

# DEVELOPMENT OF PETROLEUM INDUSTRY IN ROMANIA IN THE PERIOD OF CONTROLLED ECONOMY (1948-1989)

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## **Abstract:**

*The development of the Romanian oil industry covers a relatively short period of only 160 years, but the interest that oil had produced has been and still remains enormous. The Nationalization of the Romanian and foreign oil companies from June 11, 1948, made the first step towards the absolute management and control of the Romanian oil industry, the clear signal of Romania's political and economic isolation, with all its consequences, at least until 1964. However, the numerous international cooperation projects, spread in many countries all over the world, took various forms, involved many Romanian specialists and totalled billions of dollars, amounts with which the oil industry contributed to the economic development of Romania between 1948 and 1989.*

**Keywords:** *oil industry, refinery industry, oil and petroleum products trade, international cooperation*

**JEL classification:** Q35, N50, K11

## Introduction

The development of oil industry has taken place in several phases, during the last 150 years. The influx of foreign capitals contributed immensely to the development of this industrial sub-branch (Constantinescu, 1937, p. 57-59; Savin, 1947, p. 45), their role being positive in the beginning period of modern industrialization, when the economic development of the country required immediate valorization of oil resources, something impossible to achieve only by domestic mobile capital, quantitatively insufficient and lacking entrepreneurial spirit.

During a century since the achievement of the Great Union of 1918, several phases of the evolution of oil industry are distinguished, namely:

- the interwar period (1918–1939);
- the period of the Second World War (1939–1945);
- the period of the first post-war years (1946–1947);
- the period of the controlled economy (1948–1989); and
- the transition period from the controlled economy and the integration into the European Union (after 1990).

In our previous work (Bulearcă, 2018), we analyzed the oil industry in Romania between 1918-1948, that covered the first three phases previously announced, during which the domestic and foreign capital played a decisive role in the development of this sector of activity of the national economy, after the Great Union from December 1, 1918. Therefore, in this article we will continue the analysis of the Romanian oil industry up to 1989, with the presentation of the main elements that marked the development of this economic sector during the controlled economy (period 1948-1989). Moreover, our future paper will thoroughly deal with presenting the evolution of petroleum industry in Romania after 1990, thru the integration into the European Union and the present status of this important sector of the economic activity.

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## 1. The legal framework

At the end of 1947, the Romanian oil industry was characterized by the continuous decrease of oil production, an advanced wear of installations and equipment, the dramatic reduction of imports of petroleum materials and equipment, the blocking of the re-engineering process, the disappearance of Romanian petroleum products from traditional markets, the almost exclusive delivery of petroleum products to the USSR, and the establishment of the company Sovrompetrol, through which the Soviet state controlled an important segment of the Romanian oil production, processing and export (Buliga et al., 2014).

In 1948, before the Nationalization of June 11, 55 oil companies were operating in Romania, of which 8 companies owned 94% of the total production, namely: "Astra Română", "Steaua Română", "Concordia", "Creditul Minier", "Prahova", "Redevența", "Petrol-Block", IRDP and Sovrompetrol. The origin of the capital was as follows: 64% Western capital (American, British, Italian, French, Dutch and Belgian), 31% Soviet capital and 5% Romanian capital (Savin, 1947). 33 production sectors were exploited, with a total of 3,391 wells, of which 2,104 wells in production (Ivănuș et al., 2008).

On April 13, 1948, the new Constitution was approved which provided that: "...the riches of all kinds of the underground soil, the mining fields, the sources of natural energy, the roads of communication, railways, roads, on water and in the air, post, telegraph, telephone, radio belong of the state as common goods of the people".

On June 11, 1948, in the context of nationalization of the main means of production, the role of private initiative in the exploitation and use of oil resources was liquidated for several decades. During the period of the controlled economy, an Oil Law no longer worked, the activity being carried out on the basis of the annual plans (according to the five-year plans), while the specific norms and decisions in the field were made by "Orders" of the minister responsible for that industry or HCM - decisions of the Council of Ministers (Moldovan, 1983).

Following the Nationalization of June 11, 1948, capitalist oil companies passed into State ownership. Thus, in their place two State-owned enterprises were created: "Petrolifera Muntenia", with headquarters in Bucharest and technical direction in Câmpina, for activity in the regions of Muntenia and Oltenia, and "Petrolifera Moldova", with headquarters in Bucharest and technical direction at Moinești, for the regions of Moldova. Together with these two Romanian State-owned companies, Sovrompetrol has been active in the Romanian oil industry until 1955 (Buliga et al., 2014).

