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Target Exploration

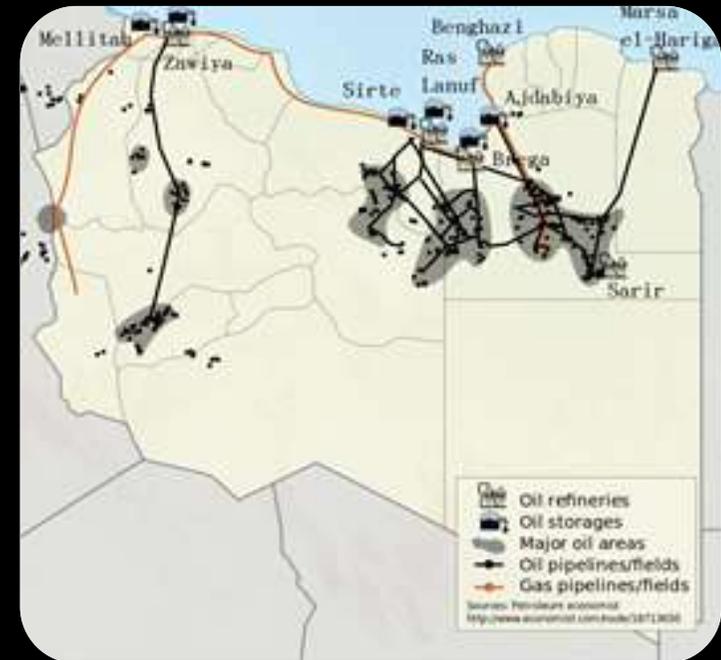
# Target Exploration

LARGE EXPLORATION

## Non-exclusive ED&P Databases on Libya

### Tar-104: Structural Traps vs. Stratigraphic and Combination Traps in Libya

- Some of the earliest giant onshore oil discoveries in Libya were in fractured and weathered igneous, **volcanic** and metamorphic Basement reservoirs, such as the giant **Augila-Nafoora** (Esso, 1956), **Amal** (Mobil, 1959) oilfields.
- However, fractured reservoir prospects were neglected following the discovery of huge oil reserves in clastic Cretaceous reservoirs at **Sarir C** (BP, 1961); carbonate reef build-ups at **Intisar A and D** (Oxy, 1967) and in



- combination trap at the giant **Messlah Oilfield (3BB STBOIIP, BP, 1971)**.
- **Recent stratigraphic combination traps discoveries 5R1-59 and 6JJ1-59 (3.2 BB STBOIIP, Waha, 2008)** in southeast and northwest of the 1961-discovered giant Gialo Oilfield indicates the presence of prospective stratigraphic traps below shallow early giant fields.
  - The intermittently investigated **fractured reservoir** and **stratigraphic traps** in Sirte Basin and other Libya basins could hold massive undiscovered hydrocarbon reserves.
  - For every oil company, there is list of small field, produced via one or two wells then left shut in and put at end of work over list when their production declines. Careful examination of Libyan producing fields will reveal shut-down fields awaiting development.
  - Hydrodynamic flow was studied by Esso (Exxon) in Sirte Basin, utilised by BOCO in Murzuk Basin, proven and published by Sonatrach at the F6 reservoir at **Tin Fouyé-Tabankort area, NW Illizi Basin of Algeria**. Hydrodynamic trapping, hydrodynamic O/WC tilting and structurally modified diagenetic (frozen-in) hydrocarbon traps are rarely investigated now in Libya; they constitute exploration targets, and may explain some "**un-discovery wells**".

