

Oil & Gas Exploitation in Albania

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Oil Industry history and oil reserves.

The oil fields of Albania, producing from Jurassic-Eocene limestone and from Upper Miocene sandstone reservoirs.

Oil exploitation in Albania began 80 years ago on 1928 year in Kuçova Oil field and one years later in Patos, in sandstone reservoirs. Both oil fields are discovered from A.I.P.A (Italian Petroleum Company). Development of Petroleum Industry in Albania can divide in this periods:

1928 – 1944 Italian companies.

1944 - 1961 Eastern Europe Specialists and Albanian specialists.

1961 - 1992 Only Albanian specialists.

1992 – 2008 Collaboration with foreign companies.

The key Petroleum events in Albania are:

-Discovery of Driza oil bearing formation on 1928 year.

-Discovery of Marinza Oil field on 1957 year.

-Discovery of the Oil reserves in Carbonate Reservoirs, on 1963 year. (Fig.1).

Albania is a Petroleum bearing Country in Sandstone and Carbonate Reservoirs. The petroleum potential is geologically augmented by:

-Existence of two types of reservoirs: Sandstone and carbonate.

-Existence of six potential source rocks on Mesozoic carbonate section, from Triassic to Cretaceous Rocks.

-Was proven Oil Generation and oil migration during a long geological period.

-Existing of faulted and thrust carbonate belts, creating very good condition for oil and gas trapping. (Fig.2)

- Existence of very good seals as flysch deposits are.

-Existence of different types of the traps in carbonate and sandstone reservoirs.

During a long period of petroleum operation in Albania are discovered oil reserves, and are exploited, according to this scenario:

-Total in place reserves in Sandstone and carbonate are 428 550 000 ton.

-Total Recoverable reserves are: 80 000 000 ton.

-Total in Place reserves in carbonate 95 650 000.

-Recoverable reserves in Carbonate 37 700 000.

-70 % of reserves in Carbonate are recovered.

-Total in Place sandstone reserves: 332 700 000 ton

-Sandstone recovered reserves : 23 471 000 ton.

Legislation framework

Hidrokarbure Operations in Albania, after 1944 year, are performed from General Petroleum and Gas Directory, named Albpetrol after 1992 year. The task of Albpetrol is exploitation of oil and gas in Albania, and treating, transport and selling of crude oil as well. Albpetrol exploits and tar sands too. The activity of Albpetrol is set worth by the Petroleum Law Nr 7746, date

