

## **Hydrocarbon Production Policies in the Area of the Suplacu de Barcău Commercial Deposit**

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### **Abstract**

The present paper analyzes the Romanian oil production policies applied to the Suplacu de Barcău Pannonian commercial hydrocarbon deposit with reference to existing EU legislation.

Oil production and processing have a long tradition in Romania and they have had consistent and set legal standards. The integration of environmental policies into the hydrocarbon production policies was realized especially after the issuing of the Environmental Protection Law 137/1995.

The actual legislation regarding the oil production conditions in Romania respect in general the requirements of the EU law formulated in Directive No. 94/22/EC regarding the conditions in which authorization is granted to prospect, explore and extract hydrocarbons.

The objective of the exploration and production policy is to intensify geological research in order to discover new deposits and to improve production methods in order to increase the recovery factor to maintain the internal production at the actual level. The integration of environmental policies into the oil production and processing activity is also to be continued.

The main operator of the Romanian oil production market is SC Petrom SA whose strategy is aimed at the stabilization of crude oil and gas production in Romania, the reduction of production costs and the increase of the reserve replacement rate to 70%, as well as the implementation of environmental requirements in the oil production activities.

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## **1. Introduction**

The crude oil production policy harmonizes with the mineral production policies of Romania laid down according to the strategies outlined in the Law of Mines 85/2003 and Oil Law 239/2004 with subsequent modifications. This decrees that the existence and functioning of an autonomous public authority in this domain, which should ensure the efficient and sustainable administration of mineral resources, is necessary. The implementation structure of policies and strategies in this domain is the National Agency for Mineral Resources (NAMR) which functions on the basis of Decree no. 756 of July 3<sup>rd</sup>, 2003.

The national strategy in the domain of the exploitation of mineral resources elaborated in the Government Programme prescribes as a basic objective the efficient and sustainable administration of resources under the conditions stated by Oil Law 238/2004, modified by Emergency Government Ordinance (EGO) 101/2007. The specified objectives are the following:

- to increase the geological information on resources;
- sustainable development and reasonable, regulated exploitation of resources;
- to use the geological fund in order to diminish the costs of future research;
- to promote some economically efficient production technologies adequate to the type of the produced substance, having a minimal ecological, social and geologic impact;
- to prepare to make offers for new oil perimeters;
- international cooperation in this domain in order to identify new methods for extracting useful substances and new ways of transport for energetic products;
- to correlate the legal frame in which mineral substances are valorised with the general legislation regarding property, the commercial code and the specific regulations of the EU and of the countries with oil production experience and oil resources.

The main prerogatives of the NAMR<sup>1</sup> in realizing these objectives in the domain of oil production are:

- to fix the price of the oil produced in Romania
- to fix the tariffs for the transportation of crude and condensate oil through the main oil pipe lines;

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<sup>1</sup> DRG 350/2007 regarding the Methodological Application Norms of the Oil Law 238/2004.

- to fix the tariffs levied for the acts issued when exercising its prerogatives as well as for the consultation and use of some documents and information referring to the oil resources;
- to observe and supervise the oil production in order to calculate the royalties.

At the same time, the documents of environmental and natural resources policy decree, first of all, that the risks of inconformity in Romanian commercial societies with the European standards regarding environmental protection must be reduced. The measures prescribed for the respect of European principles and norms in what regards sustainable development are the following:<sup>1</sup>

- to use new instruments in treating the externalities of the environment – environmental licences based on the “polluter pays” principle;
- to give the necessary assistance to develop company strategies oriented towards the protection of the environment and resources;
- to introduce the ISO 14001 environmental management system at the level of economic operators;
- to offer support to enterprises or geographic areas with serious pollution problems in special cases of inconformity;
- to aggravate the sanctions for environmental pollution by economic operators.

The thematic strategy of the European Union regarding the sustainable use of natural resources (COM 2005/0670)<sup>2</sup> emphasizes the fact that though the crisis of resources did not become as great a problem as had been foreseen after the oil crisis of 1970, and though economic increase was separated from the consumption of material resources (the economic increase of 50% at a constant consumption of materials in the last 20 years), the trend regarding the use of material resources and the impact on the environment as a receiver of human activities is unsustainable. The strategy shows the necessity to ensure the efficiency of resources and the reduction of the negative impact on the environment, but it does not determine quantitative targets for the efficiency and decrease of resources, because this is not possible with our present knowledge and use of development indicators.

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<sup>1</sup> National Sustainable Development Strategy of Romania, version adopted by the Romanian Government in November 2008.

<sup>2</sup> *Commission of the European Communities, Thematic Strategy on the Sustainable Use of Natural Resources, COM (2005/0670).*

## **2. The analysis of the oil market and of the policies and regulations in the domain**

### **2.1. The Romanian and the world oil market**

Petroleum or the “ideal fuel”, as Gheorghe Buzatu defined it,<sup>1</sup> represents a key element for the economic development of the world. For this fuel a real war has been being waged for approximately one hundred years. For the acquisition and possession of petroleum two world wars broke out, in 1914 and 1939, and in 1945 the Cold War started.

World War II increased the awareness of the importance of petroleum both for war economy and peace economy. Evidently, in the second half of the 20<sup>th</sup> century, the privileged economic position of the great oil companies became more and more apparent. Starting with this period three economic powers determining three policies have contended:

- the international oil companies
- the great petroleum products consumer countries
- the Third World producing countries.

