



National Agency for the Valorization of Hydrocarbon Resources  
**ALNAFT**

ALGERIA

# **ALNAFT**

## **Valorization of the hydrocarbon sector**

## AGENDA

- ABOUT ALGERIA
- ABOUT ALNAFT
- HYDROCARBON MINING DOMAIN AND E&P ACTIVITIES
- OPPORTUNITIES
- CONCLUSION

# ALGERIA

## A Petroleum country

- Population: 43 millions;
- Surface : 2,380 MM km<sup>2</sup>;
- HC. Mining Domain: 1,67 MM km<sup>2</sup>;
- Coast length : 1600 km;
- North to South: ≈ 2400 km.
- One hour from Europe





## ABOUT ALNAFT

# Main Missions

## Oil & Gas Upstream

Prospection

Exploration

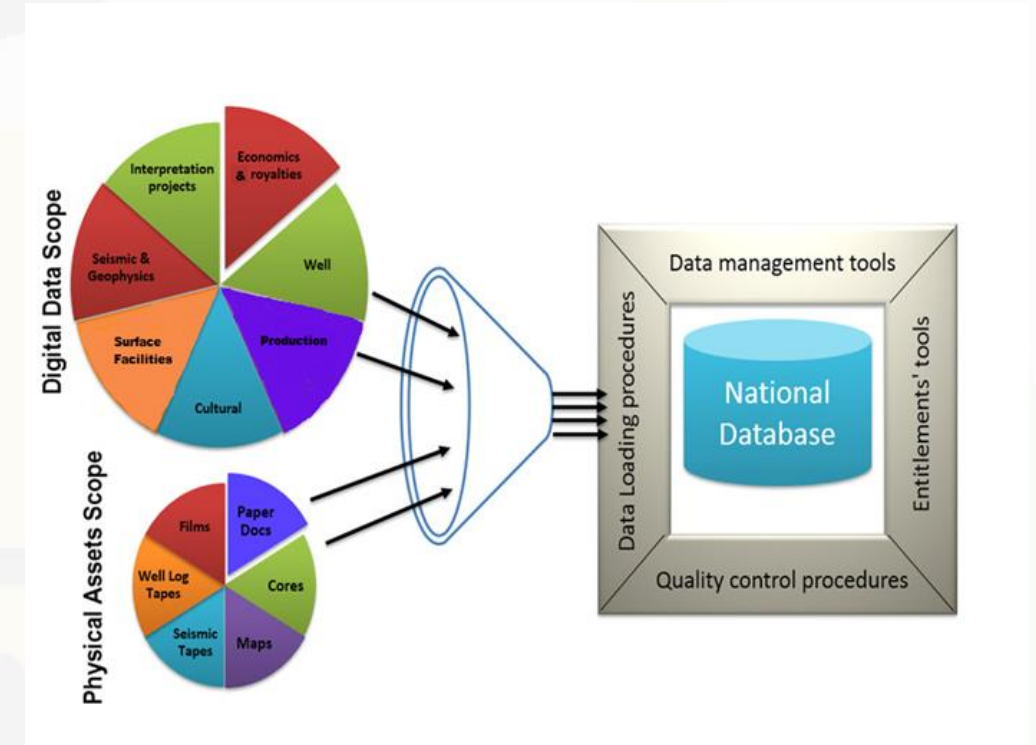
Development & Exploitation

- Concluding Exploration and / or Exploitation contracts.
- Managing the Hydrocarbons Mining Domain according to the Law.
- Promoting the hydrocarbons Mining Domain
- Managing the E&P National Data Bank
- Evaluating and approving oil & gas development plans
- Providing support to Oil & Gas companies.



# The E&P National Data Bank

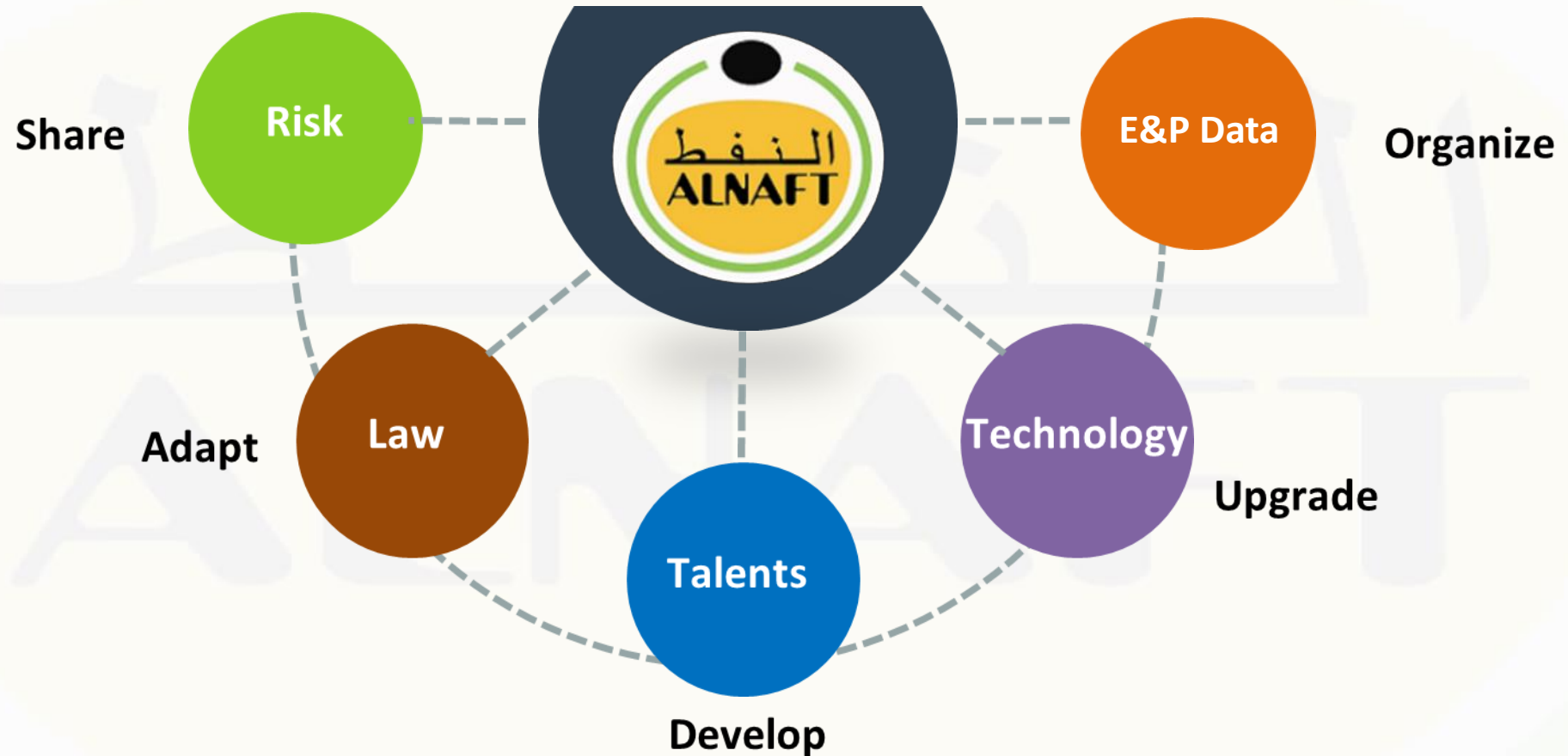
- ✓ Promoting the investments by showcasing the data
- ✓ Preserving and managing more than :
  - 12 000 wells ;
  - 670 000 km of 2D Seismic;
  - 180 000 km<sup>2</sup> of 3D Seismic;
  - 550 km of cores.