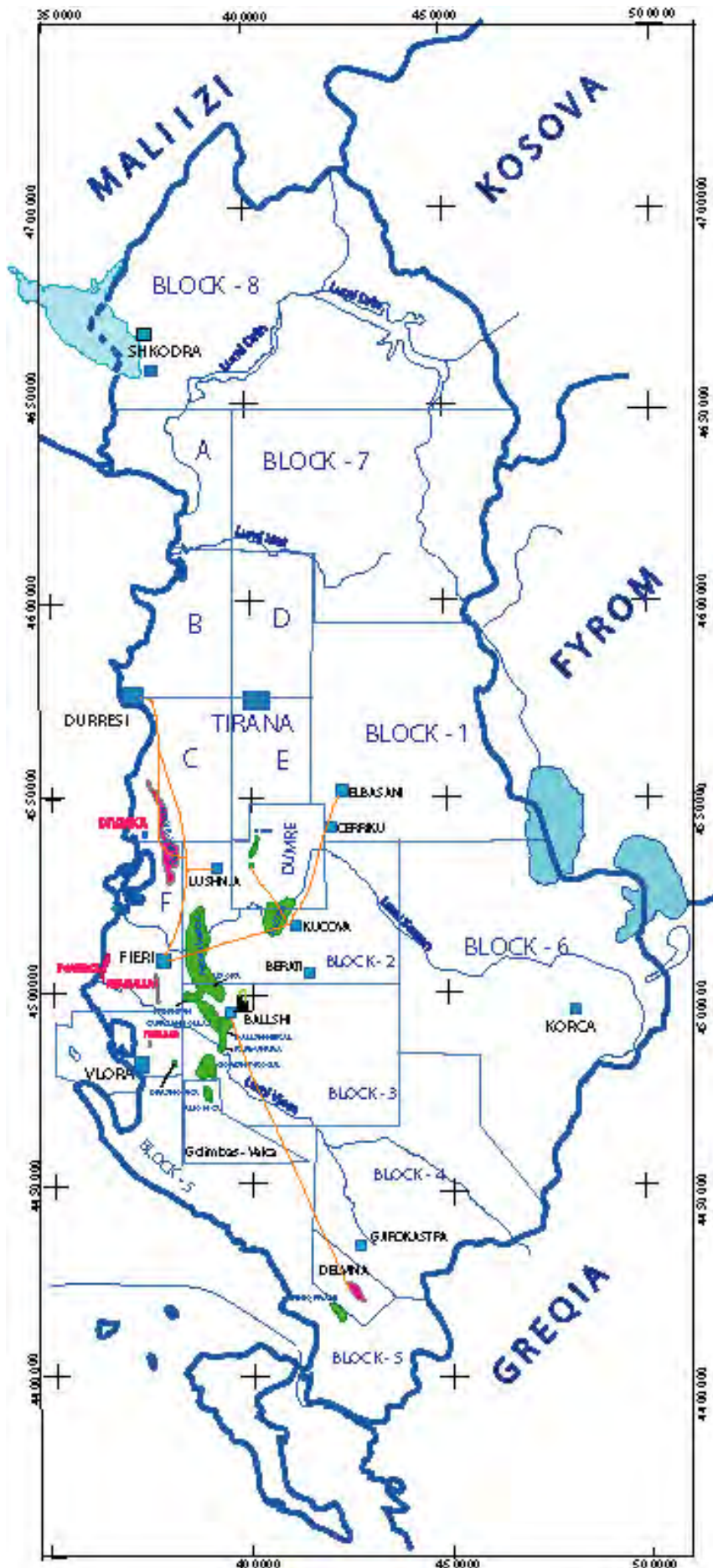


Fig.1 Oil and gas fields in Albania

28/07/1993, and the agreement between Ministry and Albpetrol date 26/07/1993. The Oil and gas company Albpetrol has got exclusive rights for the development of all oil and gas fields under its management.

. According to Petroleum Low Albpetrol can enter into agreements with foreign companies for the developing and producing of the oil fields. In this cases National Petroleum Agency of natural Sources give a License Agreement to Albpetrol.

All oil and gas reserves are propriety of Albanian State, sole shareholder is the Ministry of Economy, Commerce and Energy. Albanian State has a clear Petroleum Exploration and Production Policy as follow:
 -Opening the oil and gas industry to free competition and market liberalization and attraction of foreign investments.

-Encouragement of foreign investment in petroleum via liberal foreign investment legislation and a specific, simple and flexible legislation.

-An effective and appropriate institutional organization and fast licensing procedures.

This well organization and legislation have served during these 16 years to collaborate successfully with foreign petroleum companies, both in exploration and exploitation of oil and gas.