Each has its own objectives, these often being opposed to one another.

Petroleum industry is an industry requiring big investments. Because of the powerful increase of the production and the ever higher costs in the investments, the companies are forced to invest more and more, to obtain more and more profit in order to have financial power. On the other hand, petroleum activity is one of the most insecure economic activities. To the technical uncertainties (the discovery of hydrocarbon deposits still remains a chance) political uncertainties are added (it is well known that many hydrocarbon deposits are situated in politically unstable regions of the world). The exclusion of petroleum installations from production by local or regional wars and their nationalization are dangers which must be taken into consideration. The distribution of risks is a necessity which must be kept in view by companies.

An oil company must be a huge, financially powerful enterprise. This is why in the years 1970–1973 (the great oil crisis) four of the ten biggest societies of the world were oil companies.

Indeed, an oil company cannot exist under an adequate volume of sales. Due to the enormous costs, all oil companies are fated to

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<sup>1</sup> Gheorghe Buzatu, *O istorie a petrolului românesc* (A History of the Romanian Petroleum) (Bucharest: Editura Enciclopedică, 1998), 8.

gigantism or disappearance. Oil companies aim systematically at an economic integration “from the oil wells to the gasoline pump”. It can be easily observed that the societies are present in each stage: the geologic prospecting and exploring of hydrocarbon fields, the exploitation of the deposits, transport, refining, and distribution.<sup>1</sup>

One may foresee that oil companies will no longer build refineries for the simple reason that there will not be sufficient crude oil to refine for a period long enough to recover the investments. In the USA no refineries have been constructed since 1976. In 1982 301 refineries functioned in the USA producing 17.9 thousand million barrels of petroleum per day. At present their number is almost halved (149 refineries) and the production is 17.4 thousand million barrels per day. The spectacular increase in the efficiency is explained by the need to increase profitability. The financial effort needed to establish a refinery is very great, and the investment needs 15–25 years to pay off. Moreover, it is anticipated that this raw material will be exhausted in 20 years. In this context, despite the high profits and the rising prices the number of refineries will not increase (maybe with some exceptions in Canada).

The oil crisis of December 1970–April 1971 was surprising by its proportions, its suddenness and mainly by its form. Previous oil crises opposed a producing country to a company. This one raised the Third World producing countries (reunited in an organisation so far neglected<sup>2</sup>) against almost all the oil companies.

Economic analysts present the evolution of petroleum prices as the essential cause of the global inflationary explosion. Indeed, the first oil shock in 1973 contributed to the increase 3–4 times of world inflation. By many estimates, the second shock, in 1978, raised the inflation at least with the same values, if not greater.

There were, in the short term, positive effects as well. Because of the low petroleum prices until the crises of 1973–1974 and 1978–1980 other energy sources such as coal, hydroelectric energy and nuclear energies had been neglected. The interest in other energy sources was revived by the ever rising price of crude oil and of petroleum products fixed by the exporting countries. Moreover, the valorisation of some

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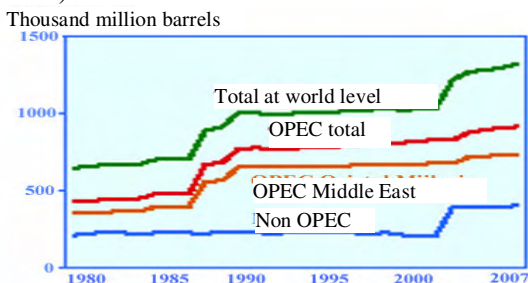
<sup>1</sup> Aurel Negucioiu, Dacia Crina Petrescu, *Introducere în Eco-Economie* (Introduction to Eco-Economy) (Cluj-Napoca: EFES, 2006), 156–161.

<sup>2</sup> In September 1960 the Organization of Petroleum Exporting Countries (OPEC) was created at the initiative of the great petroleum producers of the Middle East (Saudi Arabia, Iran, Iraq and Kuwait) and Venezuela. In 1970 this organization regrouped ten countries and controlled over 85% of petroleum exports.

deposits situated in the coastal areas down to 400 m depth (in the actual technical stage) was also suggested. The oil crisis of 1970 started the preoccupation with the use of natural resources and with the environment in general at the level of the European Union, and determined the appearance of the first environmental policy of the European Union in 1972.

The oil crisis had the advantage of emphasizing the danger industrialized countries had to face due to the oil dependence created by the Middle Eastern countries. At the time of the first oil shock the crude oil dependence was 55% in Federal Germany, 70% in Italy, 84% in Spain, 77% in France, 76% in Holland. The dependence was 100% in South Korea, 76% in Japan, and 14% in the USA. In this context the problem of the security of oil supplies was raised. The Islamic Revolution in Iran (1978), the Iran–Iraq War (in the 1970s and 1980s), the recent wars in Iraq started by the religious disputes in this country are only some sources of regional tension which threaten the security of the world oil supply. Let us also mention the last conflict between Israel and the extremist Islamic units of Southern Lebanon which caused an explosive increase of crude oil prices in the world market reaching on January 5, 2008 the limit of 100\$/barrel, and in May 2008 (with delivery in July) was over 135\$/barrel!

The evolution of oil reserves has an ascending trend nowadays, despite the prognoses made after 1970, due to the discovery of new conventional deposits of bituminous sand and bituminous shales. Oil reserves are estimated at 1317.7 thousand million barrels (EIA, 2007), these being able to sustain the actual consume level only until the year 2040 (EIA, 2007).