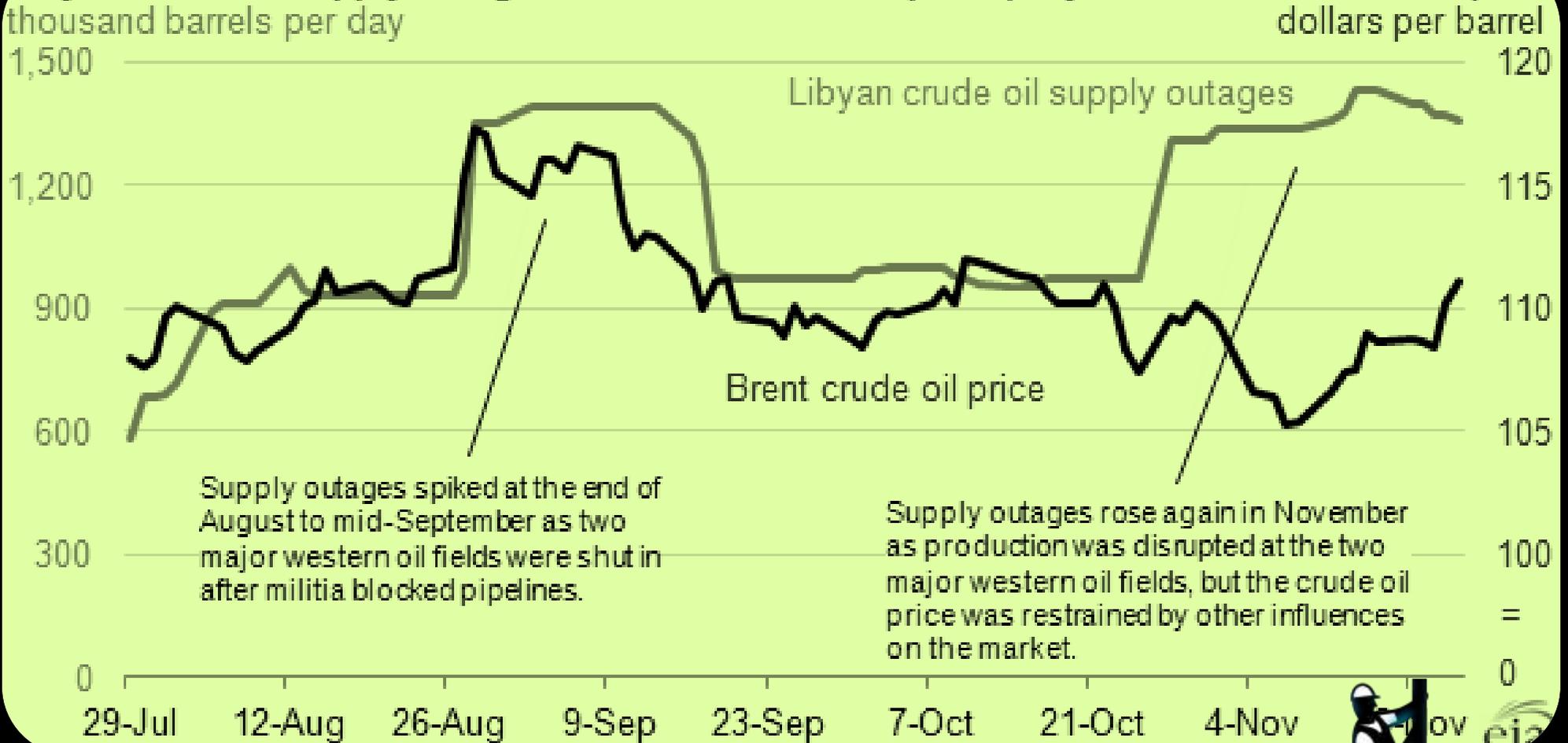
**Tar-104: Target Exploration secured access to an Atlas of 108 Oil and Gas Fields of Libya**

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# Libyan crude oil supply outages and Brent crude oil price (July 29-November 22, 2013)



