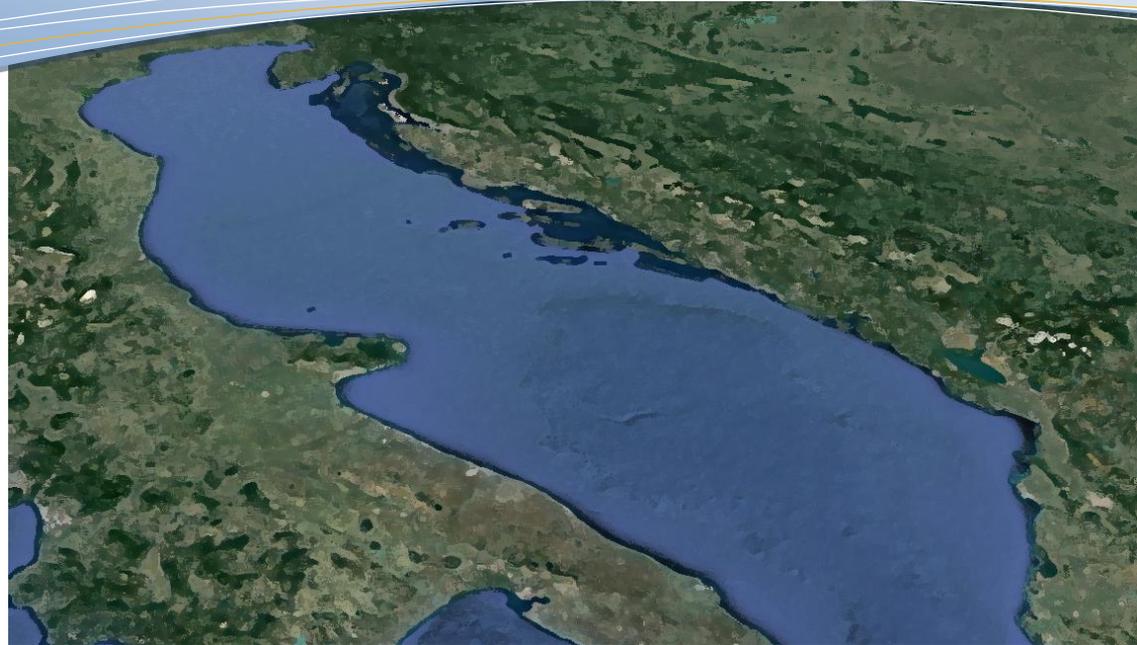


ADRIATIC BASIN REPORT: HYDROCARBON PROSPECTIVITY (update 2020)



The Adriatic Basin represents one of the most interesting and unique offshore basins of the Mediterranean area, not only for its geology and its long geological evolution but also for the abundant presence of hydrocarbons. The peculiarity of the Adriatic Basin is also due to the presence of different plays and, most important, to the existence of remaining exploration potential.

This report integrates public information and papers with and the available geophysical and well data from Circum-Adriatic countries to provide a review of the hydrocarbon exploration and production activity of the Adriatic to date and an assessment of the remaining hydrocarbons potential. In addition, the study includes an analysis of the areas where existing play types have not been adequately evaluated together with ideas for future exploration of newer play types which are currently poorly understood by the petroleum industry.

The history of exploration activity in the Adriatic Basin sees Italy as the first pioneer country that invested in hydrocarbons business with operations already in place in late 1950's. From 1960 to 2016 more than 1600 wells were drilled. The distribution of wells between the different countries in the basin is highly heterogeneous with more than 90% of the wells drilled on the Italian side of the basin, 8% in Croatia and less than 1% in Albania and Montenegro.

The Adriatic Basin is bounded to both sides by thrust belts: to the west by the Apennine thrust belt and its foreland and to the east by the Dinarides-Albanides thrust-belt and it has a long geological story that extends from Late Paleozoic to Pleistocene.

From a structural point of view, the Adriatic foreland belongs to the Adria continental block that, at present, extends northwest-southeast including, from north to south, the Po Plain, Istria, Adriatic Basin, Gargano Promontory and the Apulian Peninsula. The basin experienced two main phases: a Mesozoic extensional phase and a Cenozoic compressional phase. During the Mesozoic, the Adria domain was affected by extensional tectonics induced by the opening of the two adjoining oceanic basins. Within this context, the Adriatic area was characterised by extensive shallow-water sedimentation with the development of carbonate platforms, like the Adriatic and Apulian Platforms, and by deep fault-bounded pelagic basins, like the Belluno, the Ionian and the Adriatic Basin. During the Cenozoic the development of the Alpine and Dinaric thrust belts that bound the Adriatic Sea provided a remarkable sediments influx in the basin and the deposition of thick clastic sequences. At the present day, the Adriatic basin is one of the few foreland areas preserved by subduction in the eastern Mediterranean region.

The stratigraphic sequences are described in detail in this study, from the Hercynian interval and the Mesozoic platforms and basins framework, to the more recent Cenozoic evolution, where the development of the Apennine and Dinarides Thrust Belts led to the generation of foredeep and foreland depositional environments. A regional stratigraphic chart is included in this report, which summarises the stratigraphic successions of each geological domains, considering their tectonic evolution and main depositional environments.

The reservoir can be distinguished based on their main lithologies and textures. Mesozoic reservoirs are predominantly carbonates that could pertain to platform to basin depositional settings. They show a wide range of textures on the basis of their depositional environments and water energy; their petrophysical characteristics could be related to primary porosity but also to fracturing, karstification and diagenesis. The Cenozoic reservoirs could be related to Paleocene to Miocene high-energy clastic carbonates or to Oligocene to Quaternary siliciclastic sequences related to the development of the foredeep.

The sealing units are represented mainly by shale intervals in the Cenozoic foredeep sequences and by the evaporites (spanning from Upper Triassic, Lower Cretaceous, Messinian), but, locally, tight limestone could be potentially efficient cap rocks.

The association of the petroleum play components of source, reservoir and seals led to the identification of five different petroleum play types that are described and spatially defined in the last section of the report. The youngest petroleum play is represented by the biogenic gas within the clastic turbidite sequences deposited in the Plio-Pleistocene foredeep of the Apennine Thrust Belt, whereas the other plays are mainly related to oil and located in the carbonate sequences that span from Mesozoic (mainly Early Jurassic onwards) to Cenozoic.

This report integrates the published petroleum geology and available geophysics in the Circum-Adriatic countries to provide an assessment of the petroleum exploration and production activity of the Adriatic to date. In addition, the study include an analysis of the areas where existing play types have not been adequately evaluated together with ideas for future exploration of newer play types which are currently poorly understood by the petroleum industry.

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The study has been conducted by GEPlan Consulting s.r.l. based in Ferrara, Italy. GEPlan is an oil and gas consulting firm that can provide innovative and integrated G&G services for exploration, appraisal and development projects. It has specialistic skills in the characterization of carbonate and naturally fractured reservoirs worldwide. This study is part of larger collection of basin studies. These reports describe the geological characteristics of the basin and its evolution through time and they cover the most important aspects related to the hydrocarbon exploration and prospectivity, identifying and characterising the proved and possible plays in the area.

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9 REFERENCES

ENCLOSURES:

- ArcGIS project v. 9.3
- Enclosures (pdf format):
 1. E&P Wells and main HC Fields
 2. Jurassic-Cretaceous Geological Domains
 3. Structural Features and Tectonic Domains
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