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History and present day of crude oil and natural gas production in Poland

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The crude oil mining at industrial scale in area of Poland may be traced back to the mid-19th century. Its cradle was the region of occurrence of rocks of the Carpathian Flysch, well known for numerous natural outflows and surface seepages of crude oil. Thanks to a rapid progress in geological investigations and successful exploitation in the late 1800's and the early 1900's, the area stretching from Gorlice through Jasło and Krosno as far as Borysław (the present-day borderlands of Poland and Ukraine) became of the most important centers of the world crude oil production. Nowadays this area is merely of historical importance as production of crude oil and gas production remains to be rather symbolic. However, there are still possibilities to discover new oil and gas fields, especially in deeply buried fold structures related to the Carpathian overthrust of the Alpine age. The dynamic developments in exploration of natural gas and crude oil have taken place after the World War II, after very extensive territorial changes of *Poland*. The exploration works were continued in the Carpathians and their foreland but attention began to be mainly focused on oil and gas potential of the Paleozoic platform of the Polish Lowlands. The prospecting soon showed that the most perspective rock series for natural gas are clastic formations of the Rotliegend (Lower Permian) and most perspective oil and gas bearing formation is that of Zechstein Main Dolomite (Upper Permian). In both cases, an important role is played by a series of evaporites (salts, anhydrites) which acts as a tight seal.

According to the latest edition of a yearbook [1] there were documented 85 oil fields with exploitable resources of 23.5 mln Mg and 291 natural gas fields with exploitable resources of 127.5 billion m³.

After [2] prospective resources of natural gas were estimated at about 1.7 trillion m³, and prospective resources of oil - at about 382 million tons. In the last few years, much attention was paid to unconventional natural gas resources in Poland. This was especially the case of the so-called shale gas occurring in clay rocks of the Lower Paleozoic (Ordovician and Silurian shale) in a wide belt along the western margin of the East European Platform. The estimates of recoverable shale gas resources from early stages of prospecting used to vary over very wide range, from 48 billion to 5.3 trillion m³. According to estimates calculated by Polish Geological Institute these resources varies between 346 to 768 billion m³. After a period of relatively high interest of the foreign and Polish investors in exploring and developing these shale gas resources potential, the license holders began to withdraw. This wane of interest was undoubtedly due to a sudden quick decline in oil and gas prices at the global market. Moreover, relatively large depth of occurrence of shale formations in Poland had also significant influence on assessments of costs of eventual development of shale gas resources and, in this way, assessments of risk of investments.

References:

- [1] Szuflicki M et al. (2015) The balance of Mineral Resources Deposits in Poland as of 31.12.2014: 29-35
- [2] Gorecki W (2011) In: Wołkowicz et al.[ed.]: The balance of Perspective Resources of Mineral Raw Materials of Poland as of 31.12.2009: 23-45

