

# The History of the Oil and Gas Exploration in Italy\*

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## Abstract

The history of exploration in Italy comprised four periods. In 1860, the drilling of the Ozzano well divided the pre-industrial from the industrial periods. In 1944, the discovery of Caviaga separates the pioneers' from the growth and maturity periods. In 2007, the low exploratory activity marks the decline period. Pre-industrial Period- The populations that inhabited the country took advantage of the seepages. An interesting testimony is an ingot of purified bitumen dated 1st century AD with carved the mine owner's name. F. Ariosto (1430-1499) described the antique production method of the "Santa Caterina's oil". J. Stradanus (1523-1605) described a sea surface harvesting of oil using natural sponges. Pioneers' period- It started in 1860 with the first modern well driven by oil occurrences. The overall results were discouraging with the discovery of only a dozen of small fields concentrated in the North Apennines. The thrust belt poorly preserves the traps integrity and this is the main reason for the abundance of seepages. In 1939, started an unconventional production of biogenic shallow gas dissolved in water in the eastern part of the Po Plain named "Polesine". In 1943, it was producing more gas than all the other conventional fields. The Growth and Maturity Period- It stretches from 1944 to 2007. It was the "golden age" with the discovery of hundreds of fields. The largest gas discovery was Agostino-Porto Garibaldi in 1968, a giant of 600 Mboe. The largest oil discovery occurred in 1988 with Monte Alpi, a giant of 850 Mboe. During 1994, Italy reached a remarkable total production close to half million boe/d. The cumulative production amount to 6.4 Bboe of which the 77% is gas and 23% is oil. The Decline Period- Since 2007, the exploration investments reached an historical minimum. Several discoveries are on waiting list for development approval. A 2010 law bans the drilling within 12 miles from the coast. The bureaucratic process is quite tricky since there are different authorities involved. Public opinion is against any kind of up-stream operations. As a result, no offshore exploratory wells were drilled since 2008. In spite of the potential still existing, the choice is to leave the "domestic" oil and gas underground to prevent the politically undesired NIMBY effect from the population. Recently, new acreages became available in the Sardinia Sea and in the Medina Bank. Only future will tell if this is the right key to unlock again the exploration in Italy.

## Discussion

Three milestones characterize the up-stream industry of Italy from its early start until the present days, subdividing the history in four homogenous periods ([Figure 1](#)):

- 1860 - The drilling of Ozzano well marks the separation between the pre-industrial from the industrial period.
- 1944 - The discovery of the Caviaga gas field divides the pioneer period from the growing and maturity period.
- 2007 - The drilling of less than ten exploration wells per year represents conventionally the start of the period of decline.

**Pre-industrial Period** - Among European countries, Italy has one of the richest evidences of hydrocarbons seepages. Gas emissions, oil springs, mud volcanoes and bitumen impregnations represent them. The populations that inhabited the country during the various historical periods took advantage of these phenomena harvesting oil and bitumen from the surface. An interesting testimony of such activity is an ingot of purified bitumen of Roman age dated first century AD found in Central Italy. The scientist F. Ariosto (1430-1499) described the antique production method of the “Santa Caterina’s oil” in Northern Apennine. The painter J. Stradanus (1523-1605) depicted a sea surface gathering of oil in offshore Sicily using natural sponges.

**Pioneers’ Period** - In the 19th century, the wide spread hydrocarbons seepages attracted the interest of several oil companies that began to explore the Northern and Central Apennines. The drilling of the first modern well took place in 1860 near the village of Ozzano (next to the city of Parma in the Northern Apennines). The overall commercial results of the period were very modest, with the discovery of only a dozen small fields. The largest one was Vallezza oil field, with only two million barrels of recoverable reserves. The thrust belt poorly preserves the traps integrity and this is the main reason for the abundance of seepages. An unconventional production of biogenic shallow gas started in 1939 in the eastern part of the delta of the Po River. During 1940/1941, AGIP acquired the first commercial seismic reflection survey ever realized in the country, one of the first in Europe. The area involved was southeast of Milano.

**Growth and Maturity Period** - It was defined the “golden age of the Italian E&P. In 1944, the Caviaga-1 well discovered a biogenic gas field within the Lower Pliocene sandstones. The field held reserves of 12.5 Gm<sup>3</sup> (corresponding to 80 MM boe). It was the starting point of the modern Italian petroleum industry. For the first time, Caviaga proved the presence of large amounts of hydrocarbons within the buried anticlines of the Po Valley. This discovery, as well as the widespread acquisition of seismic reflection, triggered an intense and fruitful period of exploration and development. The first material oil discoveries took place in Sicily with the field of Ragusa (1954) and of Gela (1956). By the mid-50s, the first offshore seismic survey started in the northern part of the Adriatic Sea. In 1959, the drilling of the well Gela-21, first offshore well drilled in Europe, was busting further exploration possibilities.

The largest gas discovery of the period was Agostino-Porto Garibaldi, occurred in 1968 in the Northern Adriatic Sea. It is a biogenic gas giant field of about 600 Mboe of recoverable reserves. The largest oil discovery was Monte Alpi in the Southern Apennines in 1988. It is an oil giant field of about 850 Mboe of recoverable reserves. During 1994, Italy reached a remarkable peak of oil and gas domestic production close to half million boe/day. At the end of 2016, the cumulative production reached 6.4 Bboe of which 77% gas and 23% oil.