# ALNAFT Strategy

## ALNAFT PROMOTION STRATEGY

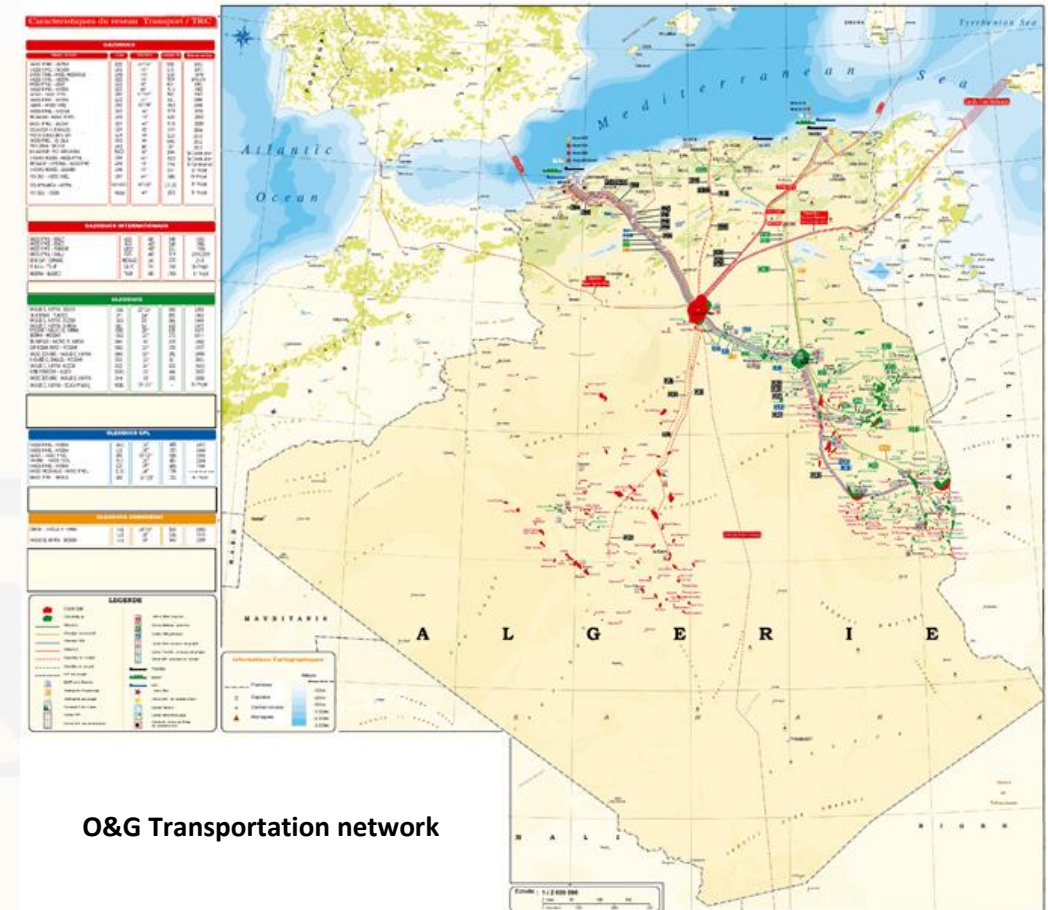


# **HYDROCARBON MINING DOMAIN AND E&P ACTIVITIES**



# Surface Facilities

- ✓ 21 oil pipelines with a length of 10 000 km
- ✓ 18 gas pipelines with a length of 11 000 km
- ✓ 3 international pipelines (57 BCM/year)
- ✓ Liquefaction : 56 MM m<sup>3</sup>/year (25,2 MM Tons/year)
- ✓ 37 industrial centers (123 Processing facilities)
- ✓ 12 docked loading stations and 5 offshore loading stations of oil (2 in Arzew, 2 in Skikda and one in Bejaia)





1.1 MM bbls / day

3.6 Tcf / year (+124 BCM / year)

Oil 20 Gbbbls

Gas 6100 BCM (215 Tcf)

### Unconventional Resources (in place):

[illegible]

### Prospective conventional and tight potential (all basins)

11

# OPPORTUNITIES

# Opportunities

## 6 Areas

1. Prospection and research in frontiers zones and the Algerian offshore
2. Exploration of deep horizons, stratigraphic and mixed traps,
3. Delineation and development of Existing Discoveries,
4. Enhance Oil Recovery in mature fields,
5. Exploration of shale & tight plays,
6. Evaluation of a zone by conducting G&G studies.