Sources: 1980 - 1993 -> "Worldwide Oil and Gas at a Glance" -  
*International Petroleum Encyclopedia* -  
 (Tulsa, OK PennWell Publishing)  
 1994 - 2007 -> *Oil Gas & Journal*

*Fig. 1. The evolution of World Oil Reserves*

**Table 1. Estimated Oil Reserves (2008)<sup>1</sup>**

Summary of Reserve Data as of 2008

Country	Reserves <sup>2</sup>		Production <sup>3</sup>		Reserve life <sup>4</sup>
	10 <sup>9</sup> bbl	10 <sup>9</sup> m <sup>3</sup>	10 <sup>6</sup> bbl/d	10 <sup>3</sup> m <sup>3</sup> /d	years
Saudi Arabia	267	42.4	10.2	1,620	72
Canada	179	28.5	3.3	520	149
Iran	138	21.9	4.0	640	95
Iraq	115	18.3	2.1	330	150
Kuwait	104	16.5	2.6	410	110
United Arab Emirates	98	15.6	2.9	460	193
Venezuela	87	13.8	2.7	430	88
Russia	60	9.5	9.9	1,570	17
Libya	41	6.5	1.7	270	66
Nigeria	36	5.7	2.4	380	41
Kazakhstan	30	4.8	1.4	220	59

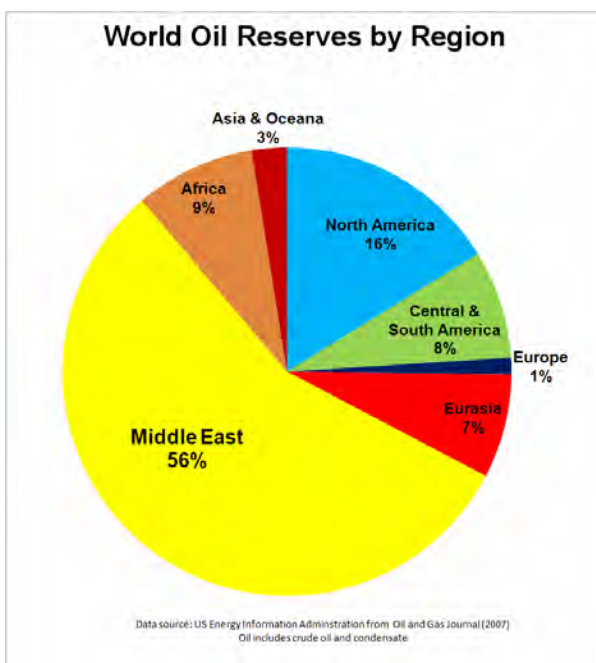
<sup>1</sup> [http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves)

<sup>2</sup> PennWell Corporation, *Oil & Gas Journal*, Vol. 105.48 (December 24, 2007), except the United States. Oil includes crude oil and condensate. Data for the United States are from the Energy Information Administration, U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 2006 Annual Report, DOE/EIA-0216(2007) (November 2007). Oil & Gas Journal's oil reserve estimate for Canada includes 5.392 thousand million barrels (857,300,000 m<sup>3</sup>) of conventional crude oil and condensate reserves and 173.2 thousand million barrels (2.754×10<sup>10</sup> m<sup>3</sup>) of oil sands reserves. Information collated by EIA. [http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves) (accessed December 03, 2008).

<sup>3</sup> U.S. Energy Information Administration (EIA) – U.S. Government – U.S. Dept. of Energy, October, 2008, EIA – Petroleum Data, Reports, Analysis, Surveys. [http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves) (accessed December 03, 2008).

<sup>4</sup> Reserve to Production ratio (in years), calculated as reserves/annual production. (from above)

United States	21	3.3	7.5	1,190	8
China	16	2.5	3.9	620	11
Qatar	15	2.4	0.9	140	46
Algeria	12	1.9	2.2	350	15
Brazil	12	1.9	2.3	370	14
Mexico	12	1.9	3.5	560	9
Total of top seventeen reserves	1,243	197.6	48.2	7,660	54



*Fig. 2. World oil reserves by region<sup>1</sup>*

<sup>1</sup> [http://en.wikipedia.org/wiki/Image:World\\_Oil\\_Reserves\\_by\\_Region.PNG](http://en.wikipedia.org/wiki/Image:World_Oil_Reserves_by_Region.PNG)



Since the 1980s, when the oil quota system by countries was introduced on the basis of reserves, the declared reserves have been continuously and substantially increasing despite the fact that reality did not support these statistics.<sup>1</sup> The following table illustrates this.

