 2000, the U.S. Geological Survey (USGS) concluded that the Suriname-Guyana sedimentary basin contains 15 billion barrels of undiscovered oil. This information attracted oil companies to Suriname. The increased exploration activities onshore as well as offshore revealed new play concepts and prospects. In 2009, more than 20 years since the last wildcat was drilled offshore, new exploration wells will be drilled offshore Suriname.

With new technology and a better understanding of the Guyana Basin, Suriname is on the brink of becoming an important oil province. Offshore production-sharing contracts are in place with Repsol YPF, Noble Energy, PetroHunt, Inpex and Murphy Oil.

Onshore, Staatsolie signed production-sharing contracts for the Coronie Block and the Uitkijk Block with Paradise Oil Co. N.V. and its joint-venture



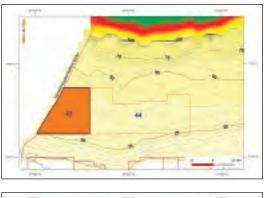


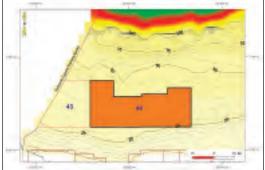
Map provided by Deloitte. Petroleum Services

partner Tullow Oil. Paradise Oil is a 100% subsidiary of Staatsolie.

The Suriname 2008-2009 International Bidding Round is currently offering Blocks 43 and 44. A data package is available upon application to Staatsolie.

For more information see www.staatsolie.com





Bottom left : Overview of the exploration and production blocks.

Bottom top right: Block 43 offshore.

Bottom right: Block 44 offshore.

### GABON Agencia Nacional De Hidro



Gabon, in west-central Africa, shares borders with Equatorial Guinea, Cameroon, Republic of the Congo and the Gulf of Guinea. The capital and largest city is Libreville. Since its independence from France on August 17, 1960, the Republic has been ruled by two presidents, with President El Hadj Omar Bongo Ondimba in power since 1967. In the early 1990s, Gabon introduced a multiparty system and a new democratic constitution that allowed for a more transparent electoral process and reformed many governmental institutions.

A small population (fewer than two million), abundant natural resources, and foreign private investment have helped make Gabon one of the most prosperous countries in the region, with the highest Human Development Index in sub-Saharan Africa.

Gabon already has a well-established oil and gas industry producing significant amounts of oil. Production peaked in 1991 at 371,000 barrels per day and, although in slow decline since, recent successive discoveries have doubled reserves and are now estimated at 2.5 billion barrels.

Many new licenses onshore and in shallow to deep waters have been awarded in recent years, and

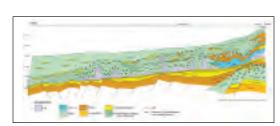




Map provided by Deloitte. Petroleum Services

exploration has increased significantly. In an effort to further stimulate exploration, the Ministere des Mines has recently announced that a number of deepwater offshore blocks and eight tracts onshore, will be offered in the 10th licensing round to be held in 2010.

CGGVeritas, the leading geophysical contractor, has been contracted to advise the Direction Generale des Hydrocarbures on the promotion and conduct of the 10th licensing round and to improve the profile of Gabon as a major exploration investment opportunity. The ultra-deep water of Gabon has been identified as having significant untapped potential in a structurally complex setting, particularly in the presalt section. Seismic imaging is complex and to improve the imaging, additional use of complementary techniques including potential field data will be required. New surveys with innovative and technically robust work flows are proposed to help unlock the potential of this area.



Bottom left: Exploration acreage available offshore Gabon (in gray). Red lines indicate CGGVeritas project areas.

Bottom right:: Geological crosssection offshore Gabon.



### SENEGAL Petrosen

One hundred and fifty exploratory wells have been drilled in the Senegal Sedimentary Basin, with 16 wells drilled for sulfur prospecting offshore south Senegal. Most of them are concentrated in the vicinity of Cap-Vert Peninsula and offshore south Senegal, which account for more than 77% of the total wells drilled. The Senegal Basin outside these two zones remains relatively under-explored.

The Senegal Sedimentary Basin occupies the central part of the large northwestern African coastal basin (MSGBC), which extends from Reguibat shield in its northern limit to the Guinea fracture zone to the south. It is a typical passive margin opening westward to the Atlantic Ocean; its eastern limit is represented by the Mauritanides chains.

