

THE EVOLUTION OF HUMAN RESOURCES FROM CRUDE OIL EXTRACTION AND PROCESSING ACTIVITIES IN ROMANIA BETWEEN 1990 AND 2006

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Abstract: Providing qualified workers for the companies represents a step forward the normal and efficient operation of them. The modern industrial company presupposes that people should interact to each other, establishing multiple connections and passing through a continuous process of getting accustomed and integrated. The quality of the worker is given by the professional knowledge which allows him the fulfillment of the work tasks. The competence is the quality of the manpower in action. It reflects the capacity, the skills of the worker in his job, in fulfilling his tasks.

Key words: human resources, oil extraction, professional knowledge

The oil has always been one of the sectors with the most tumultuous history. During the communist period, Nicolae Ceausescu planned a huge industry, with ten refineries, four petrochemical complexes and more than 1.500 companies which were organically related to the activity from this sector. Ceausescu planned the mammoth complexes from Brazi, Pitesti, Onesti or Midia-Navodari. According to the statistics, in 1976, considered as best year for aboriginal oil extraction, only 30% from the 15,5 million tons of processed crude oil were used for the internal consumption. The products resulted from the processing of more than 10 million tons of oil were exported. In 1989, the last year of communist dictatorship, Romania had a refining capacity of 24, 4 million tons, from which only 70% was used. The situation radically changed in the 90's, when this sector entered a massive reorganization process.

In 1990, the aboriginal petroleum industry was "broken" and the first restructuring process began. Several entities were created and studies were performed regarding the efficiency of refining a quantity of crude oil greater than it was necessary on the market. The American company Bechtel recommended to the authorities from Bucharest to reduce the refining capacity to a half, to close some objectives considered as not profitable and to eliminate the crude oil import. The observance of these suggestions didn't have the expected effect, so that the first restructuring didn't have many results, mainly because of the fact that the whole industry continued to be controlled by the State.

The real restructuring began after setting up the National Crude Oil Society "Petrom" S.A. and after the Russian Group LukOil took over Petrotel refinery. The first privatization attempt of Petromidia refinery, with the Turks from Akmaya, quickly proved to be a wrong decision, therefore the State cancelled the contract and sold it at the end of 2000 to Rompetrol, which already had another refinery, Vega. But the market got completely free at the end of 2004 when Petrom, the main player, was taken over by the Austrian Group OMV, after a competition with not less than 15 applicants.

The investment represents an important qualitative and intensive factor of the revamp of the economy, being the fundamental source for renewing the technical base of oil industry and of the other branches, the most important material condition to assimilate the modern products and technology, which represent essential premises for work productivity increase. Representing the main factor of production development and, at the same time, being a consequence of their quick progress, the volume of the investments from the oil field increased continuously.

In oil extraction field, in 1993, the investments increased 9 times than those in 1991, and between 1995 and 1997 more than four times than the previous period, then the investments registered a slightly slow increase. Regarding the oil processing in 1991, the investments increased four times than in 1990, in 1993 increased 4, 8 times than in 1991 and in 1995 they increased 5, 3 times than in 1993. The investments evolution continued to be a climbing one, but the increase is smaller than the other years, thus in 1997 the investments increased 2, 3 times, in 2001 3, 5 times than in 1999, then the increase rate decreases more, the volume of the investments increasing 1,8 times in 2005 than 2003.

Table no. 1. Investments in oil extraction and processing activities during the period 1990-2005 (millions lei, current prices)

Year	Oil extraction	Oil processing
1990	1,1	0,1
1991	2,5	0,4
1993	22,5	1,9
1995	53,5	10,1
1997	236,6	23,7
1999	412,6	58,5
2001	805,5	207,2
2003	997,5	415,5
2005	1163,8	732,6

Source: Romanian Statistics Year Book from 2006 -page 445; year 2002-page 301; year 2000-page 303; year 1998-page 370; year 1994-page 394

Regarding the investment indexes in Romanian crude oil extraction, it is noticed an increase of the investment index between 1990 and 1993 with almost 45 percent than the period before the revolution, in 1995 it decreases with 35 percent and then in 1997 it increases with 9 percent, between 1997 – 2001 decreasing again with more than 30 percent, the investment index reaching 93 percent fact which means that in the respective year the smallest investments from the analyzed period were brought in oil extraction, following to increase in 2003 with 6 percent, and in 2005 it registers again a decrease of almost 9 percent. The investments index in crude oil processing increase until 1995 from 20,4% in 1990 with almost 85 percent, then it loses 60 percent in 1997, between 1997 and 2001 the investment index increasing with 104 percent after which it decrease again with 86 percent in 2003 and it increases with almost 60 percent in the following period, reaching 201,5 percent, fact which represents an almost ten times increase of the investment index afferent to oil processing as compared to 1990.