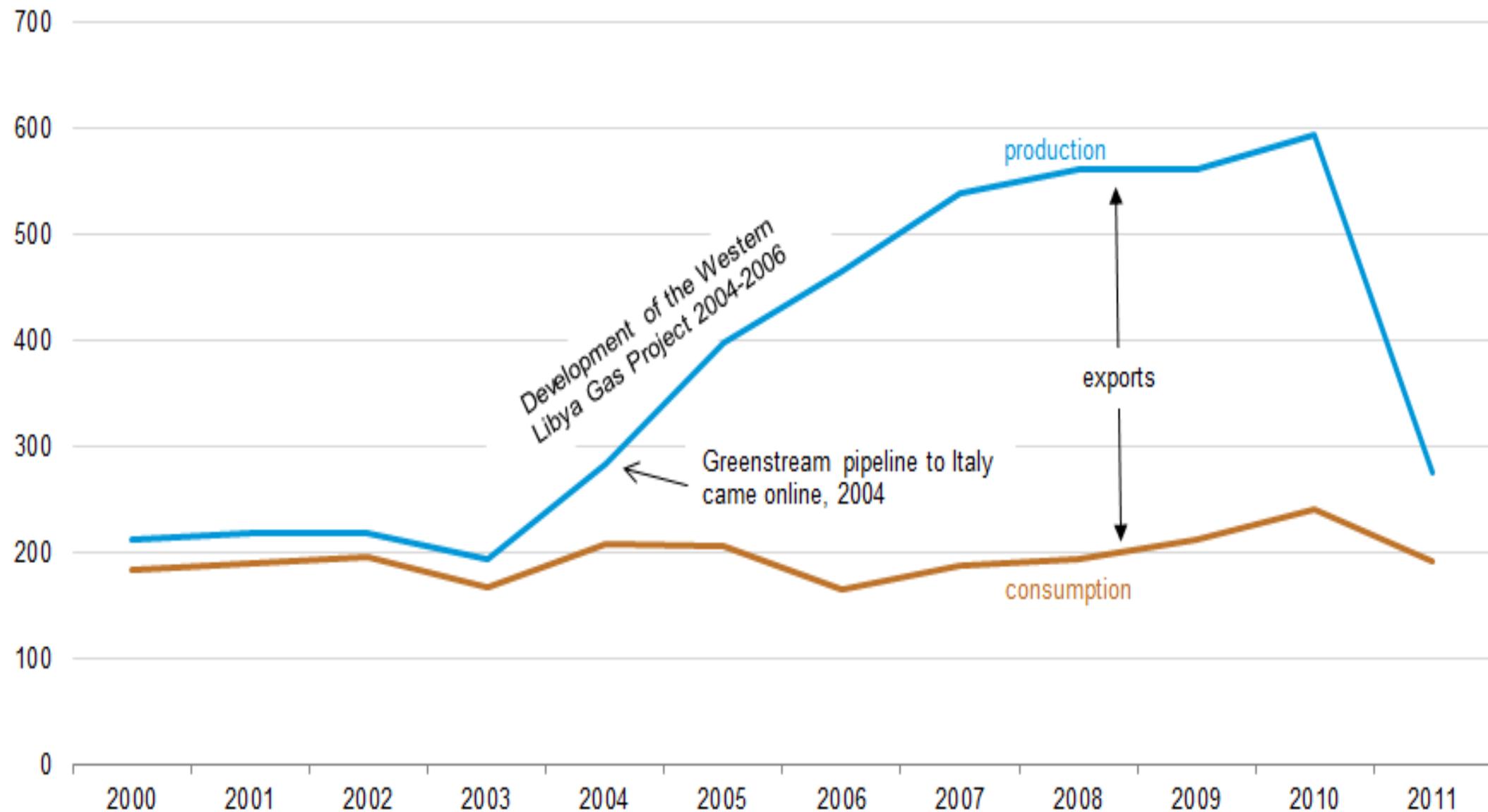
Inverse relation of Libyan Oil Supply (dark line) to Brent Oil Price-Spikes (light line), (after eia)