A careful analysis of well locations demonstrates that the majority of boreholes were poorly located, and many of them were shallow, with depths less than 1,200 meters and limited to exploration of the Tertiary to Senonian series.

Indeed, fewer than 30 wells are really significant from a petroleum point of view, as related to the 225,000 kilometers of surface basin area estimated from the 200-meters bathymetric contour. It represents an average explored surface of 7,500 square kilometers per well. From 1971 to 2002, 47,520 line kilometers of 2-D seismic and 2,840 square kilometers of 3-D were shot over the basin. The 3-D seismic covers the Dome Flore and Cheval Marin block in the AGC area and Diam Niadio East Field.

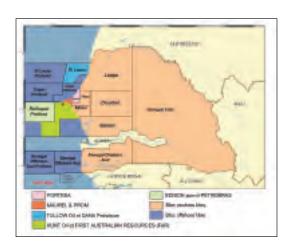


Map provided by Deloitte. Petroleum Services

Six onshore and five offshore blocks of the Senegal Sedimentary Basin are presently opened and offered for tender. The Diam Niadio and Gadiaga/Sadiaratou gas fields, the Dome Flore heavy- and light-oil accumulations, the potential in deepwater sections and the plays in the Paleozoic basin should provide incentives for the search for hydrocarbons in this under-explored petroleum province.

For more information see www.petrosen.sn





Bottom left: Map of gas field, gas pipe, and Infrastructure.

Bottom right: Map of hydrocarbon activity.

### NAMIBIA NAMCOR





Map provided by Deloitte. Petroleum Services

Offshore Namibia can be considered under-explored. Only 16 exploration wells have been drilled so far in an area that covers more than 500,000 square kilometers. Eight of those wells are in the Kudu Gas Field, which contains 1.4 Tcf of proven reserves and a further upside of 20 Tcf. Kudu is the only commercial hydrocarbon discovery in Namibia to date. The results of the other wells were encouraging in that excellent reservoir sequences, source rocks and seals were encountered.

The first exploration licensing round was held in 1991-92 with five licenses being awarded. The second round in 1995 resulted in two new licenses



being awarded. One of these was an extension to the existing license that Shell had over the Kudu field. As a result of these license awards, more than 28,000 kilometers of 2-D seismic was acquired in addition to the 60,000 kilometers of multiclient data already available. The Third Licensing Round in 1998-99 resulted in no applications being received, partly because of the low oil prices at that time as well as the numerous international company mergers that were ongoing. The mini-Fourth Round, held in 2004, eventually resulted in the award of two blocks west and south of Kudu to BHP-Billiton.

Data is available from Deep Sea Drilling Project (DSDP) and Ocean Drilling Program (ODP) wells as well as academic seismic data from earlier work. The data that has resulted is a modern, comprehensive and digital set that is easily accessible.

In 2002, Shell withdrew from the Kudu Block, and the license is currently operated by Tullow Oil plc. In March 2006, a license was awarded in northern Namibia (Block 1711) to Sintezneftegaz. NAMCOR, the state oil company, was granted an exploration license in blocks 2011B and 2111A of the Ondjou Block in June 2007. Enigma Oil & Gas Exploration (Pty) acquired a total of 10 blocks in early November 2007. Eight blocks are located offshore and two are onshore. These licenses and the license over Kudu are the only current full exploration licenses in Namibia. Recently, many other licenses have been awarded for exploration both onshore and offshore Namibia.

For more information see www.namcor.com.na



Bottom left: Petroleum exploration and production licenses.

Bottom right: Sedimentary basins.



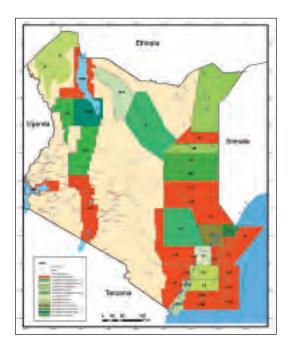
### KENYA National Oil Company of Kenya

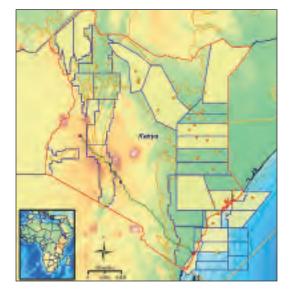
Kenya's petroleum potential is best depicted by the four large sedimentary basins that straddle the country. These are Lamu, Anza, Mandera, and Tertiary Rift basins. The sedimentary basins are divided into exploration blocks as shown below.