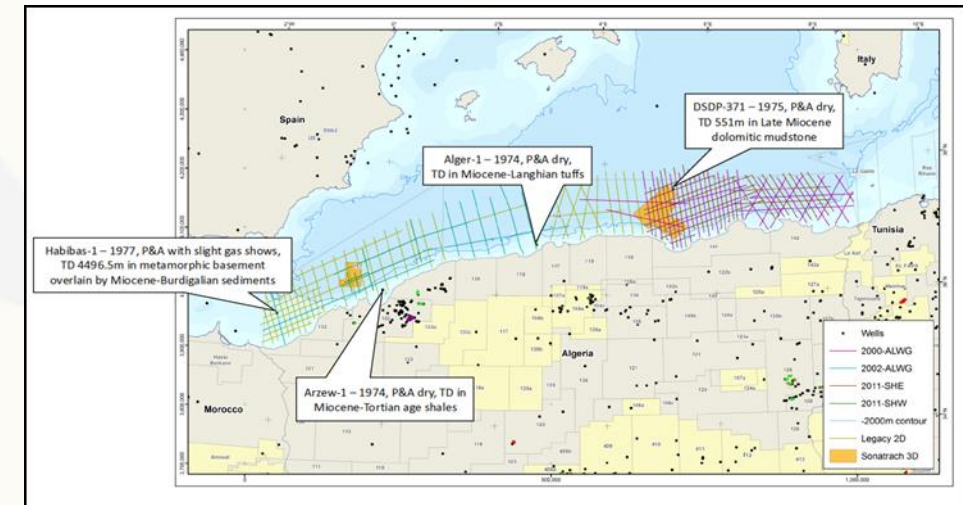
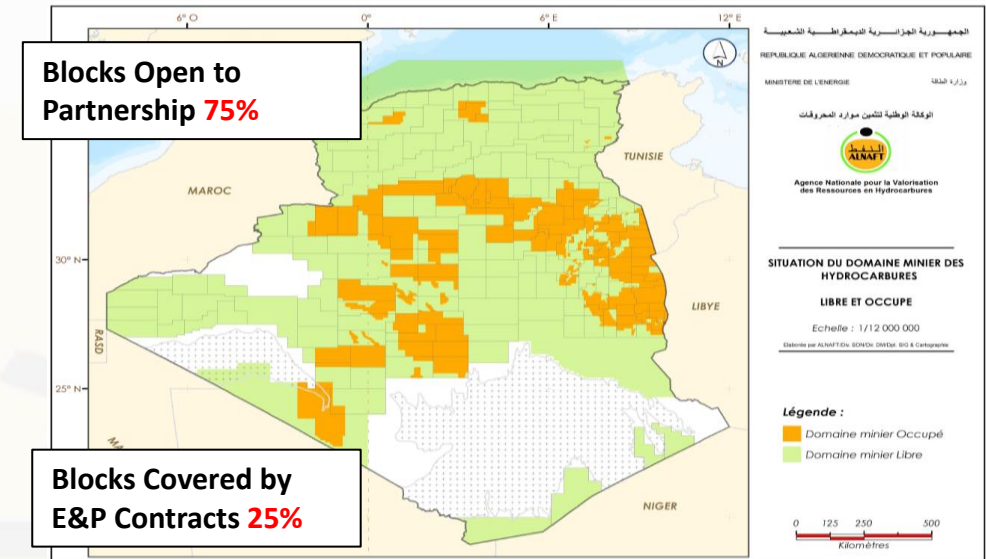
# Opportunities

## I- Prospection and research in frontiers zones and the Algerian offshore

- ✓ Large mining domain 1,67 Million km<sup>2</sup>
- ✓ 1 Million km<sup>2</sup> Open to Partnership (green color)
- ✓ Underexplored areas:
  - ❖ In the North
  - ❖ In the West of Sahara platform
  - ❖ Algerian Offshore

### Offshore :

- 4 studies (within 2 on going);
- Prospects & Leads that reach a size of 400 Km<sup>2</sup> already identified;
- Presence of Clastic and Carbonate “build ups” reservoirs;
- The main Lead in Carbonate Build ups (East area) presents similarity to Zohr discovery;
- Thermogenic and Biogenic hydrocarbons generated.

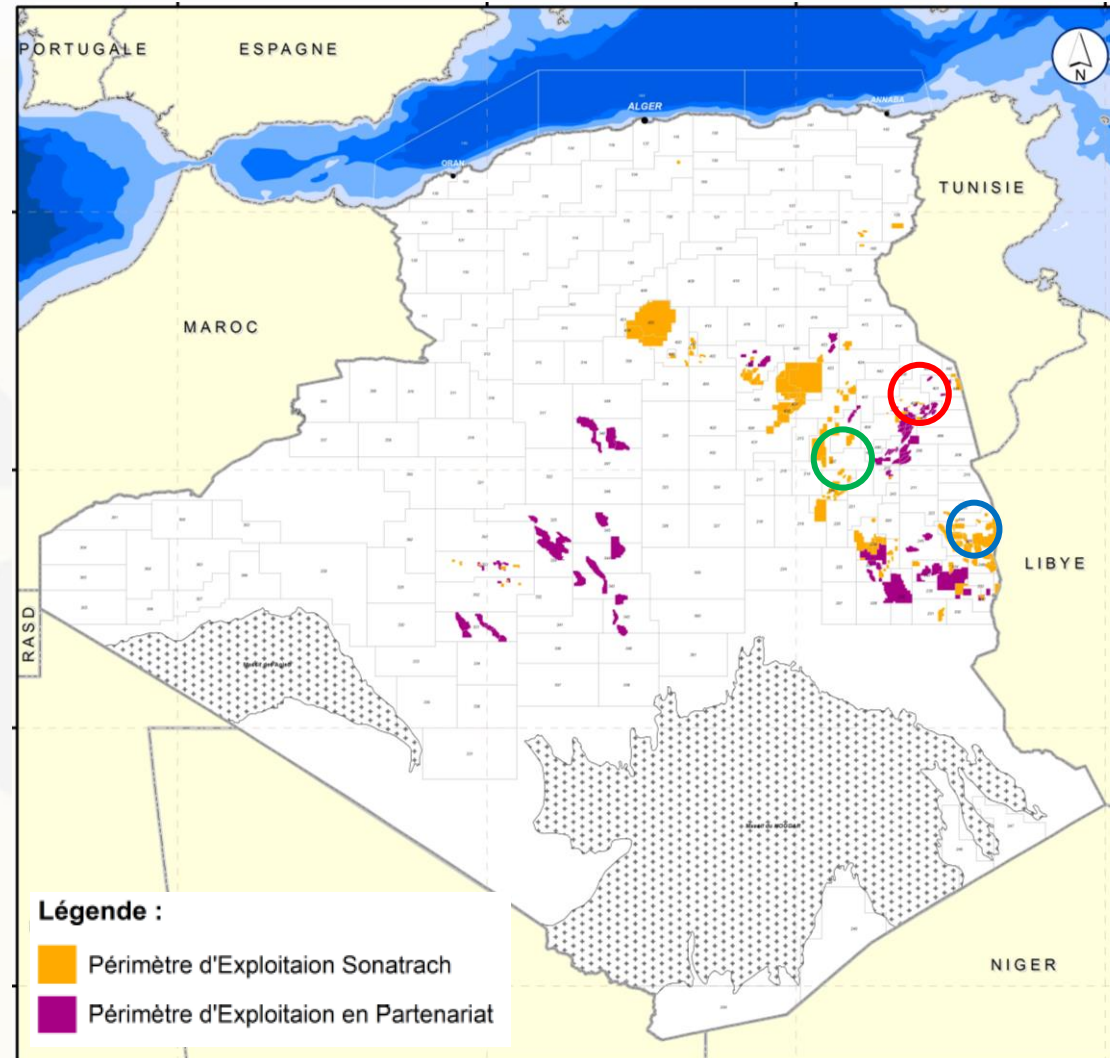


**Estimated volumes per prospect/lead:**  
 200 to 500 mmbbl of oil  
 0,5 to 2 Tcf of gas

# Opportunities

## 2- Explore Deep Horizon, Stratigraphic & Mixed Traps

- ✓ A successful exploration strategy requires a high quality of regional studies that could increase the reserves
- ✓ Increasing reserves of mature fields
- ✓ Exploration of Deep horizons, Stratigraphic & mixed traps