Revised 28/03/2015

# Libya's dry natural gas production, consumption, and exports, 2000-2011

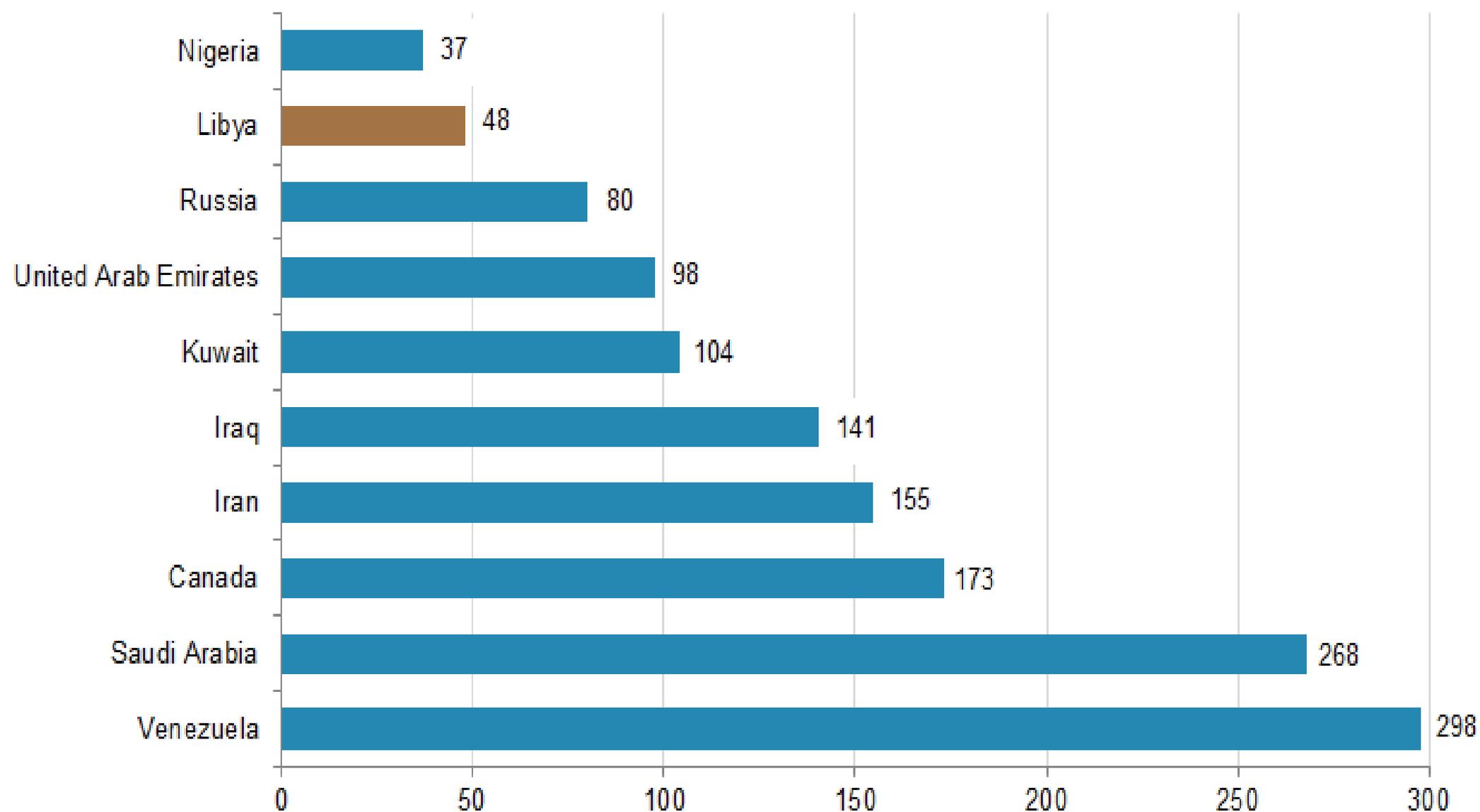
billion cubic feet



Source: U.S. Energy Information Administration

## The world's top 10 holders of proven crude oil reserves, 2013

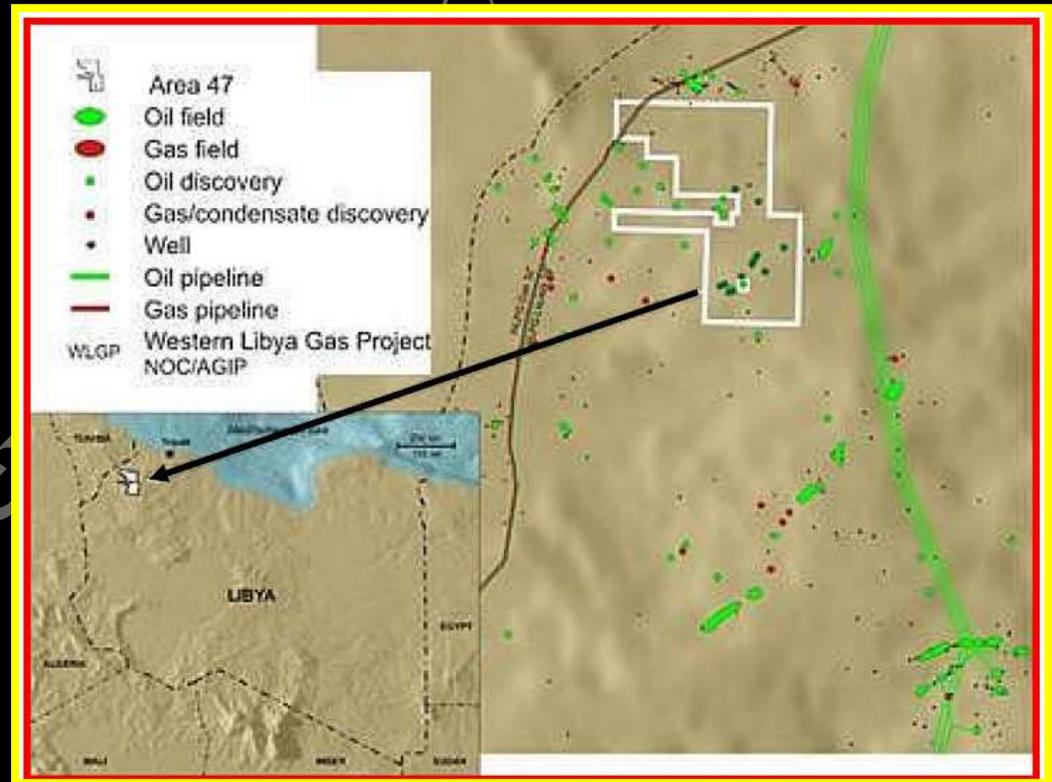
billion barrels



Source: Oil & Gas Journal

# Another Oil & Gas Discovery in Libya

- Delineation Well O2 of Area 47, Ghadames Basin, NW Libya was spudded on 23 May 2014 and drilled to a TD of 10,780 feet.
- Initial tests demonstrated the well flowing 3,300 barrels of oil per day and 140,000 standard cubic feet per day of gas through 48/64 inch Choke from the Silurian Lower Akakus sandstone Formation.
- The O2 well location that lie outside reservoir closing contour proved the existence of stratigraphic element that may have connection to multiple structures in the area.



- The discovery of O2 well and P2 well in last July 2014 again proved the prolific hydrocarbon area of Ghadames Basin in Area 47, where large oil and gas reserves was discovered with a 90 percent exploration success rate (18 out 20 exploration wells discovered oil and gas).
- Furthermore, on 17 September 2014 the Libyan Government declared commerciality of B, C and J structures in Area 47.
- Medco Energi, with partners Libyan National Oil Corporation (NOC) and Libyan Investment Authority (LIA) will commence development of the O field along with the cluster of A, D and F fields, previously declared commercial in 2011.
- **Estimated Oil and Gas recoverable reserves in A, D, F and O fields are 250 MMBOE. Total recoverable Oil and Gas reserves including B, C and J Fields is not known** (after Medco).



Revised 28/03/2015