Table no. 2. The indexes of the investments in oil extraction and processing industry between 1990 and 2005 (percentage) 1989=100

Year	Oil extraction	Oil processing
1990	105,9	20,4
1991	137,5	32,9
1993	150,5	105,5
1995	115,2	184,9
1997	124,3	124,8
1999	98,5	139,9
2001	93,0	228,8
2003	109,2	142,5
2005	100,4	201,5

Source: Romanian Statistics Year Book from 2006-page 446; year 2002-page 302; year 2000-page 305; year 1998-page 371

The changes and tendencies in the qualification degree and in the structure of manpower, in the production technique, in the organization, in the revamp of petroleum industry and of the economy in its assembly, cause the reduction of the relative work consumption. Obtaining a product unit needs less and less work expenses, and so it needs less manpower. The increase of work productivity represents now the main development method. It was much exceeded now in society the situation of the Asian people from the ancient times described by Karl Marx in one of the paragraphs from “The Captain”, when “in order to obtain the great moments which amaze us even nowadays there were sufficient the number of workers and the concentration of their efforts”. The increase of work productivity depends directly on the development level of the work means, especially of the production tools, which condition, at the highest degree, the production technical characteristics and the efficiency. The technique improvement and its application in production represent the essential condition for developing the work productivity. The continuous outrunning of the increase of work technical endowment in crude oil industry by developing the work productivity expresses a favorable evolution of the economical efficiency; a greater development of work productivity in industry corresponds to each percentage of technical endowment increase.

The work productivity for crude oil extraction, although between 1991 and 1999 it meets a decrease of 6,3 percent, it will however register important increases of more than 30 percent between 1993 and 1999, after which it decreases with up to 12% until 2003 and it will increase with more than 8 percent until 2005. For crude oil production, the work productivity decreases with approximately 12 percent between 1991 and 1993, after which it follows an increase period between 1993 and 2005, reaching 215, 6 percent as compared to 55,1% in 1993, fact which means an almost 4 times increase.

Table no. 3. Work productivity indexes, per employee, in crude oil extraction and processing industry between 1991 and 2005 (percentage) 1990=100

Year	Extraction	Production
1991	80,0	66,9
1993	73,7	55,1
1995	75,3	63,8
1997	96,8	82,6
1999	103,7	95,5
2001	102,5	110,0
2003	91,7	162,4
2005	99,8	215,6

Source: Romanian Statistics Year Book from 2006-page 640; year 2002-page 409; year 2000-page 415; year 1996-page 496

Industry, the main propulsive factor of economical development, has a decisive role in creating, consolidating, extending and capitalizing the technical-material basis of Romanian economy, under the conditions of performing a competitive production from the technical and economical point of view. The usage of the huge created technical potential and of the manpower prepared according to the requirements of crude oil extraction and processing activity generated, between 1991 and 2005, a powerful dynamics of industrial production, which determined an alert rhythm of crude oil production increase in extraction field of 3-5 times from a period to another, and for the processing field the greatest increase of 8,6 times was registered between 1991 and 1993, after which the increase rhythm slows down gradually.

Table no. 4. Industrial production for crude oil extraction and processing between 1991 and 2005 (millions lei current prices)

Year	Oil extraction	Crude oil processing
1991	184,4	181,0
1993	731,0	1.563,0
1995	2198,0	4.621,0
1997	11095,8	18.045,2
1999	12339,4	31.245,4
2001	36633,3	10.464,7
2003	50618,9	15.946,4
2005	67959,0	25.342,4

Source: Romanian Statistics Year Book from 2006-page 628; year 2004-page 171; year 2002-page 397; year 2000-page 401; year 1998-page 465; year 1996-page 492

Between 1990 and 1995 the industrial production index for crude oil extraction and processing activity decrease with approximately 26 percent, between 1995 and 1997 it increases with almost 8 percent, after which it decreases with 10, 7 percent, and then it increases with 15,6 percent, decreases again with 13, 7 percent and it increase one more time with 7,5 percent until 2005. Between 1990 and 1993 the industrial production index for crude oil processing activity decrease with 42 percent, between 1993 and 1997 it increase with 33 percent, after which, in 1999 it decreases with 24, 4 percent, and between 1999 and 2005 it increase with almost 72 percent.