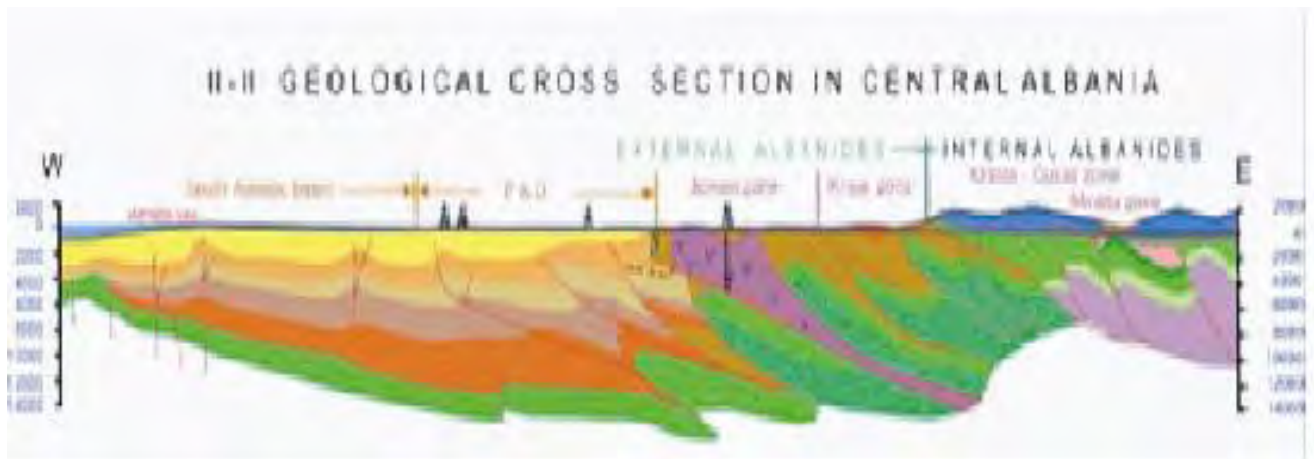


Fig. 2. Cross section in Central Albania

Albpetrol is cooperating in almost all oil fields in Albania. It has six agreements in six oil fields in sandstone and carbonate fields, and is collaborating to increase oil production, and to improve recoverable coefficient of the in place reserves.

Oil and gas production

Oil production in Albania is from two distinct reservoirs. The earliest production was from Upper Miocene sandstones, in the Peri-Adriatic Depression, or Durrresi Basin, a post orogenic largely Neogene fill covering the greater part of the coastal plain.

The second pay is in fractured limestone ranging in age from Jurassic to Eocene, of the Ionian Zone, a folded and thrust zone making up the Albanids. Ionian Zone underlie the Durrresi Basin.

Oil production in Albania was increasing continuously. During the periods 1929-1944 and 1945-1963 the total production was only from the sandstone reservoirs, while after 1963 year was and from the carbonate reservoirs. Up to the 1963 year from the sandstones were produced 4 974 649 ton oil. .

Discovery of the new reserves on carbonate reservoir have increased considerably oil production in Albania arriving the maximum on 1975 year 2 250 000 ton. (Gr Nr 3) . After this year oil production decrease rapidly. Carbonate reserves were recovered intensively and in the carbonate oil fields evidenced a lot of negative phenomenon's as:

- increasing water- cut production.
- Interruption of the fountain of a lot of wells.
- Increasing of the exploitation depression
- Intensive decreasing of the bottom pressure
- High progressive advancing of the water-oil contact.
- High decreasing of the energy.

Despite of the measurements to improve oil recovery of carbonates the production decline continued progressively. The most considerable declining of the production was during the years 1989-1991, from 1.1 million ton to 0.6 million.

After 1993 year Albpetrol starts another stage of collaboration with foreign companies.

On 2004 year start to increase production from Marinza oil field Bankers Petroleum. Total production from this field increased from 359 000 ton on 2003 to 563 402 on 2007.