**Period of Decline** - Starting from 2007, the level of exploration drilling dropped under ten wells per year with the up-stream investments reaching an historical minimum. It conventionally represented the starting point of the decline of the Italian E&P industry. This negative trend was further confirmed in 2014, when no onshore exploratory wells were drilled. The situation is even worst for the offshore drilling, where the

last well was realized in 2008. One of the causes of this decline is certainly the exploration maturity of the biogenic gas play and the heavy bureaucratic process to obtain exploration authorisations. In addition, several old discoveries, ready for development, are queuing up awaiting only the government authorisation. This situation is strongly discouraging further investments. Finally, during the 2010, the potential investors faced a new law permanently banning the E&P activities within 12 miles from the coast. Nevertheless, there is a subtle general con-cause to explain the present situation. It is, perhaps, the increasing general opposition of a large part of the Italian population to any kind of petroleum domestic activities both onshore and offshore.

### **Conclusions**

In spite of the hydrocarbon potential still existing within the Italian territories, especially as concerns the oil exploration play, the “domestic” hydrocarbons remain unexplored to avoid the politically undesired NIMBY effects from the population. The Government has recently made available new acreages in the deep waters of the Sardinian Sea and within the offshore disputed area known as the Medina Bank between Italy, Malta and Libya. Only future will tell if this was the right move to promote again the up-stream investments in the country.

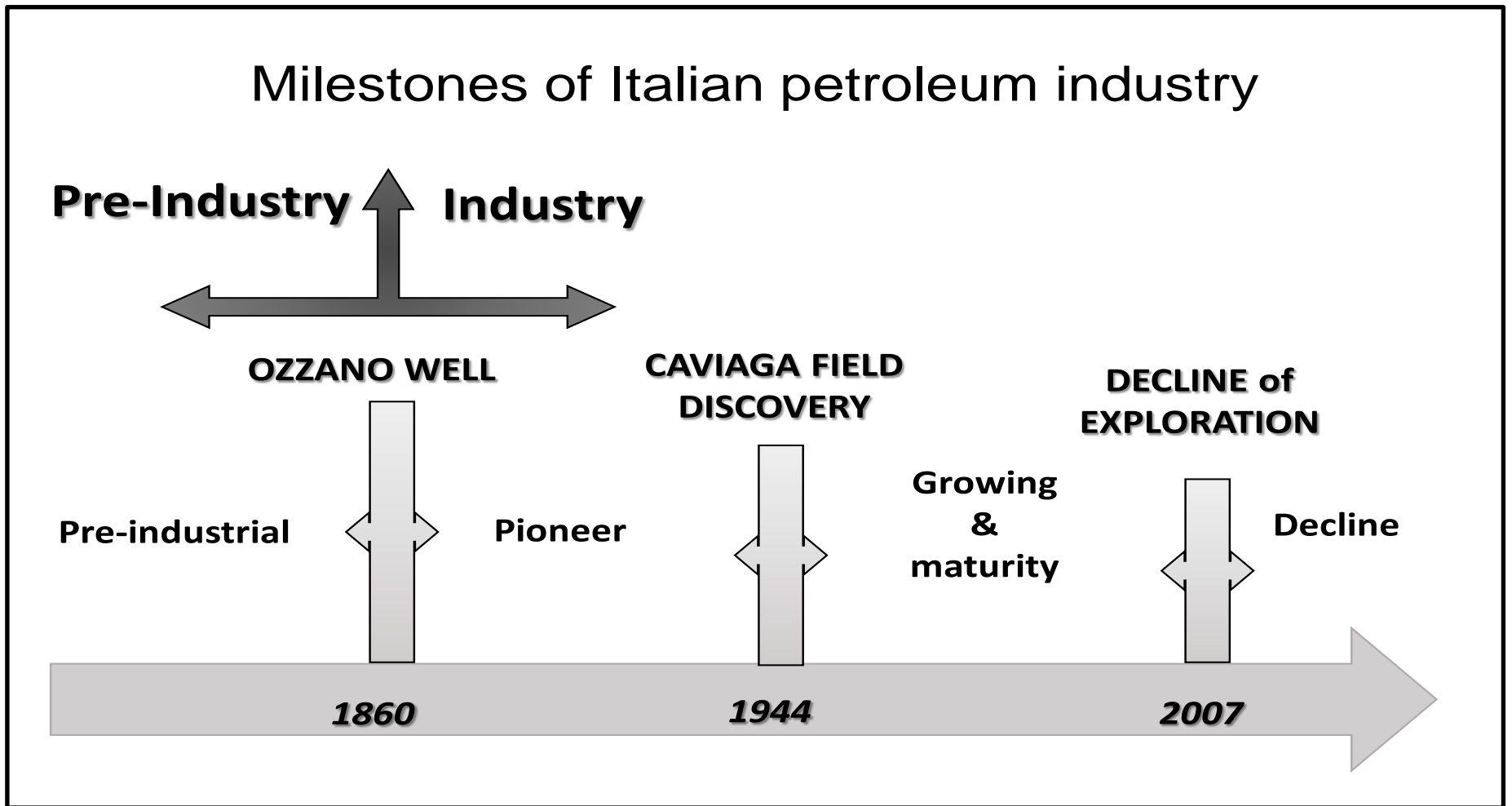


Figure 1. Historical milestones and periods of the Italian up-stream history of industry.