**Table 2. Declared reserves of major OPEC Producers (thousand million barrels)<sup>2</sup>**

Year	Iran	Iraq	Kuwait	Saudi Arabia	UAE	Venezuela	Libya	Nigeria
1980	58.3	30.0	67.9	168.0	30.4	19.5	20.3	16.7
1985	59.0	65.0	92.5	171.5	33.0	54.5	21.3	16.6
1990	92.9	100.0	97.0	260.3	98.1	60.1	22.8	17.1
1995	93.7	100.0	96.5	261.5	98.1	66.3	29.5	20.8
2000	99.5	112.5	96.5	262.8	97.8	76.8	36.0	29.0
2005	137.5	115.0	101.5	264.2	97.8	80.0	41.5	36.2
2006	138.4	115.0	101.5	264.3	97.8	87.0	41.5	36.2
2007	138.4	115.0	101.5	264.2	97.8	87.0	41.5	36.2

In 2008 the United States Geological Survey (USGS) estimated that north of the Arctic Circle there are 90 thousand million barrels of undiscovered and technically recoverable oil and 44 thousand million barrels of natural gas liquids. These quantities represent 13% of the undiscovered oil in the world. More than half of the undiscovered oil resources are estimated to occur in three regions: Arctic Alaska, the Amerasian Basin, and the East Greenland Rift Basins. Similarly, it is further estimated that approximately 84% of the undiscovered oil and gas occurs offshore. In its estimations and assessments the USGS did not take into consideration the economic factors such as the effects of permanent sea ice or oceanic water depth.<sup>3</sup>

What we have presented above imposed a new economic policy on international oil companies, as well as on Occidental States in the domain of oil and energy in general. The strategy of the great oil

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<sup>1</sup> \*\*\*, *World Energy Outlook 2005: Middle East and North Africa Insights*, (International Energy Agency, 2005), 125–126.

[http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves) (accessed December 03, 2008).

<sup>2</sup> BP Statistical Review – June 2008,

[http://www.bp.com/liveassets/bp\\_internet/globalbp/globalbp\\_uk\\_english/reports\\_and\\_publications/statistical\\_energy\\_review\\_2008/STAGING/local\\_assets/downloads/spreadsheets/statistical\\_review\\_full\\_report\\_workbook\\_2008.xls](http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/downloads/spreadsheets/statistical_review_full_report_workbook_2008.xls), in

[http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves)

<sup>3</sup> [http://en.wikipedia.org/wiki/Oil\\_reserves](http://en.wikipedia.org/wiki/Oil_reserves) (accessed December 03, 2008).

companies developed in these last years takes into consideration three important imperatives.

The first one refers to the physical security of crude oil and derived products provisions, for they remain essential to transportation, as well as to many branches of industry. Therefore they are strategic products which ensure the economic survival of industrial countries and not only these and in general terms they remain an essential component of political independence.

Secondly, there is the problem of the financial security of provision. The world cannot live with the continuous obsession of rising oil prices. This increase, often severe or exorbitant, burdens the commercial balance heavily creating payment deficiencies which generate real haemorrhages in foreign exchange. Similarly, the rise of oil prices contributes to the inflationary outburst becoming general in the whole world causing important economic recessions.

The third imperative to be taken into consideration is that the big oil concessions (in the Middle East, South America and others) disintegrate as a consequence of nationalization and local or regional conflicts. In this context, it has become necessary for the big transnational oil companies to search for new hydrocarbon deposits in their own territory (rare situation), in offshore areas or in regions free of conflicting influences. Last but not least, the perspective of the exhaustion of hydrocarbon deposits must be considered. Therefore, in order to survive, these companies must diversify their investments looking for projects in other economic sectors: nickel and chromium mining industry (Elf-Aquitaine), nuclear and coal energy (Gulf Oil – USA, Total – France), etc.

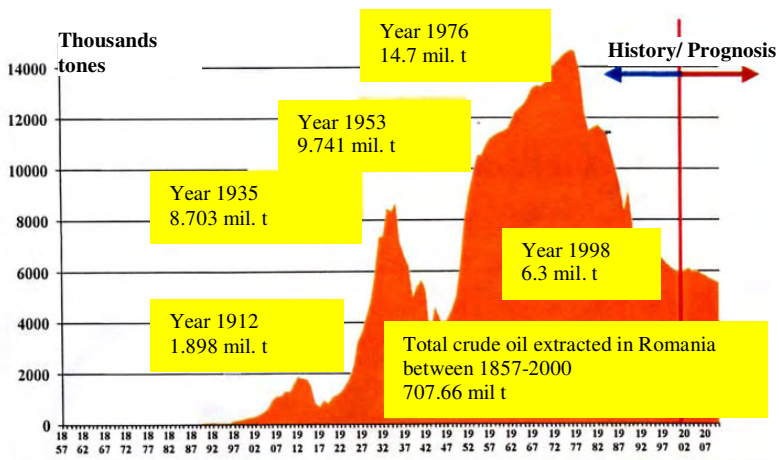
The energy economy policy – inclusively that which avoids oil dependence – remains the measure of yielding the best results; this is the opinion of both energy specialists and political decision makers. To this the diversification of (conventional and regenerable) energy sources is added. The conciliation of classical and sustainable economic development remains the provocation of the 21<sup>st</sup> century.

Romania's potential of oil resources is limited on the grounds of a declining primary production, since no new deposits with important potential have been identified.<sup>1</sup> The known and economically useful crude oil reserves will be exhausted in 14 years under the present

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<sup>1</sup> Romania's energy strategy for the period 2007–2020 ratified by DRG 1069/2007.

conditions. The actual crude oil reserves are 73.7 thousand million tonnes.<sup>1</sup> The actual production is 5 thousand million tonnes a year (2006) with a continuous decrease since 1976 when the summit was reached with a production of 14.7 thousand million tonnes.<sup>2</sup>



*Fig. 3. The evolution of Romanian oil production in the period 1857–2002<sup>3</sup>*

It is presumed that there are undiscovered geologic oil resources in Romania, as there are still many less explored deep structures. The production can also be increased by increasing the recovery factor in the deposits.

