OIL AND GAS EXTRACTION ON THE BLACK SEA SHELF OF UKRAINE: LEGAL AND ENVIRONMENTAL ISSUES

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\textbf{Abstract}. Ukraine is undergoing a historic period of economic, social and political changes. One of the conditions of achieving of sustainability in social and economic development is to provide energy safety. Since Ukrainian economy depends on energy import, what makes it vulnerable to price volatility and manipulation of supplying countries, it is extremely important to explore and exploit its own energy sources. For the time being Ukraine stays the only country of the Black sea basin which does not extract minerals on its part of deep shelf. The Cabinet of Ministers and Vanco International Ltd., the subsidiary of Vanco Energy Company (Houston, USA) signed the long-awaited agreement on distribution of products the extraction of which will be carried out on the territory of Transkerch oil and gas bearing field of the Ukrainian part of the shelf. The ecological sensitivity of this region requires an industrial system that would have a minimum impact on the Black sea environment. This paper addresses problems of marine environment protection of the Black sea, with an emphasis on the current problems of marine boundaries delimitation in the Black sea.

\textit{Keywords}: oil and gas extraction, maritime zones delimitation, marine pollution.

\section*{AIMS AND BACKGROUND}

At the end of the 20th century the continental shelf has become a place for large-scale and vitally important activity – oil and gas production. Marine oil-gas production industry has become the leading branch of power engineering and now it provides 30\% of the world hydrocarbon output.

The strategic importance of oil and natural gas has been gradually increasing in the world politics as indispensable inputs for countries development. Increase in the prices of oil and natural gas and decreasing production costs in parallel to developing technology have made the Black sea basin, which is considered to have significant oil potential along with natural gas, the focus of attention of international oil companies. The recent discoveries are the evidence of the fact that expectations regarding the potential of the Black sea are apposite.

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The aim of this paper is to determine legal and environmental problems which face the Black sea and Azov sea in the process of the shelf exploration and determine the ways of their solving.

Ukraine is one of European largest energy consumers. Almost half of Ukraine energy consumption comes from natural gas. At the same time Ukraine remains highly dependent on imported oil and gas. Until now Ukraine did not pay attention to questions of the deep-water oil and gas exploration. Large structures in deeper waters have been bypassed due to the lack of off-shore technology during Soviet times. Since its independence Ukraine has made efforts at oil exploration, particularly in its sector of the sea of Azov, but nevertheless oil production has remained relatively flat. Ukraine is still playing in the main the role of a transport corridor for Russian and the Caspian sea region oil exports to European markets.

Situation has changed dramatically with the price increasing for Russian and Asiatic gas. Because the own shore gas fields in Ukraine are exhausted on 70–80% (Ref. 1) the great expectations are connected to oil and gas exploration on the Ukrainian part of the Black sea and Azov sea shelf.

Until now there was only one company in Ukraine ‘Chernomorneftegas’ which provided hydrocarbons exploration on the Black sea shelf. It conducts drilling on a depth no more than 70 m, while leading world companies have technologies for shelf exploration on depths over 2 km. By estimations of geologists, 2/3 of the Black sea deposits lie on deep shelf. Now only 5 gas fields are being explored in Ukraine, it is only 4% of all reserves².

By experts estimations, total capacity of reserves in the east part of the Black sea is about 3.5 trillion of t of conditional fuel. The considerable part of hydrocarbons (about 1.5 trillions of t of oil equivalent) is in the territorial waters of Ukraine³.

October 22, 2007 the Government of Ukraine signed the Prykerchenskiy Production Sharing Agreement (PSA) with Vanco International Ltd., a subsidiary of Houston-based independent Vanco Energy Company. The agreement represents the culmination of the tender process through which in April 2006 Vanco was granted the right to negotiate the first license to explore the deepwater part of the Ukraine Black sea. The signing of the landmark Production Sharing Agreement gives Vanco the opportunity to explore and develop the highly prospective Prykerchenskiy block. If exploration efforts are successful, the development of the project will require investments of more than $20 billion⁴.

DISCUSSIONS
LEGAL STATUS OF THE SHELF ZONE

Solid legal basis is an indispensable condition of economic activity in the Black sea basin. After coming into force the UNCLOS (1982), 16 November 1994, new
geopolitical problems stemmed from it: delimitation of maritime zones, including
the continental shelf and agreements between the neighbouring littoral states.

UNCLOS’82 states that: the continental shelf comprises the sea bed and subsoil
of the submarine areas that extend beyond its territorial sea throughout the natural
prolongation of its land territory to the outer edge of the continental margin, or to
a distance of 200 km from the baselines from which the breadth of the territorial
sea is measured where the outer edge of the continental margin does not extend up
to that distance. If the continental margin extends beyond 200 km from the shore,
the outer limits of the continental shelf shall not exceed 350 km from the baselines
from which the breadth of the territorial sea is measured or shall not exceed 100
km from the 2500 m isobath\(^5\).

The coastal State exercises over the continental shelf sovereign rights for the
purpose of exploring it and exploiting its natural resources (mineral and other non-
living resources of the sea bed and subsoil together with living organisms belonging
to sedentary species). The coastal State has also the exclusive right to authorise
and regulate drilling on the continental shelf for all purposes. If the coastal State
does not explore the continental shelf or exploit its natural resources, no one may
undertake these activities without the expressed consent of the coastal State.

The former USSR declared its continental shelf in 1968 beyond its territorial
sea to a depth of 200 m, or beyond that limit, to where the depth of the super-ad-
jacent waters admits of the exploitation of the natural resources of the said areas.
(In 1994 Ukraine confirmed to Turkey its former 1978 Continental Shelf Agree-
ment.) In addition, the sea-bed and the subsoil of depression entirely surrounded
by the coastal state of the USSR irrespective of their depth were made part of the
Soviet continental shelf. After collapse of the USSR arose the question of marine
boundary delimitation between the new independent states.

