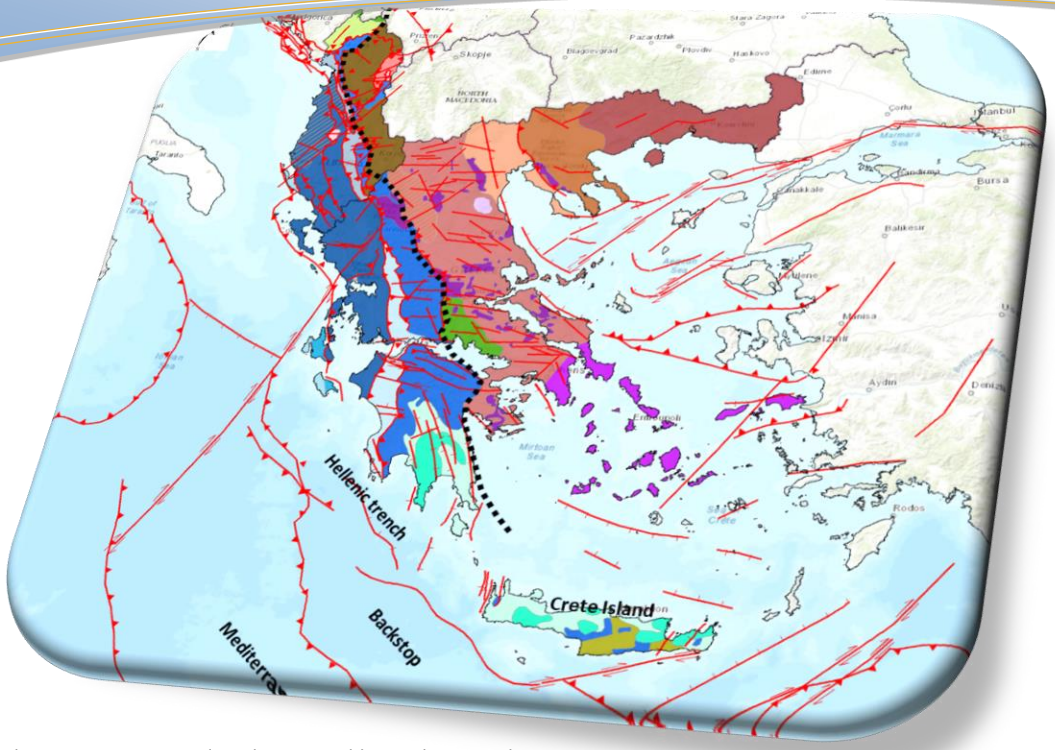
ALBANIA, WESTERN GREECE AND CRETE PETROLEUM PROSPECTIVITY (update 2020)



This report is a regional study prepared by GEPlan Consulting S.r.l., aimed at illustrating the geological setting and exploration potential of Albania (onshore and offshore), the western sector of Greece mainland (onshore and offshore) and the offshore areas to the south of Crete Island. This study includes a critical review of the tectono-stratigraphic settings and of the evolution of the region, a summary of the characteristics and distribution of the source rock in the study area and a description of the petroleum systems elements and the associated hydrocarbon plays that are present in this part of the central Mediterranean Sea.

Albania and Western Greece are located in the southern sector of the Dinarides-Albanides-Hellenides orogenic belt system, which is subdivided into different stratigraphic-tectonic units that formed NW-SE elongated parallel belts. This report is mainly focused on the foreland/foredeep and on the western external units of the fold-and-thrust belt (from Apulian, Pre-Apulian/Sazani zones to Ionian and Kruja-Gavrovo-Tripolitza zones). The offshore part of the study area is characterized by highly variable bathymetry; generally, the water depth is shallow in the Adriatic Basin and becomes deeper moving southwards into the Ionian Sea and the Eastern Mediterranean, where depths of more than 4000 metres are reached in the Hellenic trench to the West of Crete.

The study is based on public data from different sources, combined and critically reviewed with the experience of GEPlan Consulting working in the region on research and proprietary studies since early 2000's.

From an exploration point of view, the External Albanides, comprising also the Neogene molasse basins, represent the area of main HC interest in Albania, which is characterised by a long history of hydrocarbon exploration, which started in the beginning of XX Century. Greece, on the contrary, despite the occurrence of numerous oil seeps, is still considered as a frontier exploration area. The seismic and well data collected in the last decades have revealed a suitable geological setting for hydrocarbon generation and production, within structures that are very similar to the productive domains of Southern Italy.

Albania and Western Greece shared a similar geological history and the hydrocarbon potential of both areas may be comparable.

In Albania, several oilfields located in the Ionian Zone produce from Mesozoic-Paleogene fractured carbonates while gas fields are mainly related to Neogene sandstone reservoirs located along the eastern margin of the Durres Basin (Albania). Traps are mostly structural, i.e. thrust-related anticlines, but mixed and stratigraphic traps are also present, especially in the clastics systems. The source rocks identified in Greece show similar characteristics and thermal history to those found in Albania. In both Albania and Western Greece, the Mesozoic to Eocene succession includes several intervals made of organic-rich shales.

Offshore Crete is a frontier area where a very limited amount of data and information regarding the petroleum play components are available. For this reason, it is difficult to fully frame the various components of possible petroleum plays at this stage; nevertheless, we have proposed two play concepts, based on similarities with HC plays proved in other part of the Mediterranean region or examples from fields that show similar geological characteristics in order to understand the HC potential of this area.

Eight different play types were identified in Albania, Western Greece and offshore Crete. Some of these plays have been proved by the previous exploration activity carried out in the area. Plays not proved are based on geological concepts and surface evidences (HC seeps, units with suitable porosity and permeability, and/or units with seal capacity) but no discoveries have been made yet. The petroleum plays located in the carbonate sequences span from Lower Jurassic to the Eocene, and are mainly oil-related; the Cenozoic clastic play is characterised by biodegraded oil and biogenic gas and reservoirs/seals/traps within the Flysch and Molasse units.

The plays were classified according to the different reservoir and source rocks, and the type of hydrocarbon. The spatial definition for each play is related to the source rock distribution, the known hydrocarbon discoveries and the possible migration pathways in the various areas of the External Hellenides and Albanides. The play type extension was defined using the facies distribution maps of source rocks, reservoirs and seals, using the proved and inferred extension for each element. Thus the resulting maps tend to be quite conservative in terms of predictability.

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 fractured reservoirs and in the Italian and Circum-Mediterranean Oil and Gas Prospectivity. 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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