National Oil initiated an in-house study of the Lamu Basin as part of a long-term strategy to re-evaluate the existing geological, geophysical and geochemical data relating to each of the sedimentary basins in Kenya. The Lamu Basin study resulted in the subdivision of the Lamu embayment (both onshore and offshore) into 10 exploration blocks, each with a specific exploration play. Two more exploration blocks have been created since 2001.

CNOOC Africa, a Chinese company undertaking oil and gas exploration activities in Kenya, recently progressed to the second stage of its exploration exercise in Block 9 in the Anza Basin, in northern Kenya. This second stage will involve acquisition of 2-D seismic data.

This comes two years after the company signed a production-sharing contract (PSC) with the Government of Kenya to conduct an integrated geological study in several blocks. The geological study information gathered enabled CNOOC Africa to concentrate its efforts on two blocks located in Lamu and Anza basins.

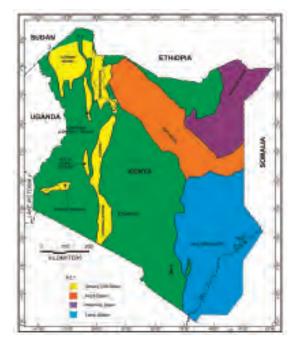




Map provided by Deloitte. Petroleum Services

National Oil has a data center for storage of seismic data, well logs, well reports, other oil exploration reports and aeromagnetic as well as gravity data that has been obtained in Kenya through petroleum exploration activities. In addition, National Oil has set up a cores and drill-cuttings storage facility in which the rock samples retrieved during petroleum exploration in this country from 1960 to date are stored for use by those carrying out exploration.

For more information see www.nockenya.co.ke



Bottom left: Sedimentary basin exploration blocks.

Bottom right: Kenya's four sedimentary basins define its potential.

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# SOMALILAND

Evelopia

Map provided by Deloitte. Petroleum Services

Somaliland was under British rule from 1884 until independence was gained in June 26,1960. The country was then known as British Somaliland. Somaliland was admitted to the U.N. and was recognized by 35 countries prior to joining the former Italian Somalia on July 1 of the same year to form the Somali Republic. After the collapse of the Somali Republic in 1991, the people of Somaliland decided to withdraw from the union with Somalia and reinstate Somaliland's sovereignty.

The sedimentary cover of Somaliland includes post-Triassic continental and marine strata, which accumulated in basins related to the disintegration of the Gondwanaland. Among these, the Guban, Ahl Mado and Nogal basins are the most important basins stratigraphically and in terms of hydrocarbon potential.



# Somaliland Oil and Gas Potential

Based on published and unpublished data, the geology of these basins proves that oil and gas have been generated with favorable reservoirs, as well as structural and stratigraphic traps. Moreover, continuation of these basins across the gulf, matching the hydrocarbon-producing Marib-Hajar and Say'un-Al Masila basins of Yemen, raises the hydrocarbon prospect of Somaliland.

Petroleum exploration in the country began in 1912 when an oil seep was reported at Dagah Shabel, 38 kilometers southeast. In 1959, Standard Vacuum, Mobil and Esso drilled three dry wells (Dagah Shabel 1, 2 and 3) near the Dagah Shabel oil seep, without the aid of subsurface control.

One of the wells recovered free oil from the Wanderer limestone (Upper Jurassic) and Nubian sandstone (Upper Cretaceous). However, no oil was recovered from the follow-up wells. Interest in oil exploration re-emerged in the late 1970s, and Geco conducted an extensive offshore speculative seismic survey in the Gulf of Aden for the Somaliland government. In the same year, the Guban concession was awarded to Quintana and Hunt oil companies. They conducted a detailed exploration program over onshore blocks 32 and 35.

Somaliland is actively seeking international E&P companies to apply for blocks in Somaliland. The government signed an agreement with TGS-NOPEC to carry out non-exclusive seismic surveys offshore, as well as the marketing. TGS-NOPEC conducted 5,400 kilometers of 2-D offshore seismic survey. A country-wide (137,600 square kilometers) aeromagnetic/gravity survey was also completed recently.