### Berkine

Under production : Triassic réservoirs

Deep reservoirs : Siegenian & Silurian Sandstone units

### Gassi Touil & Rhourde Nouss

Under production : Triassic réservoirs

Deep reservoirs : Silurien and Ordovician Sandstone units

### Illizi

Under production : Ordovician (Upper), Devonian:

Deep reservoir: Ordovician (M. & Lower),  
Stratigraphic traps within Siluro-devonian

# Opportunities

## 3- Appraisal and development of Existing Discoveries

### Oued Mya, Amguid

Oil : 5,74 Gbbls (P2+P3)

### Ahnet, Timimoun, Reggane

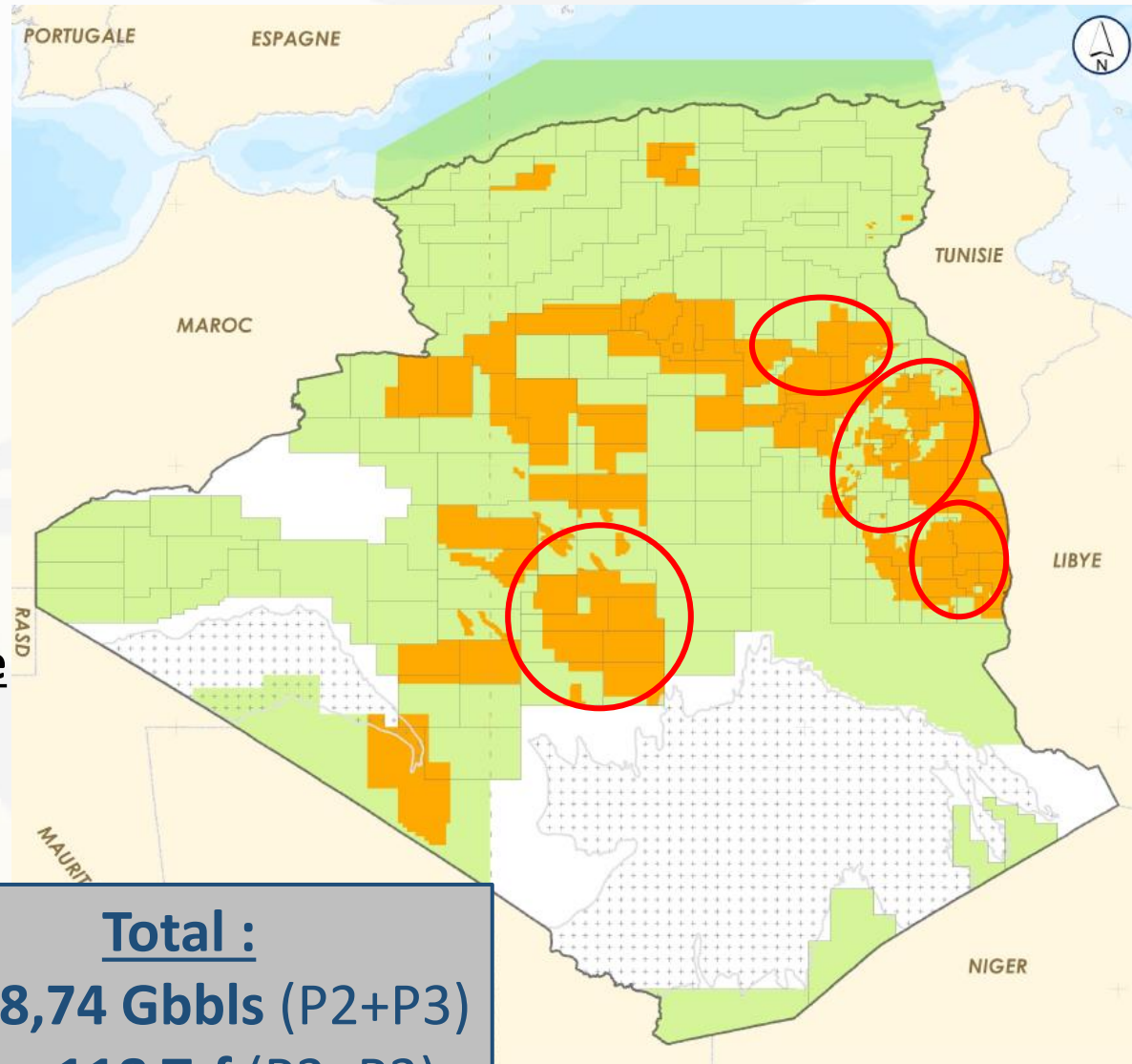
Gas : 51 Tcf (P2+P3)

### Berkine

Oil : 3 Gbbls (P2+P3)  
Gas : 33 Tcf (P2+P3)

### Illizi

Gas : 34 Tcf (P2+P3)