At a European level, Romania is the fifth oil and gas producing country and the first on-shore oil producing country after the countries of the former Soviet Union.<sup>4</sup>

Although the Romanian crude oil production was not extraordinary, at an international level, Romania is a country with 150 years of oil history during which approx. 700 million tonnes of oil have been produced. Romania was industrialized by means of the oil, and capital was raised by this. Oil was also the cause of misfortune, since, due to oil, Romania became a target of Germany in World Wars I and II

<sup>1</sup> Romania's energy strategy...

<sup>2</sup> Romania's energy strategy...

<sup>3</sup> www.petrom.ro, 2004

<sup>4</sup> Commission of the European Communities, 2007, EU Energy Policy data.

when approximately a third of the oil necessary to the German war machinery came from Romania. After World War II it was the turn of the Soviet Russians to suck the available Romanian oil.<sup>1</sup>

In 1857 Romania made three world premieres:

- the first country with registered oil production (The Science of Petroleum 1938);
- the first refinery in the world in Ploiești (the Mehedințeanu brothers' refinery);
- the first city to be illuminated by kerosene (Bucharest).



*Fig. 4. Silver memorial coin issued in 500 copies in 2007*

The global recovery factor of oil from the deposits was 20% in the 20<sup>th</sup> century and it is 35% at present as Foreign Policy has shown. Oil is recovered from deposits by primary methods, the recovery factor being approx. 20%; by primary and secondary methods 25–35% of the oil being recovered; and by the use of tertiary methods up to 50% of the petroleum reserves are recovered from the deposits.<sup>2</sup>

The average recovery factor realized in Romania is 27–28% and 33–34% is prescribed for production.

Another important value on the oil market is the selling price. The record was registered in July 2008 when it reached 150 USD/barrel (1 barrel=159 l), after this it fell. The minimal price of 10 USD/barrel was recorded in 1998 after the Asia crisis. Prognoses show an increase to 200 USD/barrel in the following two years (Goldman Sachs).

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<sup>1</sup> Buzatu, *O istorie a petrolului*, 12.

<sup>2</sup> International Energy Agency, 2007, *World Energy Outlook 2007*.

The Suplacu de Barcău deposit is the most important oil deposit in Romania. It belongs to the big geologic unit of the Pannonian Basin with productive geological objectives in the Pannonian Age. The initial geological resources were of 48,000,000 t, and the initial reserves of 23,000,000 t. At present the existent reserves are 5 million tonnes.

Production began in 1960. Thermal methods are used for production: steam injection and *in situ* combustion, due to the high viscosity of the oil.

In present (the period 2004–2007) the yearly production is approx. 410,000 tonnes of crude oil. The economically efficient limit year is 2019–2020.<sup>1</sup>

The recovery factor realized in the Suplacu de Barcău deposit is 44.6%, and the planned final recovery factor is 51.7%, much higher than the average in the Romanian deposits or the world average.<sup>2</sup>

In 2007 the direct cost price of crude oil was approx. 17 USD/barrel, and the total price was of 30 USD/barrel.

## **2.2. The history of Romanian oil legislation**

Romania was among the first countries in the world to have oil laws.<sup>3</sup> The first regulation in the oil domain in Romania was the 1857 Law of Mines, which had distinct dispositions regarding the conditions of oil production. It was followed by Petre Carp's law, and then by Tancred Constantinescu's 1924 Law of Mines which sanctioned state ownership over oil deposits, a fact of special importance in the period after World War I. The big oil companies of the age exerted great pressure in order to modify the law and finally succeeded in this in 1929 by the passing of Virgil Madgearu's law which opened the Romanian petroleum market to foreign capitals. The 1937 law and then Mihai Antonescu's *1942 Oil Law* followed. Other attempts to systemize petroleum production took place after the war.

In 1973 *The Strategy Regarding the Development of the Energy Basis and the More Sensible Use of Fuels and Energy*, which became *Law 140/1973*, had as an aim "to ensure primary energy resources period for administration for a longer and the rational and highly efficient use of

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<sup>1</sup> The Research and Project Institute for Ploiești Oil and Gas Production Industry, Study of reserves and the survey of production by wet *in situ* combustion of the Suplacu de Barcău Pliocene deposit, 1970, 1982, 1986, 2004.

<sup>2</sup> The Research and Project Institute for Ploiești Oil and Gas Production Industry, Study of reserves and the survey.

<sup>3</sup> Buzatu, *O istorie a petrolului*, 18.

these, in order to eliminate the waste and losses of energy resources.” This strategy also limited the use of hydrocarbons in burning processes, crude oil and gases being especially for chemical use.

In 1995 Oil Law No. 134/1995 was issued. It stipulated the exclusive ownership right of the Romanian state on oil resources, as well as the regime of valorising crude oil deposits. It also stipulated taxes, tariffs and due oil royalties taking into consideration the dispositions of Directive No. 94/22/EC regarding the conditions on which authorizations are issued for the prospection, exploration and production of hydrocarbons. Thus an adequate legal frame was created for the optimal valorisation of oil resources in the spirit of market economy by establishing fair relationships between the Romanian state as the owner of the resources, and the companies which effectuate the petroleum operations.

By Order 101/1997<sup>1</sup> the technical instructions regarding the evaluation, classification, and conformation of geological resources and oil reserves, and the content of the evaluation studies of geological resources and oil reserves were ratified.