The company "Petrolifera Muntenia" worked, until 1950, when it was disbanded, by merging with "Petrolifera Moldova" and Sovrompetrol, the activity being organized on regional drilling and extraction trusts, respectively. The company was re-established in 1955, with the objective of liquidating the old nationalized oil companies and extinguishing foreign debts, and it worked until 1974, when it was disbanded by absorption in the Bolintin drilling-extraction enterprise. Apart from the normal activity carried out within the three subordinate departments, the company "Petrolifera Muntenia" also took over the archives of the nationalized oil companies, created and pursued 59 funds of the nationalized companies for their liquidation and acted to settle their foreign debts (Pearton, 1971; Moldovan, 1983; Buliga et al., 2014).

## 2. The geological research activity and oil reserves

After 1948, **the activity of geological research** carried out by specialized institutions and companies aimed at restoring the known deposits in production, the inventory of oil reserves (oil, associated and free gases, condensate) and the discovery of new deposits (Mălureanu and Neaguț, 2001). From the official data, published with the strict censorship of those times, the special attention given by the communist Government to the extractive and oil processing industry results (Pearton, 1971).

Thus, in the period 1950–1964 (the period of restoration and relaunching of this branch) major investments were made, valued at 30.77 million stabilized lei (of which, only in the period 1950–1959, of 18.37 stabilized lei); from this point of view, investments in oil ranked second in the economy, after coal, but being double compared to other industrial branches and **being mainly**

**directed to the exploration and exploitation drilling** (Preda, 2001; DCS, 1965; Steaua Română, 1995). Thus, after 1948, there was an intense development of the drilling activity, especially the one for the geological research, which in 1955 increased by 54% compared to 1944.

Between 1963 and 1980, the volume of geological works by drilling was maintained around an average value of 700-800 thousand meters per year, although the average cost per drilled meter increased continuously (CIDE, 1983), from an average value of 1,500 lei per drilled meter (in 1963) to 4,100 lei/m drilled (in 1980), while for deep wells, the unit cost increased from an average of 4,200 lei/m drilled (in 1963) at 7,700 lei/m drilled (in 1980), due to the difficulties in conducting the wells, the increase of the depth and complexity of the geological investigation operations. According to these costs, the specific investment (indicator of economic efficiency of the activity of reserves discovering) has increased continuously (CIDE, 1983), from an average value of 3,700 lei/m drilled (in 1963) to 7,900 lei/m drilled (in 1980), indicating a low level of efficiency.

Thus, as a direct result of those intense drilling activities, if in 1950 deposits were located in only two major geological units (Depression of the Eastern Carpathians and Depression of the Southern Carpathians), in 1989, their number increased to 9 major geological units (Depression of the Eastern Carpathians, Depression of the Southern Carpathians, the Panonic Depression, Maramureş Depression, Barlad Depression, Moesian Platform, Moldavian Platform, North-Dobrogean Promontory and the Continental Black Sea Platform) (Constantinescu and Anastasiu, 2015).

In 1989, the drilling activity (geological research, exploitation and injection wells, wells repairs, samples for production, preparation and maintenance of drilling fluid, construction and assembly works, etc.) was carried out within 9 branches (which included 19 drilling enterprises), and of the company "Foradex" Bucharest and "Petromar" Constanţa.

As a result of these large investment efforts, in 1989, **the proven oil reserves of Romania** reached 200 million t (Ivănuş et al., 2008).

### 3. Oil extraction activity

The extraction activity, as well as the drilling activity, has undergone an intense development after 1948, as a result of the introduction of new technologies, as well as due to the extension and the refinement of existing ones.

Hence, as a result of the extension of the complex research activity of the subsoil, **the oil production of Romania** registered a continuous increase, reaching the maximum level of 14.7 million t of crude oil in 1976. In order to obtain these production increases, important drilling works were executed, from 657,000 m (of which 44% for exploration drillings) in 1950, to a maximum of 1,814,000 m (of which 197,000 m at depths over 3,500 m) in 1980. Moreover, great depth drilling represented about 25% of the total drilling volume (respectively over 2,000,000 m drilled). A significant example is the completion, in 1984, of drilling at the 7,000 Băicoi well, which reached a record depth of 7,025 m, being one of the deepest wells in Europe and in the world (Ivănuş, 2008).

In 1970, Romania, with a production of 13.229 million tons of crude oil, ranked first in Europe (DCS, 1980).