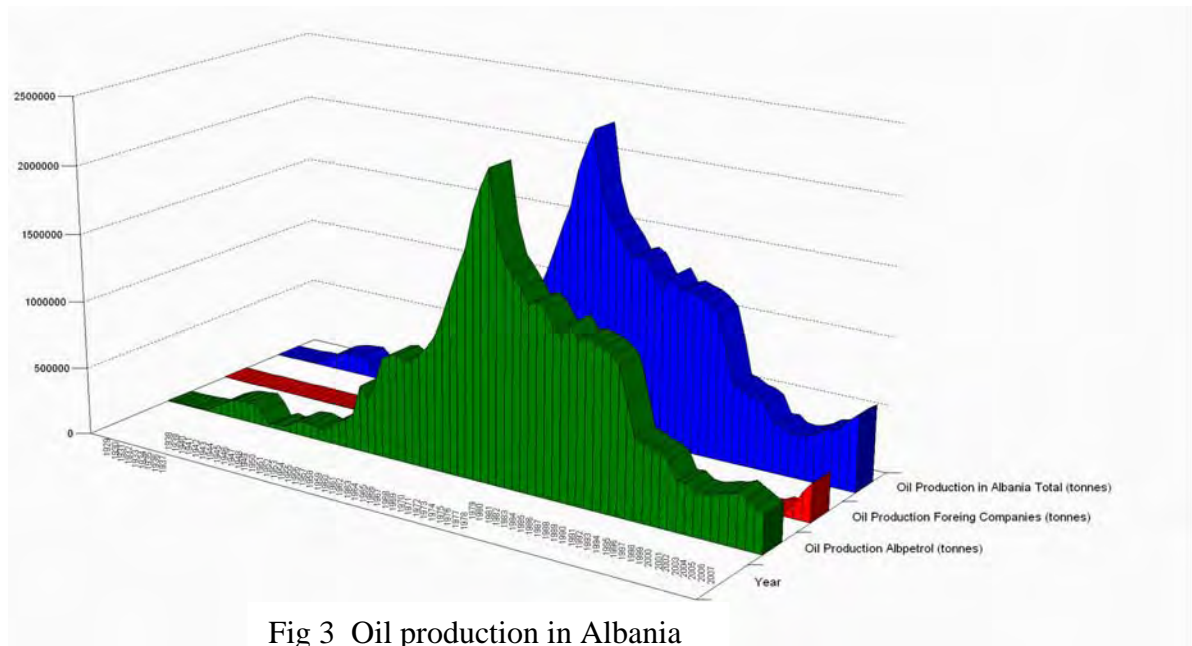


Fig 3 Oil production in Albania

Gas P production:

Prior 1963 year were produced only associate gas from oil fields. After 1963 were discovered new reserves of natural gas on Pre-Adriatic Depression Structures. Gradually gas production increase up to 1 billion Nm³ per year. This maximum production was reached on 1985 year. (Fig.Nr 4 gas production).

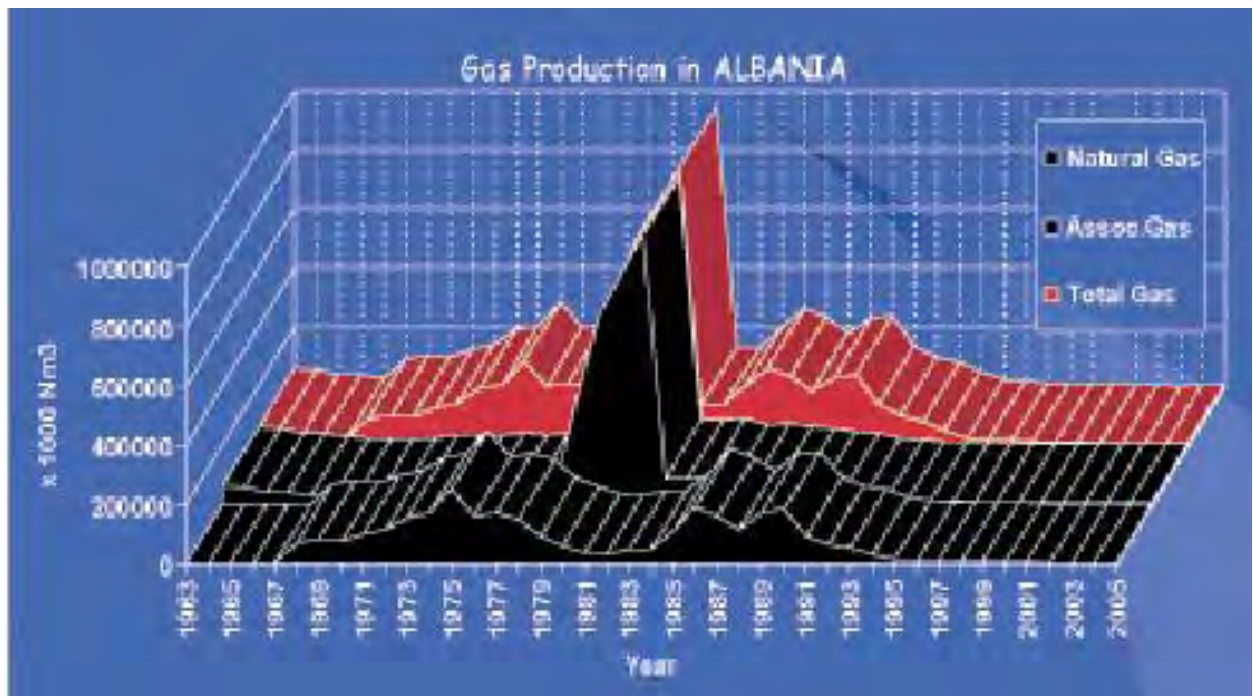


Fig. 4 Gas production in Albania

After 1985 year gas production declined because the associated gas decrease together with the recoverable reserves and natural gas reserves depleted year after year. Today's gas

production is less than 1 million m³ per year, mainly from Delvina gas condensate field, and a small amount from oil fields.