Table no. 5. Industrial production indexes for crude oil extraction and processing activity between 1990 and 2005 (percentage) 1989=100

Year	Extraction	Processing
1990	106,1	98,7
1991	85,4	64,1
1993	82,4	56,5
1995	80,2	67,3
1997	98,1	89,5
1999	87,4	65,1
2001	103	109,1
2003	89,3	113,7
2005	96,8	136,9

Source: Romanian Statistics Year Book from 2006- page 639; year 2002-page 408; year 2000-page 414; year 1996-page 488; year 1994-page 504

Analyzing the industrial production structure for oil extraction and processing activity, as well as the crude oil extraction and processing activity, it registers oscillations with increases and decreases in short time intervals, such as the oil extraction decrease with 3,2 percent between 1990 and 1995, then its increase with 1,5 percent in 1997, after which it decreases with 2 percent in 1999 and increase with 0,7 percent in 2001, then it decreases again in 2005 with 0,6 percent, while the oil processing registers an increase of 2,1 percent between 1991 and 1993 and of 2, 9 percent between 1999 and 2001 and it decreases with less than 1 percent between 1990 and 1991, 1993 and 1995, 1997 and 1999, 2001 and 2003.

Table no. 6. Industrial production structure for oil extraction and processing activity between 1990 and 2005 (percentage) 1989=100

Year	Oil extraction	Oil processing
1990	6,8	6,9
1991	6,7	6,5
1993	4,0	8,6
1995	3,6	7,7
1997	5,1	8,3
1999	3,1	7,9
2001	3,8	10,8
2003	3,2	10,1
2005	3,2	12,0

Source: Romanian Statistics Year Book from 2006-page 630-631; year 2004-page 172-173; year 2002-page 398-399; year 2000-page 400-401; year 1998-page 468-469; year 1996-page 490-491; year 1994-page 508-509

The main industrial products obtained during the crude oil processing activity are: crude oil, gasoline, petrol, gas oil, fuel oil, mineral oils, petroleum bitumen and liquefied gases. The smallest crude oil quantity obtained by processing was in 1999, and the biggest quantity was obtained in 1990 2,4 times more than in 1999. The biggest

gasoline quantities were obtained in 1990 and in 2005, 2,7 times more than in 1997. The gas oil production registered the biggest quantity in 1990 and the smallest one in 1999 when the production was reduced to a half. Regarding the fuel oil, the production decreased since 1990 becoming 5 times smaller in 2003. The same phenomenon happened regarding the mineral oils production which in 2005, registered a quantity 4 times smaller than the one performed in 1990 and regarding the petroleum bitumen which was 2,6 times smaller in 2005 as compared to 1990. On the contrary, for liquefied gases, the smallest production, 3 times smaller, was performed in 1990 as compared to the one in 2005.

Table no. 7. The production of the main industrial products in crude oil extraction and processing activity between 1990 and 2005

Year	Extracted crude oil (thousands tons)	Crude oil Processing (millions m ²)							
		Crude oil	Gasoline	Petrol	Gas oil	Fuel oil	Mineral oils	Petroleum Bitumen	Liquefied gases
1990	7928	23664	4667	453	6332	8126	371	414	217
1991	6791	15191	3122	407	3895	4969	273	379	224
1993	6713	13191	3078	394	3731	3711	230	319	239
1995	6717	15259	3922	248	4695	2984	208	347	280
1997	6517	12429	3642	168	3952	2083	171	305	242
1999	6140	9894	3017	205	3137	1825	115	204	261
2001	6011	10948	3394	340	3842	1797	153	184	325
2003	5651	10736	3841	443	3721	1558	148	204	327
2005	5215	13890	4956	455	4542	1707	98	157	658

Source: Romanian Statistics Year Book from 2006-page 631-632; year 2002-page 401-402; year 2000-page 406-407; year 1998-page 472-473; year 1996-page 498-503; year 1994-page 514-515

The organization and operation of industrial unities on scientific bases need an as rigorous as possible substantiation of the personnel necessity. This results from the fact that the establishment of a personnel number greater than the necessary one influences negatively the work productivity level, while the dimensioning of a smaller necessary causes difficulties in performing the production plan. Providing qualified workers to companies represents a step in performing a normal and efficient operation. The modern industrial company is not only a technical-productive unity, but also a social one, where people, acting on the work objects with the help of work means, interact between them, they establish multiple connections and they pass through a continuous process of getting accustomed and integrated. By this process, strong workers collectives are created, a climate favorable for the work, having the possibility to manifest their individual skills and to put in application the accumulated knowledge and experience.