Between 1963 and 1976, the production increased by about 20%, as a result of applying methods of increasing the recovery factor, but after 1976 (the year of the maximum oil production in Romania, of 14.7 million tons), there was a noticeable decline and costs increased continuously (CIDE, 1981). Thus, compared to 1963 (12.2 million tons of crude oil), production in 1979 (12.3 million tons of crude oil) was only 0.8% higher, while unit costs increased by 161% (from 92.87 lei per tone in 1963, to 242.4 lei/t in 1979), because a large part of the total production was obtained due to the growth of the recovery factor.

Applying the appropriate technologies, the recovery factor increased from 29.8% in 1973 to 31.77% in 1979, resulting in increased economic efficiency in oil extraction. In 1989, a number of **216 processes for increasing the recovery of oil** were applied in Romania, of which 161 industrial processes and 45 experimental processes. The share of additional crude oil production as a result of applying these recovery processes, from the annual production, increased from 8% in

1951, to 10.5% in 1974 and to 32% in 1992, while in 1999 it represented 27.8% of the total crude oil production of that year. As a result of the application of these processes, in the period 1950–1991, an additional 75.2 million tons of oil were extracted (representing 11.8% of the Romanian oil production).

The evolution of the investment effort also marked a continuous concern for the development of this sector (CIDE, 1983), so that the volume of investments for oil extraction amounted to 17.8 billion lei in 1971–1975, 26.9 billion lei during the period 1976–1980, rising to 36.3 billion lei in 1981–1985 and reaching a peak of 45.3 billion lei in 1986–1989. Between 1971 and 1989, by correlating the investment effort with the number of production capacities put into operation, a necessary effort of about 4.5-5 million lei per well was highlighted. As a result, in 1989, the number of productive wells in Romania reached a maximum of 16,000 extraction wells.

#### 4. Oil resource consumption - oil refining activity

Because of forcing the productive potential capacity of oil deposits, oil production decreased from about 15 million tons in 1975-1980, to about 10 million tons in 1985-1989, and Romania became an importer of crude oil, in the context of the excessive development of the refining capacity. Analyzing the international practice, the Romanian authorities at that time focused on acquiring the oil needed to cover the domestic consumption, on developing the petrochemicals and on carrying out refineries oriented towards the export of petroleum products, thus trying to take advantage and "suck" profit from the last two operations.

Given that the capacity of the refineries developed until 1965 ensures the processing of crude oil from domestic production, the decision was made to build new refineries, much more than the immediate needs of the country, designed on certain imported crude oil (heavier, paraffinous and sulphurous), without having long-term contracts for the supply of these quantities (as international processors normally do). However, the international economic situation has forced the practice of raw materials and products trade in a "spot" regime with all its disadvantages and risks (the two oil shocks of the 1970s, the loss of traditional suppliers - Libya, Iraq, Iran).

Thus, in the field of **relaunching the oil processing**, after the restoration of the main refineries destroyed during the war, in 1955 the construction of new refineries or the expansion of existing ones began, so that the capacity of the Romanian refineries increased from 7,522 thousand tons in 1951, to 13,671 thousand tons in 1956, exceeding the level before the war (DCS, 1959; Steaua Română, 1995).

From this perspective, the stages of refinery development were:

- post-war restoration, until 1950;
- "classic" developments, until 1960;
- rational modernization from 1960-1965 and continued until near 1970;
- expansion of production capacities from 1970 to 1989.

In this context, the most important achievements of the period were the following (Buliga et al., 2014):

- development of production capacities at Vega, Dărmănești, Astra, Teleajen, 9 Mai - Colombia, Câmpina and Brazi refineries;
- the modernization of existing refineries, such as Teleajen, Dărmănești, Onești refineries (newly built between 1952–1957, with successive modernizations in 1957–1960 and 1965) and Brazi;
- the development of major refineries, such as:
  - Brazi (built from "the ground grass" (Ivănuș et al., 2008, p. 504) and came into operation in 1969, the raw material being made up of a mixture of sulfur oil from Iran, processing for the first time in the country of such crude oil requiring the construction of machinery with an appropriate metallurgy; the processing flow was completed in 1974-1975 with a series of installations necessary to complete its profile of fuels processing);
  - Teleajen (development began in 1977 and was completed in 1979);

- Onești (development started in 1979 and ended in 1989);
- Midia (newly built between 1977–1985, located on the Black Sea shore, raised many problems because of the marine climate and unstable terrain, requiring the resolution of many ecological protection issues; for those times, the refinery became a standard for the Romanian facilities of that kind for the study and comparison of the technical performances and the economic results).

Thus, from an industry ruined by the war during the 1944 bomb shelling in Ploiesti area (where most of these refineries are located), through forced internal efforts, in an uncertain international context, the oil processing industry managed to reach in 1989 a complex structure, including all modern oil processing processes of the moment, being able to process 34 million tonnes of crude oil per year, double compared to the internal consumption needs, of crude oil of different types, to be converted into petroleum products and petrochemical raw materials required on the domestic and international market.