Albania has increasing demand for the gas supply.

Forecast of the oil production.

As a result of the Petroleum Agreements with foreign companies, they are doing investments and applying new technology for an increase of production. The most advanced company with investments is Bankers Petroleum, which is operating since 2004 in the Patos-Marinza oil field. During the 2004-2007 period, this company has done 170 million USD investments, increasing production in this oil field more than 3 times.

The amount of in-place reserves in the oil fields compared to their level of production with primary production techniques indicates a high potential for the application of EOR techniques. This is evident also from the success of EOR activity of Albpetrol. To increase production from sandstone reservoirs, it was foreseen to apply five technological methods:

- Cavity progressive pumps.
- Drilling of horizontal wells.
- Drilling new vertical wells.
- Steam injection.
- Water injection.
- Fracturing in carbonate section.

Along with increased investment, which is significantly higher than previous years, the oil production is expected to grow at a faster pace as illustrated in the figure Nr 5

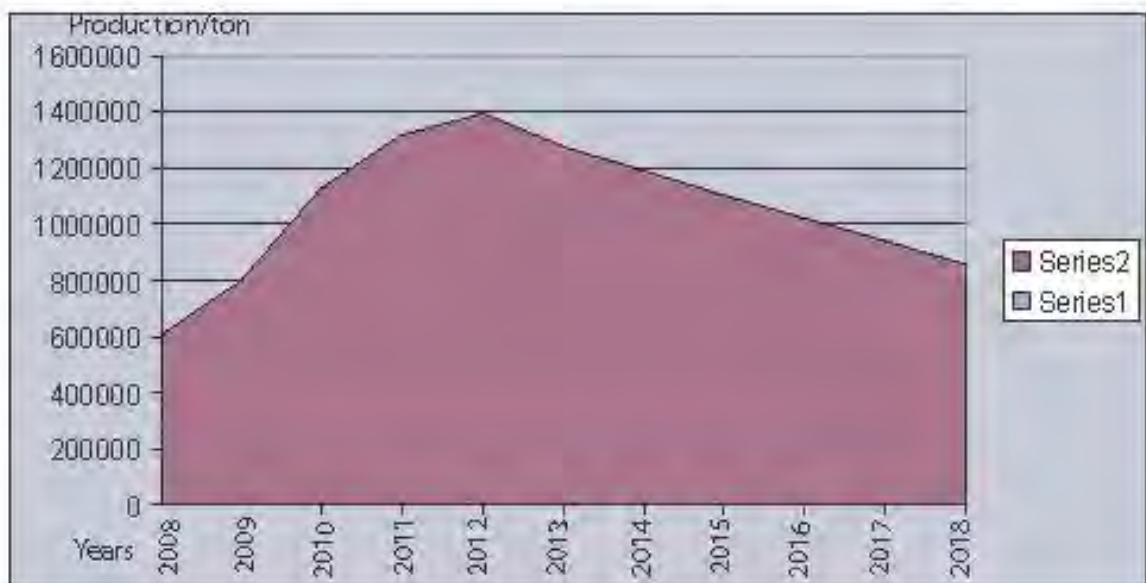
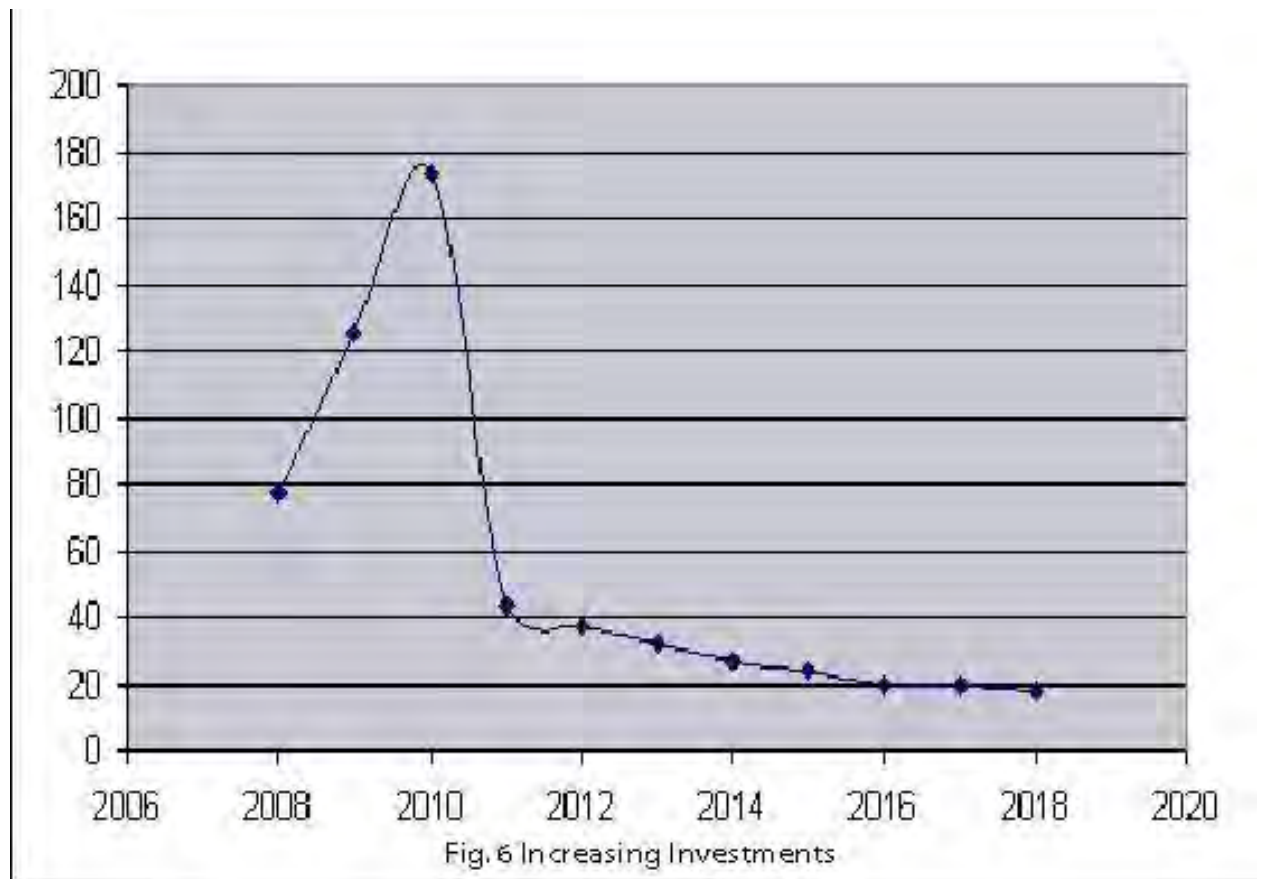