**Total :**  
Oil : 8,74 Gbbls (P2+P3)  
Gas : 118 Tcf (P2+P3)

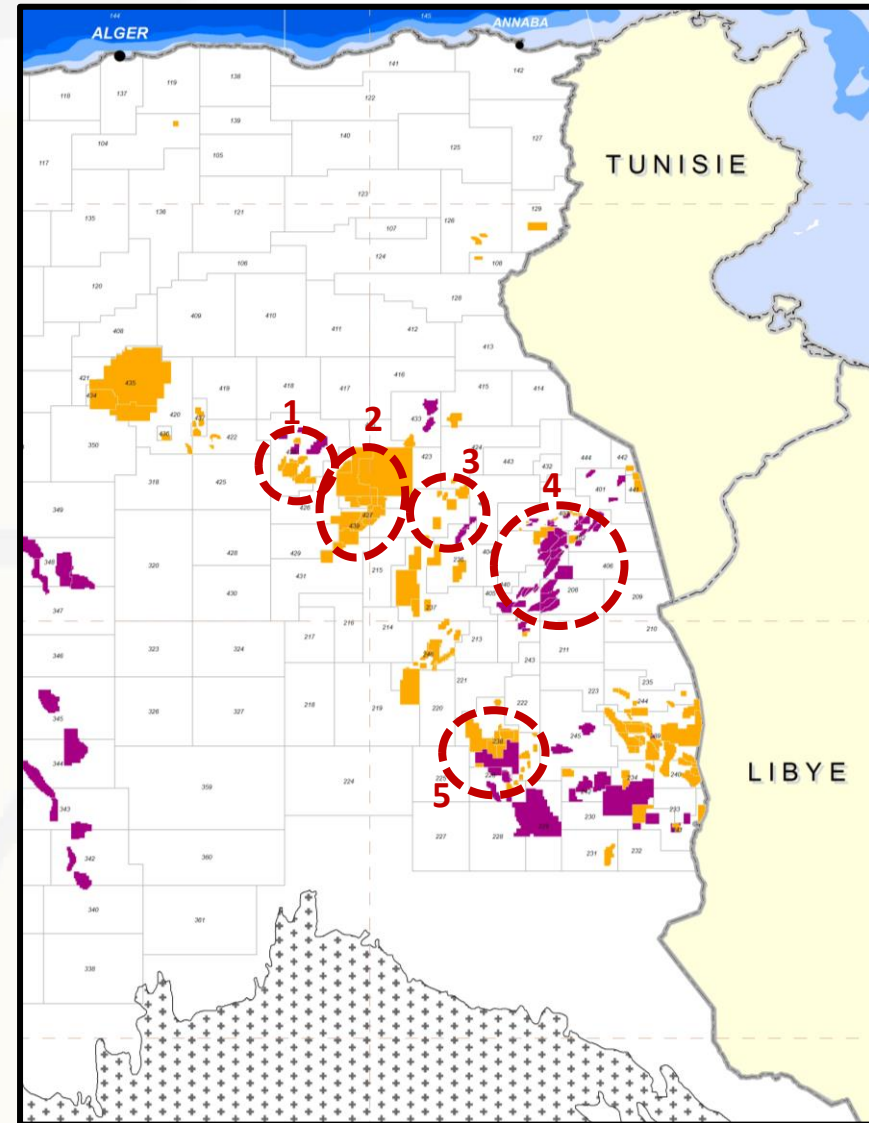


# Opportunities

## 4- Enhance Oil Recovery in mature fields

### In more than 30 fields

By increasing the recovery rate by 10-15%, the remaining recoverable reserves will increase by 7,2 Gbbbls.

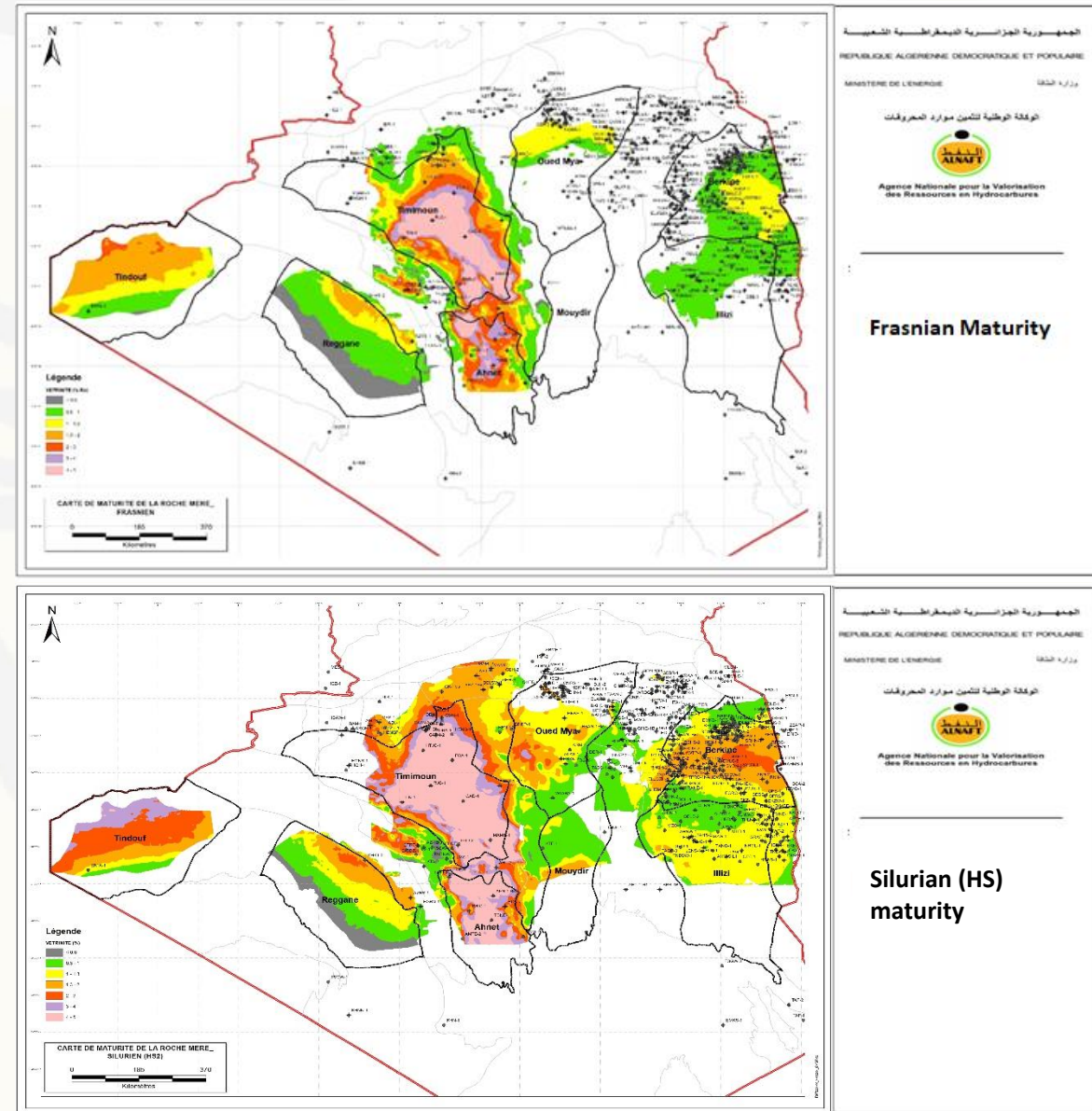




# Opportunities

## 5- Exploration of Shale and tight Plays

- Main source rocks : Silurian and Frasnian
- Resources confirmed by ALNAFT 's study;
- Possibility of producing particularly gas (Western basins); and liquids (Eastern basins): wide range of maturity
- Two (2) wells have confirmed the high productivity and fracability (6 to 9 Bcf, may reach 18 Bcf in P3, recovery per well 1000 m of Horizontal section