At the present moment the legal frame of oil production is fixed by Oil Law 234/2004 with modifications made by Emergency Government Ordinance 101/2007. This Law transcribes Directive No. 94/22/CEE regarding the conditions of according and using the authorizations for the prospection, exploration and production of hydrocarbons. By No. 20075/2004 Decision of the Romanian Government modified by DRG 350/2007 the Methodological Norms of the Application of the Oil Law were ratified.

The main modifications made by Law 234/2004 were necessary in order to conform to the dispositions of EEC legislation regarding: the conditions under which authorizations are issued for oil operations, energy policy especially regarding the security of oil and oil product supplies, the policy in the domain of competition and the free circulation of goods, and also in order to encourage investments, to stop the decrease of oil production in this way:

- paying royalties in money and not in nature, as well as the elimination of production tax perceived as a taxation similar to oil royalties;
- ensuring indiscriminate access to the national transport system, granting indiscriminate access to this oil transit system, as well

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<sup>1</sup> The Official Monitor of Romania – Order 101/1997 NAMR.

as the regime of ownership over some new investments in the respective domains; thus the premises for the realization of some important projects are created (such as the Constanța–Trieste pipeline);

- regulating the subterranean accumulation of natural gases and creating the conditions necessary to realize new deposits;
- more flexible dispositions regarding the organization of auctions and ensuring indiscriminating treatment to the participating companies;
- introducing some express obligations in order to remake the environment and to constitute some commissions destined to this aim;
- eliminating some dispositions considered discriminatory or restrictive, such as: the use of mainly autochthon labour force, and the states' pre-emption right to purchase some oil quantities and the conferring of some concessions on the basis of administrative acts;
- mentioning the constitution of a strategic fund for oil in accord with Directive 2006/60/CE regarding the obligation of member states to constitute and maintain minimal oil and/or oil product stocks.

Romania obtained derogation and a period of transition regarding the obligation to maintain some minimal oil and oil product stocks for 90 days, thus:<sup>1</sup>

- a derogation of 25% from the minimal oil stock level, since Romania is an oil producing country, and, at present, the consumption is covered at a proportion of approx. 50% of the internal production; thus Romania will ensure a minimal stock corresponding to the consumption for 67.5 days in comparison with the 90 days prescribed by the acquis;
- a 5 year long period of transition from the moment of accession in order to constitute the minimal stock, namely until December 31, 2011, the date when Romania will reach the stock level of 67.5 days.

### **2.3. The conditions under which the oil operations take place**

The conditions regarding oil operations at the level of the European Union are based on the following principles:<sup>1</sup>

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<sup>1</sup> The Romanian European Union Accession Treaty, 2005.

- maintaining sovereignty and sovereignty rights over oil reserves;
- indiscriminate access based on objective criteria to prospecting, exploring and producing activities, under conditions which should encourage the best methods of resource prospecting, exploring and extracting;
- establishing some common norms which would ensure that the procedures of issuing authorizations for the prospecting, exploration or production of hydrocarbons are open to any entity which has the necessary capacities, and that authorizations should be issued on the basis of some objective and published criteria, under conditions known to all entities participating in the procedure;
- member states preserving the option to limit the access to these activities and their exercising due to reasons justified by public interest, making the payment of a financial or a hydrocarbon contribution a condition, in an indiscriminating manner;
- avoiding to impose on the entities some conditions and obligations which are not justified by the necessity to perform the activity in a suitable way; the entities should be supervised only to the extent necessary in order to grant that these obligations will be respected; member states may impose conditions and requirements regarding the exercising of some activities to an extent justified by national and public security, public health, the security of transport, environmental protection, the protection of biological resources and of the artistic, historical and archaeological national heritage, the safety of installations and workers, the planned administration of hydrocarbon resources (for example the hydrocarbon recovery factor, or the optimization of their recovery, or the necessity to ensure tax incomes); the entities' independence in administration will be granted, but the state can interfere when the conditions and demands – regarding the policy of increasing the recovery factor and the protection of financial state interests – specified in the authorization are not respected;
- the extent of the areas which are the object of an authorization and the duration of the authorization must be limited in order to

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<sup>1</sup> The Official Journal of the European Union – Directive No. 94/22/EC regarding the conditions under which authorizations are issued and used for the prospecting, exploration and production of hydrocarbons.



prevent the reservation for a single entity of an exclusive right over an area which can be prospected, explored and exploited more efficiently by more than one entities.

These principles are respected in general in Romanian legislation.

Romanian legislation<sup>1</sup> states some conditions and demands for the production and development of oil deposits; *there are no express dispositions referring to the policy of increasing the crude oil recovery factor*. The offers for the concession of oil operations contain the exploitation and exploitation-development programme which includes: the estimated reserves, the period of the reserves' economic valorisation and development activities, as well as the description of oil operations and the cost of these, obligatory to realize.

Regarding the protection of the state's financial interests, the EU directive<sup>2</sup> prescribes the payment of the tax either as a financial or a hydrocarbon contribution. At present no common prescriptions are stipulated regarding the amount of the due contribution.