Fig 5 Production increasing forecast.

As a result of enhanced oil recovery methods, it is anticipated to reach a maximum of 22,000 million barrels per day in the year 2011. (Gr 5).

This would be possible according to a very high level of investments both in carbonate and sandstone reservoirs. (Fig. 6)



Conclusions:

Oil production in Albania start on 1928 year and was continuously increasing. There are producing two reservoirs: Sandstone and carbonate.

Albania has a high oil bearing potential and good opportunity for Oil and Gas Exploration.

In Albania exist a good legislation framework on collaboration with foreign companies for the development and production from existing oil fields.

The most valuable term is in place oil reserves. The main focus in oil production is in increasing of recoverable reserves coefficient, specially in sandstone reservoirs. To do that is necessary to apply new technology and new EOR methods. For the long term new technology is of prime importance for producing marginal fields in a world with more and more constrains on economics, safety and environment. In order to apply these methods Albpetrol is collaborating with foreign companies.

As result of collaboration with foreign companies, applying of new EOR methods, and increase considerably of the investments, the oil production will be increase in the near future.

There are good opportunities for the improvement of the Coefficient of recoverable reserves. It is foreseen to reach 22% in sandstone reservoirs.

Actual situation in oil market is very favorable for increase investments, and high price of the oil affect on marginal oil field to be more effective. The technical and economical optimization requires long term frame work agreements or alliances which share both risks and profits.