# Opportunities

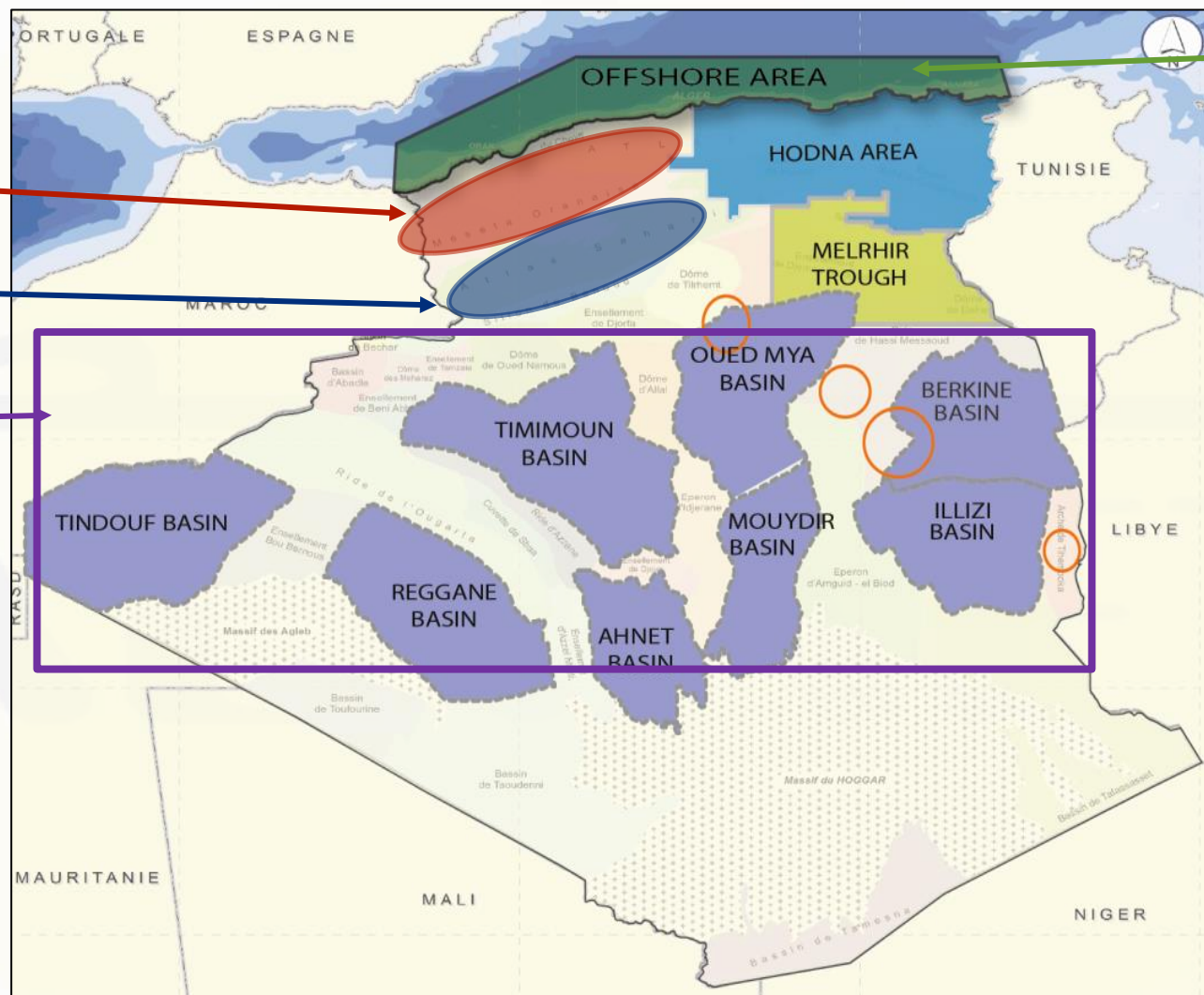
## 6- Evaluation of a zone by conducting G&G studies

### 10 Studies Launched on the Petroleum Potential

1 on Chelif, Tiaret & Boughezoul

1 on western Saharian Atlas

1 on UNC on 8 Saharian basins



4 on the offshore

1 on the N-E part

1 on the Melrhir trough

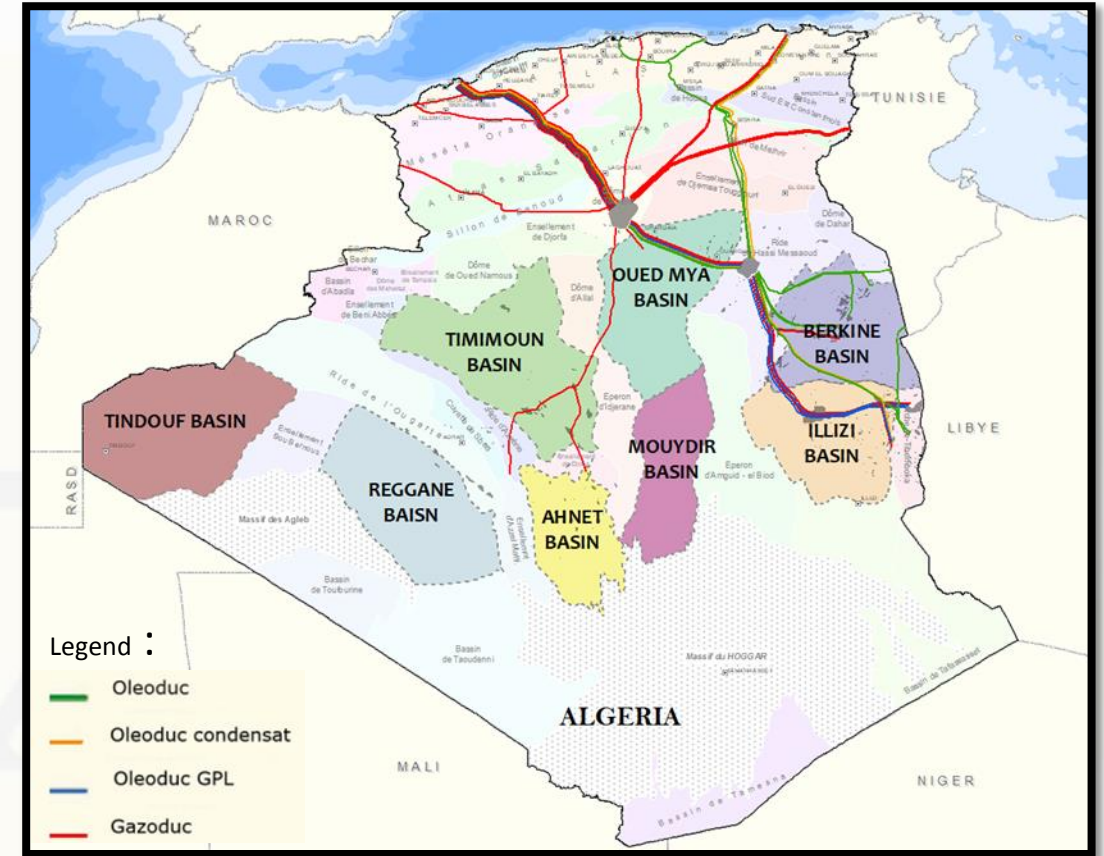
1 on recoverable reserves of 4 main areas

# Opportunities

## Assessment of Unconventional Resources

### Key notes

- ✓ Area of more than 1 millions km<sup>2</sup>;
- ✓ More than 1600 wells correlated across the Saharan platform;
- ✓ 400 wells evaluated in targeted sections ;
- ✓ 5 km of cores described exclusively on targeted intervals;
- ✓ Thousands of analytical geochemical data (TOC, Rock-Eval) gathered in a single data base.