CONFLICTS ON MARITIME ZONES DELIMITATION

Some perspective oil and gas fields are located in the Kerchenskiy island area and
come in sphere of interests both of Ukraine and Russia. Totally about 40–50 bln
m\(^3\) of gas are concentrated on the disputable territories.

The discussions about marine boundaries delimitation between Ukraine
and Russia started in early 1990th. Russia wanted to declare the Azov sea and
Kerchenskiy strait as internal waters of the two states. It considered conducting a
border only in the bottom and living resources and water remain in common use.
Ukraine wanted delimitation of the Black sea, Azov sea and Kerchenskiy strait in
accordance with UNCLOS, 1982. In this case Ukraine gets 2/3 of the Azov sea,
including gas and oil fields of its shelf zone.

Politicians from Ukraine and Russia have held more than 20 meetings before
the sides finally came up with the solution regarding the Azov sea delimitation.
Ukraine and Russia have agreed a maritime boundary in the Azov sea as a median
line, dividing the water at the mid-point between the shores, and lines extending from current borders. But there is still no agreement on the delimitation of the Kerchenskiy strait. Ukraine insists that a state border be drawn in the Kerchenskiy strait that completely coincides with the administrative border which existed in the former Soviet Union. The Russian side maintains that, according to the former USSR legislation, internal waters were not delimited and therefore this principle is unable to be applied now.

It is not easier to find a compromise between Ukraine and Romania and to come to an agreement about status of the Snake island. Romania insists that Snake island is a rock and it should not affect delimitation of the marine border. Ukraine stands on the point that it is an island and it able to sustain human life. Therefore, it is necessary to take this fact into account during the marine boarder delimitation. At stake are the rights to the continental shelf surrounding the island which contains significant oil and gas reserves. Deposits of oil (minimum 10 mln t) and gas (minimum 10 bln m³) (Ref. 6) were recently discovered close to the Snake island. Ukrainian company ‘Chernomornorlagaz’ did the first searching mining hole on a structure ‘Olympic’, which Romania considers by it. Both countries now defend an own rightness in the Hague International Court.

SHELF EXPLORATION: ENVIRONMENTAL ISSUES OF CONCERN

The off-shore exploration of oil and gas constitutes additional source of marine pollution of the Black sea. The assessments of oil and gas resources and studies of bottom structures before the developing an oil field include intensive 3D seismic survey. Effects of seismic exploration may result in negative impacts on marine species and especially on the populations of marine mammals.

Assessment of risks and potential impacts of shelf exploration include: air emissions, wastewater discharges, solid and liquid waste, noise generation, spills. The main sources of air emission include combustion sources from power and heat generation; use of compressors, pumps, and reciprocating engines (boilers, turbines, and other engines) on off-shore facilities including support and supply vessels and helicopters; emissions resulting from flaring and venting of hydrocarbons; fugitive emissions. Significant additional waste streams specific to off-shore development activities include: drilling fluids and drilled cuttings, produced sand, completion and well work-over fluids, naturally occurring radioactive materials (NORM) 7.

The most serious threat for marine organisms from the oil fields development and cause oil spills, as a result of oil tanker wreck or break of a gas pipeline. There is always particular risk of oil transportation accidents. Significant both large drilling accidents and large tanker catastrophes occur relatively rarely. But in case it happens, the consequences of these accidents can be catastrophic. The Black sea is facing its most serious ecological threat for years after a fierce storm November 2007 five ships sank, including an oil tanker. At least 2000 t of fuel oil spilt
into the water when a tanker broke up in the Kerchenskiy strait. It is a large-scale environmental disaster, which will take a long time to deal with\(^8\).

Along with tanker transportation and drilling operations pipelines are among the main factors of environmental risk during off-shore oil developments. Depending on the cause and nature of the damage (cracks, ruptures, etc.), a pipeline can become either a source of small and long-term leakage or an abrupt (even explosive) blow out of hydrocarbons near the bottom. The dissolution and transferring of the liquid and gaseous products in the marine environment are causing toxic impacts on the marine biota in the accident zone.

The other group of accidental situations includes regular, routine episodes of hydrocarbon spills and blowouts during drilling operations. These accidents can be controlled rather effectively (in several hours or days) by shutting in the well with the help of the blow-out preventers and by changing the density of the drilling fluid. But, at the same time, their ecological hazard and associated environmental risk can be rather considerable, primarily due to their regularity leading to chronic impacts on the marine environment.

Finally, it is important to take into account that significant greenhouse gas (GHG) emissions from all facilities and off-shore support activities should be quantified annually as aggregate emissions in accordance with the internationally recognised methodologies and reporting procedures.

All of these environmental issues should be considered as part of a comprehensive assessment and management program that addresses project-specific risks and environmental impacts of shelf exploration of living resources and recreation.

CONCLUSIONS

Sustainability of the society is directly connected with an efficiency of energy supply and energy management. But approach of perceiving sustainability which disregards environmental conditions and democratic factors is simplistic and primitive. Sustainable development includes both economic and social and ecological vectors. Sustainability can be achieved only in the context of the implementation of the proper environmental policy. Intensive economic development and exhaustive nature management has led to considerable ecological pressure on the Black sea ecosystem. The further Black sea exploration should be based on the principles of ecosystem approach, compromise, common strategies and partnership between all the Black sea coastal states.

REFERENCES

5. UNCLOS, Part VI, Art. 76,77.

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