This contribution, named royalty in Romania, is to be paid in money. The value of the royalty in Romania is between 3.5–13.5% depending on the value of the production realized in a trimester; the royalty is higher in the case of a greater production from the deposits.<sup>3</sup> At the level of the EU the situation is the following: there is zero royalty in Denmark, Ireland, Greece, Great Britain and Portugal, but it is replaced by other taxes and duties; the royalty is 6–12% in France, 5–10% in Hungary, 12.5–17.5 in Bulgaria, 5% in Germany and the Czech Republic, 9% in Italy, 0.85 USD/barrel in Poland, and 2.25 USD/barrel in Ukraine.

For the Suplac deposit the average royalty is approx. 11%, in relation to the production method of the proposed deposit.

Romania has a specific disposition according to which exploration works can be made only on the basis of some unexclusive

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<sup>1</sup> The Official Monitors of Romania – Oil Law No. 238/2004 modified by EGO 101/2007; Order 101/1997 NAMR, DRG 2075/2004 modified by DRG 350/2007 regarding the Methodological Norms of the Application of Oil Law No. 238/2004, Law 555/2004 regarding some measures for the privatization of SNP PETROM SA Bucharest, other specific regulations.

<sup>2</sup> The Official Journal of the European Union – Directive No. 94/22/EC regarding the conditions under which authorizations are issued and used for the prospection, exploration and production of hydrocarbons.

<sup>3</sup> Oil Law No. 238/2004 modified by EGO 101/2007.

prospection licences, contrary to the EU Directive,<sup>1</sup> which stipulates the fact that any act with legal force gives the exclusive right to an entity to prospect, explore and extract hydrocarbons in a geographical area.

The initial duration of oil concessions is 30 years at the most, with the possibility of prolonging it up to 15 years, and the duration of the prospection licence is a maximum 3 years.

The environmental requirements applicable to hydrocarbon deposits<sup>2</sup> prescribe the obligation to realize the investment projects only on the basis of the environmental accord, while the production can be made only on the basis of the environmental authorizations. For oil operations an abandonment provision is required to restore the environment as an agricultural or a wooded area. It is also stated that title holders have the obligation to repair damage caused to a third party which is their fault, by means of the oil operations made until the date of renouncing, even if these are discovered after the oil concession has ended. The concessionaires are answerable until all environmental factors affected by oil operations are restored, in conformity with the environmental restoration plan ratified by the competent environmental authority.

#### **2.4. Operators on the Romanian oil production market**

At present moment, Romanian oil production is realized by SC PETROM SA, a society with mainly Austrian capital (51%). SC PETROM SA holds petroleum permission for the production of oil and natural gas in 22 production blocks, namely approx. 300 commercial oil and gas fields.<sup>3</sup>

The production activity of other investors is insignificant, carried out generally in areas which PETROM has given up.

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<sup>1</sup> The Official Journal of the European Union – Directive No. 94/22/EC regarding the conditions under which authorizations to prospect, explore and extract hydrocarbons are given and can be used.

<sup>2</sup> The Official Monitors of Romania – Oil Law No. 238/2004, modified by EGO 101/2007, modified by DRG 2075/2004, modified by DRG 350/2007 regarding the Methodological Application Norms of the Oil Law 238/2004.

<sup>3</sup> [www.namr.ro](http://www.namr.ro)

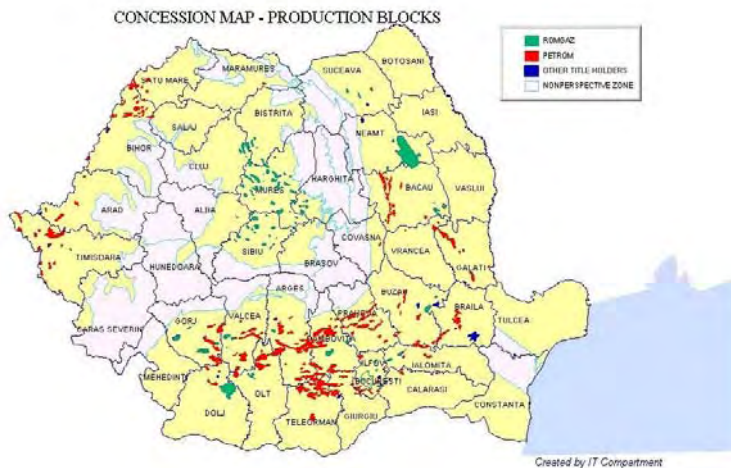


Fig. 5. The situation of the concessions for oil and gas production blocks<sup>1</sup>

It must be mentioned that after 1990 (1992–1997) big companies activated in Romania such as AMOCO and SHELL, which signed exploration and production contracts for the Northern Transylvanian region, and Lapos, but they withdrew from the area after the exploration period in 1997, having invested sums of approx. 140 million dollars.

The strategic objectives of SC PETROM SA for 2010 are the following:<sup>2</sup>

- to stabilize the crude oil and gas production of 210,000 boe/day before 2010;
- to reduce production costs to 15 USD/boe;
- to increase the reserve replacement rate to 70%.

Due to the 3D seismic programmes started in Romania and Kazakhstan by SC PETROM SA, the reserve replacement rate was increased from 11% in 2004 to 33% in 2006.<sup>3</sup> In order to realize its objectives PETROM will continue the modernization of oil derricks and the efforts to increase the efficiency of production. The effort to

<sup>1</sup> NAMR

<sup>2</sup> www.petro.com

<sup>3</sup> www.petrom.com

maximize the production level in Romania will also be continued by means of an intensive drilling programme combined with the re-developing of 50 main areas and the continuation of the successes achieved by the reorganization of derricks.