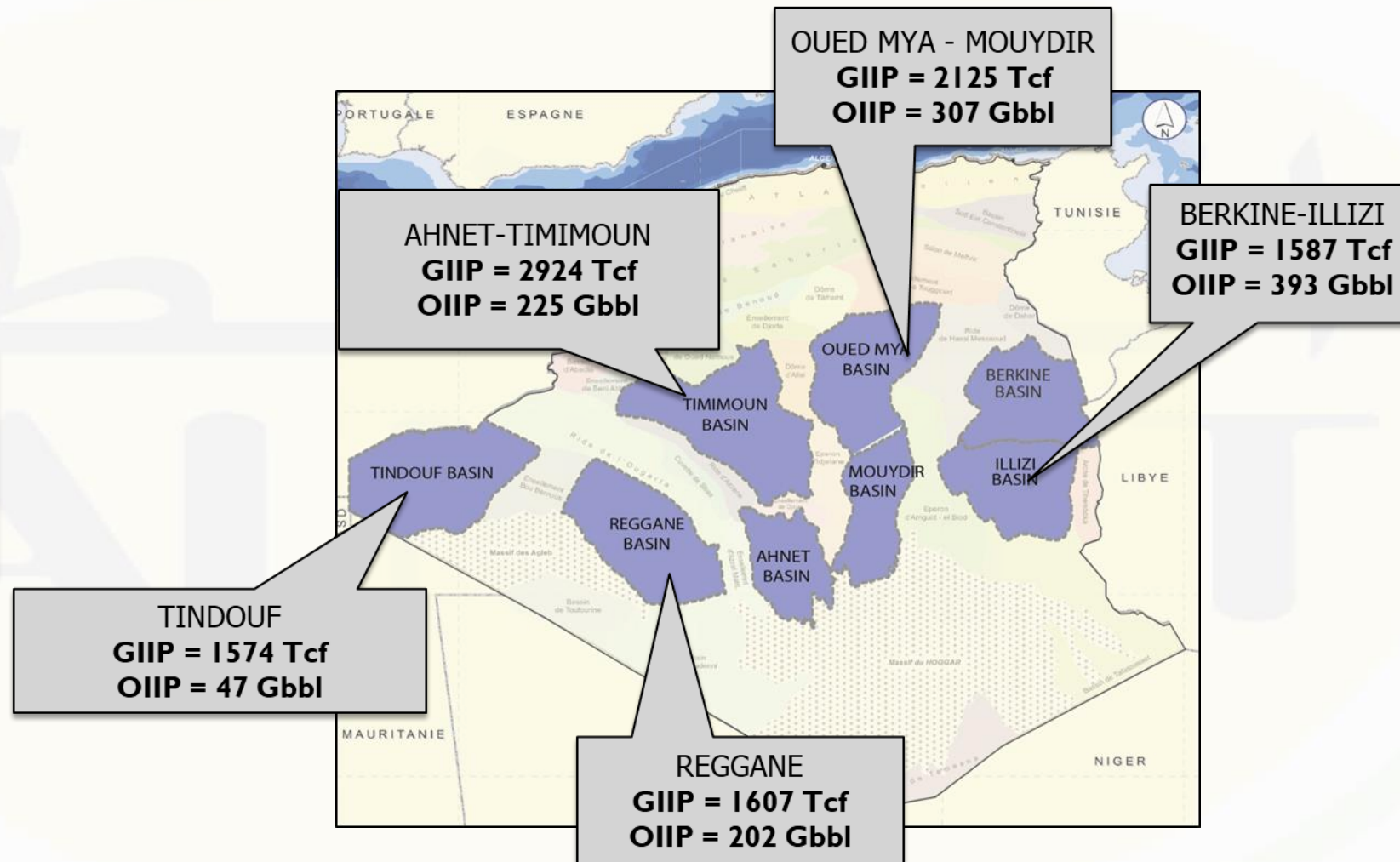
Location of the Study



# Opportunities

## Unconventional Resources

Regional overview of the resources (**Risk**ed & **un**risked)