## 5. International cooperation

Regarding the international cooperation, after 1950, the specialists from Romania contributed with their knowledge and experience to the execution of complex studies regarding the exploitation of oil fields, to the accomplishment of technological and investment projects, as well as to the execution of works for prospecting and exploration, drilling, extraction, refining, infrastructure work, technical assistance, etc. Also, machines and equipment were delivered worldwide for different sectors of activity in the oil field.

The first external contract in the field of oil prospecting, exploration and production runs between 1958 and 1962 (Moldovan, 1983). The object of the contract was the research of the Mazari Serif Basin in North Afghanistan. The general contractor of the works was a Soviet company, and among the external subcontractors was the Industrialexport. The Romanian performance was in the conception, design and execution phases. The success was the discovery of the first commercial hydrocarbon deposits. The drilling and putting into production were also the merit of the Romanian specialists.

The granting by Romania of technical-material support to different countries of the world was perhaps more intense and significant than the imports made in this field. International oil cooperation has materialized on multiple levels: oil-oriented education, technical assistance, know-how, delivery of petroleum machinery and equipment, complete construction of complex installations and refineries, maintenance work and specialized service.

In support of these claims, the following achievements of the period are worth mentioning (Buzatu, 1998):

- drilling plants were exported to Algeria, Greece, the countries of South America, Germany, Iraq, Sudan, the countries of the former USSR, India, etc.;
- works were carried out for oil transport pipelines in Iraq and Turkmenistan;
- oil deposits were built in Jordan, Egypt, Syria, Kuwait, Abu Dhabi, Iraq, Albania, Syria, Pakistan, Turkey, totaling over 420 tanks of different types and capacities;
- high-tech machines have been designed, built and exported for refineries and chemical and petrochemical plants in Mexico (Salina Cruz & Caderta refinery), Bangladesh (Jamuna fertilizer factory), Saudi Arabia (Ras Tanura refinery), Greece (Aspropirgos refinery), Nigeria (Port Harcourt refinery), Kuwait (Ahmadi Mine refinery), etc.

The great experience of the international cooperation of the Romanian specialists in the oil refining was the accomplishment of some refineries "from the ground grass" (Ivănuș et al., 2008, p. 626) or the development and modernization of others, such as:

- in India: the Gauhati refinery (built between 1957 and 1960) and the Haldia refinery;
- in Pakistan: the National Refinery Ltd refinery;
- in Jordan: the Zarqa refinery (launched in 1980);
- in Syria: Baniyas refinery;
- in Turkey: the Kirkale refinery (belonging to Turkish Petroleum Corporation);

□in Serbia (the former RSF Yugoslavia): the Pancevo refinery.

These investments and international projects totalled billions of dollars, amounts with which the oil industry supported the economic development of Romania between 1948 and 1989.

## Conclusions

**Since 1948**, the extractive industry has undergone a powerful restructuring process, in the context of controlled economy. These restructurings have led to an increase in the role of the extractive industry in supporting economic and social development. Significant investment funds were also spent to capitalize on mineral resources that were not of the highest quality and sometimes of deposits under difficult conditions of extraction (high depth, complicated tectonics, low content of useful substance).

Even if, at certain times, the import of raw materials was more profitable, the internal effort was justified by a policy of ensuring an independent economic development of the country, which depends as little as possible on the external environment, by maximizing the internal natural resources. Thus, during the period of controlled economy, the most important resources were coal and oil, to which natural gas was added, along with metalliferous and non-metallic minerals.

These natural riches not only supported their own industrial development, but also constituted the main supplier of energy carriers and raw materials for industry, and **exports of mining, oil and petrochemical products** provided the foreign currencies for modernizing the entire economy, for imports of machinery and technologies for the development of extractive industry and, in particular, of manufacturing industry, but also for promoting the interests of the Romanian state in the world.

International cooperation projects have been widespread in many countries of the world, taking various forms, involving numerous Romanian specialists who have worked in all cases as a team with the staff of the beneficiary countries and with the technology providers, when these technologies were other than the Romanian ones. The respective investment projects totalled billions of dollars, amounts with which the oil industry contributed to the economic development of Romania between 1948 and 1989.

After 1980, the controlled economy entered a systemic crisis. Thus, despite a remarkable economic growth during the four decades, in 1989, Romania was in a marginal position in the hierarchy of European countries, between its level of development and that of the developed countries with market economy, with large gaps in what regards the main economic and social indicators.

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