The privatization contract of SNP PETROM signed by Law 555/2004 included an unwelcome clause which decreed that royalties (the percentage level, the calculation basis and modality) must be maintained for a period of 10 years from the date when the contract was signed, a disadvantageous fact to the Romanian state, aiming at a great increase of oil prices after privatization.

With reference to environmental obligations the contract defines historical contamination and contains a compensation commitment regarding the environment. Thus, the contract prescribes an obligation to constitute provisions for the restoration of affected areas to the initial state and function, up to a quota of 1% applied to the difference between production incomes and costs (10% for off-shore operations). The costs regarding environmental responsibility resulting from historical contamination, as well as abandonment costs for stopped and closed derricks, or those which are to be abandoned at the end of the contract are to be paid by the society and are retrieved from the Romanian state, cf. the Compensation Commitment. The state budget will include annually the sum of 50 million Lei to cover the eventual costs, with environmental compensation for historical contamination, as well as the sums which are not covered from the provisions, cf. the Compensation Commitment.

## **2.5. The application of the “polluter pays” principle to the exploitation of the Suplacu de Barcău deposit**

The “polluter pays” principle decreed by article 174 of the European Community Treaty and applied in environmental policies all over the world requires the polluter to support the cost related to the measures taken in order to combat pollution by internalizing environmental costs. The application of the principle ensures that product prices reflect the real costs of economic activities for society.

In the case of the Suplac deposit production activities were based on an environmental authorization<sup>1</sup> with a compliance programme which has been realized. In the present the re-authorization procedure is taking place by identifying the necessary remedial measures referring to

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<sup>1</sup> Salaj Environmental Protection Agency.

historic pollution, the old, still functioning derricks are being conformed and other measures are being taken in order to increase the internalization of environmental costs. At the Suplacu de Barcău deposit, as, otherwise, in most of the oil operations in Romania, the “polluter pays” principle is only partially applied, the following instruments being used to internalize the environmental costs:

- taxes for the emission of pollutants in the atmosphere from stationary sources: dusts, azote oxides, and sulphur oxides, and taxes for the occupation of new fields to deposit valorizable waste materials, applied according to ratification Law 105/2006 of EGO 196/2006 regarding the Environmental Fund;
- penalties for exceeding the CMA (highest admissible concentration) in the used waters evacuated into Barcău river, applied on the basis of Water Law 107/1996 with ulterior modifications;
- taxes for withdrawing areas from agricultural use, applied on the basis of Law 18/1991 with ulterior modifications (the value of the tax is calculated according to the class the field belongs to);
- investments for reducing emissions into the air and water as well as sound pollution to values allowed by the standards and regulations in force; the conformation to emissions into the air and water is not granted;
- investments for waste management, especially dangerous technological wastes (oil residues); conformation is not granted, a transition period having been obtained for the management of dangerous wastes until 2009;
- taxes and tariffs for obtaining the regulation acts (accords and authorizations for investments, operating permits and permissions to cease activity);
- costs related to the occupation of the areas necessary to production under the conditions prescribed by Oil Law 238/2004;
- royalty, taxes and tariffs for obtaining concessions to produce mineral resources which are common goods; the royalty is fixed according to the Oil Law 238/2004 with ulterior modifications at a quota of the gross production value extracted in a trimester from the deposit (extracted quantity X reference price);
- the costs to realize the supervision systems of the technological installations and processes, and the auto-monitoring of polluting emissions (EGO 195/2005);

- rehabilitation costs for the areas where the soil, subsoil, and the ecosystems have been affected, cf. DRG 1403/2007 regarding the restoration of the areas where the soil, subsoil, and terrestrial ecosystems have been affected;



*Fig. 6. Unecological derrick, Suplacu de Barcău, 2008*

### **3. Conclusions**

Romania's petroleum resource potential is limited, primary production being in decline since no new important deposits have been identified. Nevertheless, SC PETROM SA is the biggest oil and gas producer in South-Eastern Europe.

The policy and regulations regarding oil production require revisions, mainly with regard to the value of the royalty due to the Romanian state. This seems to be impossible to realize until 2014, because of the unwelcome clause in the privatization contract of the PETROM.

The environmental demands are insufficiently answered in the current activity, while the historically polluted sites have not been ecologically reconstructed. The costs regarding historical pollution will be supported by the Romanian state through SC PETROM SA, according to the "polluter pays" principle.

Since the oil operations in Romania are not sustainable, the following measures have been identified as necessary by an analysis of the domain:

- to intensify geological research in order to discover new deposits, and to improve production methods in order to increase the recovery factor, so that internal production might be maintained at the actual level;
- to include in the actual regulations some express dispositions referring to a policy aimed at the increase of the deposit recovery factor;
- to continue the internalization of environmental costs in the oil price, especially by realizing environmental investments which would ensure conformity with legal environmental requirements;
- to continue the integration of the environmental policy in the oil exploration and production activity, and to use mainly those market instruments which are the most efficient in the realization of environmental objectives;
- to make public contracts between state organs and private investors in the petroleum domain regarding state income;
- to modify the calculation of royalties according to international oil quotations and to re-actualize them each trimester, or according to the delivery price, if this is higher than the international quotation, as well as to take into consideration the index of profitability;
- to improve the regulatory framework regarding the exploitation of mineral resources and to impose these regulations thus that the dispositions of Directive 94/22/CE should be respected.

Translated by Ágnes Korondi