**Bottom left:** Somaliland oil concessions 2007.

**Bottom right:** Potential basins.



MOZAMBIQUE National Petroleum Institute

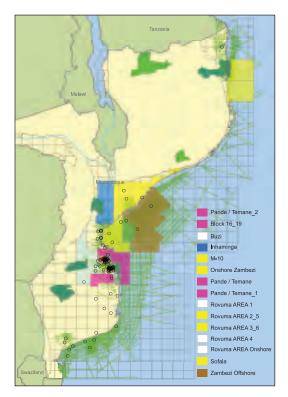
Exploration for hydrocarbons in Mozambique dates back to 1904, when the early explorers discovered thick sedimentary basins onshore. Poor technology and lack of funds halted those early exploration attempts.

From 1948 onwards, international oil companies moved into Mozambique and carried out extensive exploration, mainly onshore, with limited activity offshore. Pande Gas Field was discovered in 1961 by Gulf Oil, followed by the gas discoveries of Búzi (1962) and Temane (1967).

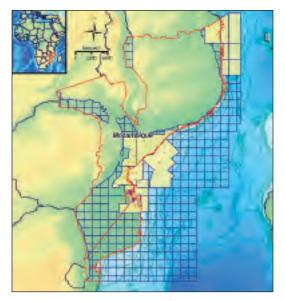
New activity was established in the early 1980s with the enactment of law 3/81 and creation of ENH. In the following years, extensive work was carried out to map and appraise Pande Field.

A breakthrough was made in 1993 when it became clear that Pande Field could be mapped using direct hydrocarbon indicators (DHI) from seismic data, and a giant bright spot was identified at the top of the reservoir. The method was later used to map Temane Field, also with good results.

From 1970 to 1980 only six wildcat wells were drilled in Mozambique—three of them offshore. An extensive drilling campaign conducted in 2003 by



Map depicting concessions and wells.



Map provided by Deloitte. Petroleum Services

Sasol, which included exploration and production wells in the Pande/Temane Block, allowed the expansion of gas reserves and the discovery of Inhassoro Gas Field, making a total 5.504 trillion cubic feet (Tcf).

#### Well Statistics

A total of 97 wells have been drilled to date in Mozambique. Of those 61 wildcats, 24 appraisals and 12 production wells:

15 are offshore; 16 are in Pande Gas Field and 18 Temane Gas Field; six are in Inhassoro Gas Field; four are offshore Zambezi Delta; and one has been drilled in the Rovuma Basin onshore.

#### Seismic Statistics

Since the early 1980s, several extensive 2-D seismic surveys have been acquired in the offshore and onshore part of Mozambique and Rovuma basins, using new technology to enhance the data quality. The new data, together with well data and earlier geophysical data, provide a good basis for further exploration.

About 85,000 line km of 2-D seismic were acquired from the 1950s to 2003. All modern seismic data are stored in an updated and modern data center managed by the Institute National Petroleum (INP).

For more information see www. inp.gov.mz

### PAST & PRESENT IP Participants

NOITI Afghanistan Albania Algeria Angola Argentina Australia Azerbaijan Bahrain Barbados Belize Benin Bolivia Brazil (ANP) **British Columbia** Cameroon China Colombia ANH Colombia Ecopetrol Cote d'Ivoire Cyprus D.R. Congo Egypt Eritrea Equatorial Guinea Falkland Islands France Gabon Ghana Greenland

India Indian & No. Affairs Indonesia Ireland Jamaica Jordan Kazakhstan Kenya Korea Kuwait Latvia Lebanon Liberia Libya Mali Malta Madagascar Malyasia Mongolia Morocco Mozambique Namibia Netherlands Newfoundland New Brunswick New Zealand Nicaragua Nigeria Nova Scotia Oman

an AAPG Company

TERNATIONAL

LION

Papua New Guinea Paraguay Peru Philippines Poland Romania Oatar Saskatchewan Sao Tome Senegal Seychelles Somaliland South Africa Sudan Sri Lanka Suriname Tajikistan Tanzania Togo Trinidad Turkmenistan Tunisia UAE Uganda Ukraine UK - BGS Uzbekistan Vietnam Yemen Yukon

Iceland