### Total Volumes

**GIIP = 9818 Tcf**  
**OIIP = 1174 Gbbbl**

# Opportunities

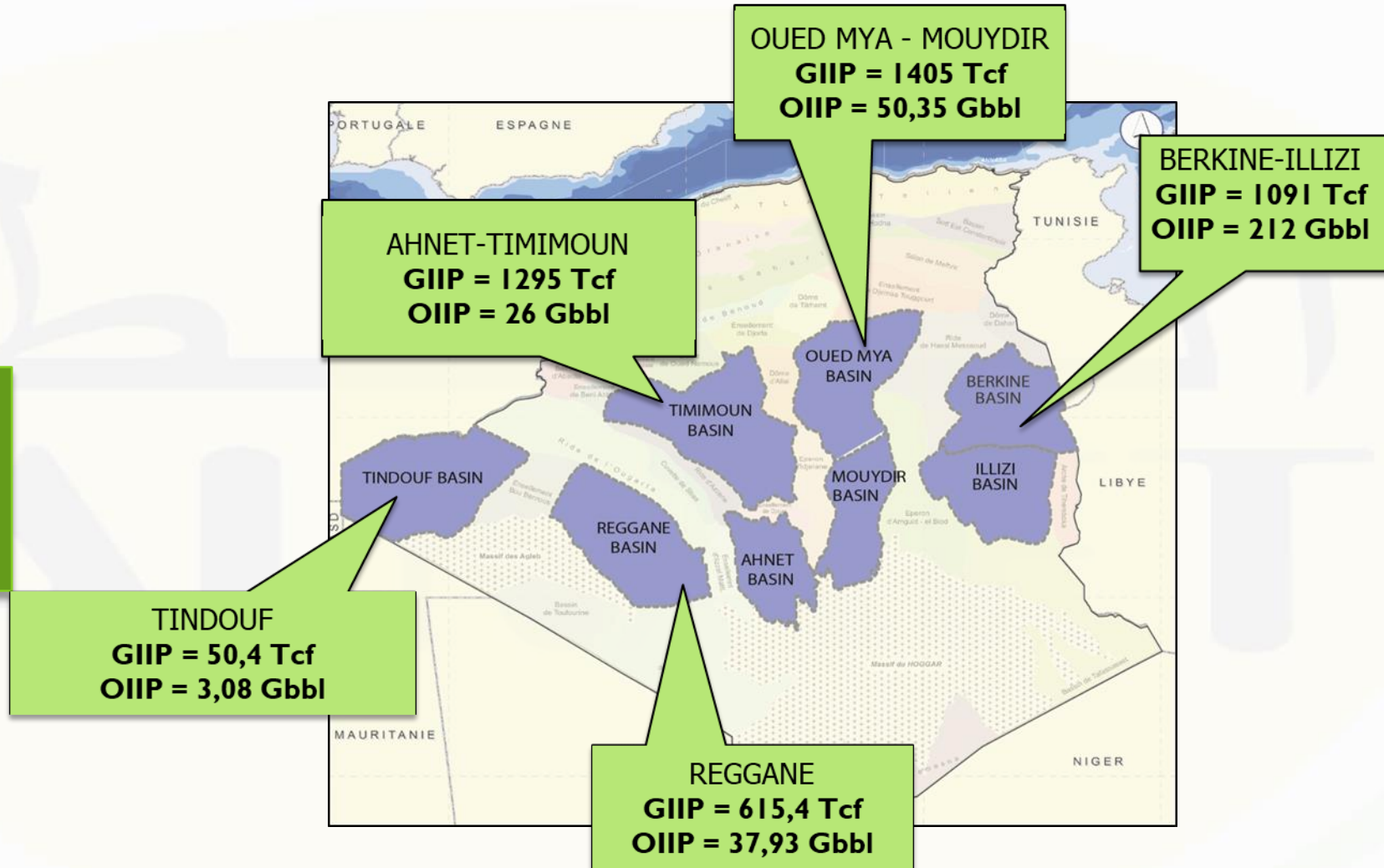
## Unconventional Resources

### Regional overview of the resources (unrisked)

**Cutoff :**  
 HCIIP > 5 Mbbbl/Km<sup>2</sup>  
 Thickness ≥ 20m  
 TOC > 1%  
 SPI > 1 tonne/m<sup>2</sup>

### Total Volumes

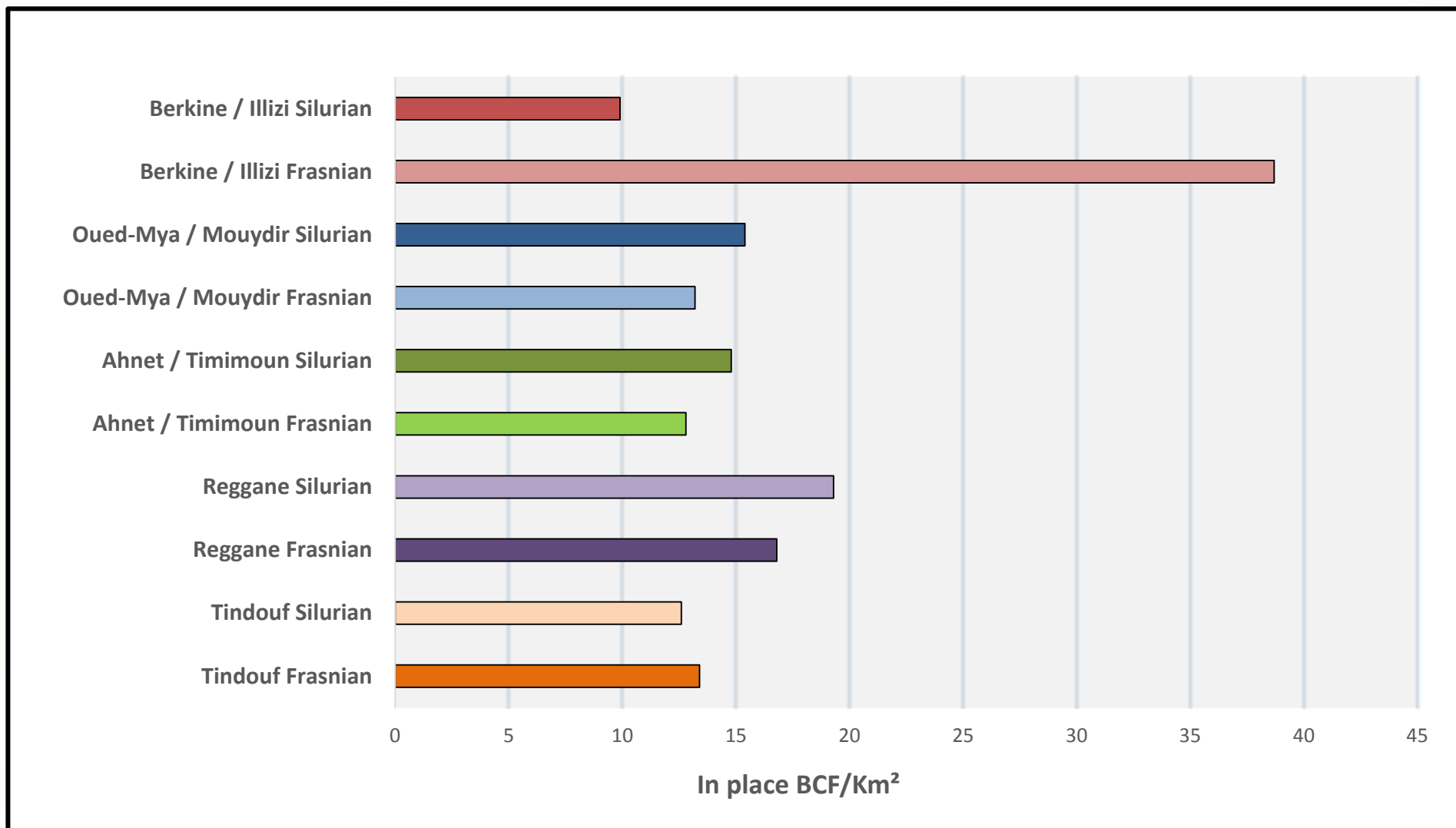
**GIIP = 4456 Tcf**  
**OIIP = 329 Gbbl**



# Opportunities

## Unconventional Resources

### Bscf/km<sup>2</sup> in place



# Opportunities

## Unconventional Resources

### Ranking of Algerian NC Potential

Shale Gas – EIA Assessment		
Technically Recoverable		
Shale Gas Resources		
TCF		
1	U.S	1 161
2	China	1 115
3	Argentina	802
4	Algeria	707
5	Canada	573
6	Mexico	545
7	Australia	437
8	South Africa	390
9	Russia	285
10	Brazil	245

**+ 30%**

**891 Tcf**  
Unrisked area  
with **20%**  
recovery factor

Shale Oil EIA Assessment		
Technically Recoverable		
Shale Oil Resources		
Billions Barrels		
1	Russia	75
2	U.S	48
3	China	32,2
4	Argentina	27
5	Libya	26,1
6	Australia	17,5
7	Venezuela	13,4
8	Mexico	13,1
9	Pakistan	9,1
10	Canada	8,8
11	Indonesia	7,9
12	Colombia	6,8
13	Algeria	5,7
14	Brazil	5,3

**+ 250%**

**16,5 Gbbls**  
Unrisked area  
with **5%**  
recovery factor



U. S. Energy Information  
Administration

## To end :

- Algerian Hydrocarbon sector is well established industry, with an extensive and reliable infrastructure network
- Huge unconventional potential;
- Mining domain still underexplored;
- Important potential to develop including EOR;
- Partnership is a strategic choice;
- Geographically well located;
- Experienced talents available.

**Thank You For Your Attention**





January 22<sup>nd</sup> , 2020

## CHEVRON-ALNAFT Meeting Program

Presentation of ALNAFT and the Hydrocarbon Mining Domain 20mn

Presentation of the Unconventional Study 20mn

Demo of the National E&P Data Repository 20mn