The employed personnel from crude oil extraction activity between 1990 and 2000 have an oscillating evolution with ups and downs and within it the workers share is a preponderant one. The greatest personnel increases took place between 1990 and 1992, about 10.000 employees, reflected in the workers' category, increasing from 58.000 to 68.000, and the greatest salary decrease was performed between 1998 and

2000, when the personnel number decreased with 19.000 persons, from which 17.000 were workers. The greatest workers share in the total number of employees from crude oil extraction activity was registered in 1992 and it was of 86% and the smallest share of 77,2% was reached in 2005. In what concerns the employed personnel in crude oil processing activity, the evolution is a descendant one, except for 1994 when the personnel number increased to 36.000 workers from which 83,3% were workers. In 2005, the workers numbers of crude oil processing activity reaches 14.000 persons, from which 10.000 were workers, fact which represents a personnel reduction of almost 40% as compared to 1994. The workers have the greatest share within the personnel from crude oil processing activity, therefore in 1992 the workers represented 87,5% from the total personnel.

Table no. 8. The average employees number from crude oil extraction and processing activity between 1990 and 2005 (thousands of persons)

Year	Total number of employees		Workers	
	Extraction	Processing	Extraction	Processing
1990	69	33	58	28
1992	79	32	68	28
1994	81	36	68	30
1996	79	35	67	29
1998	78	27	65	22
2000	59	22	48	18
2002	59	18	48	14
2004	56	15	44	11
2005	57	14	44	10

Source: Romanian Statistics year Book from 2006-page 126; year 2000-page 109; year 1994-page 162

The integration within work appears as a process whose effect is to create a new qualitative manpower. The increase of workers number within the recruited population represents a general condition for the revamp of economical structure, for the recruitment and usage of the man power with increased efficiency. From the table below it can be noticed that the employees from oil extraction and processing activity between 1993 and 2005 are mostly men, more than 80%, women occupying only a small proportion between 17,5 and 19,5 %from the total number of employees from oil extraction and processing activity. Within workers, women are between 12 and 17% from the total number of workers of oil extraction and processing activity, while men have a share of over 83%.

The number of employees injured while working within oil extraction and processing activity is generally decreasing from a period to another, and among them the number of dead employees varies between 2 and 10% as compared to the number of injured employees which temporarily are not able to work. Regarding the collective work accidents, their evolution is an insignificant one from the point of view of the employees involved in collective work accidents, as well as from their gravity point of view. Therefore, the work accidents rate increase from 1,7% in 1993, up to 6,9% in 1999, after which it decreases to 2% until 2005.

Table no. 9. Employees of oil extraction and processing activity by sex between 1993 and 2005 (thousands of persons)

Year	Total number of employees				Workers			
	Total	Mostly private property	From the total		Total	Mostly private property	From the total	
			men	women			men	women
1993	120	0	96	23	00	0	83	7
1995	114	1	92	22	96	1	80	16
1997	113	2	91	22	93	1	78	15
1999	82	12	66	16	67	9	58	9
2001	80	14	66	14	65	11	56	9
2003	72	17	58	14	57	12	50	7
2005	65	60	53	12	49	45	42	7

Source: Romanian Statistics Year Book from 2006- page 130-131; year 2004-page 100-101; year 2002-page 104-105; year 2000- page 110-111; year 1998-page 136-137; year 1996-page 152-153; year 1994-page 164-165

Table no. 10. The number of injured employees during oil extraction and processing activity between 1993 and 2005

Year	Number of injured persons			Collective accidents			Work accidents rate (%)
	Total	From which:		Number of accidents	Number of injured persons		
		Deadly	Temporary incapacity to work		Total	Deadly	
1993	272	27	245	2	17	4	1,72
1995	197	4	186	2	9	-	2,25
1997	258	21	237	2	6	1	3,25
1999	227	14	213	1	3	-	6,9
2001	185	9	176	1	4	1	2,92
2003	148	9	139	2	7	-	2,06
2005	117	9	108	-	-	-	2

Source: Romanian Statistics Year Book from 2006-page 136; year 2004-page 107; year 2002-page 111; year 2000-page 118; year 1998-page 148; year 1996-page 163; year 1994-page 178

The permanent need of manpower within petroleum industry, allows the existence of a fluctuation on high level, but it doesn't represent its cause, but just a favorable factor. The real causes usually are of subjective nature: the conflicts with the work mates and with the collective chiefs, the lack of attraction to the job, the non-integration within the work discipline, the wish of gaining a more substantial incomings, etc. Regarding the interest conflicts which took place during the crude oil extraction and processing activity between 1993 and 2005, are not significant from the numeric point of view. 1995 registers the greatest number of interest conflicts, but a small number of persons were involved, only 1.788 as compared to 1999 when 3 conflicts took place involving a number of 4.801 participants, which represents a proportion of 86, 3% from the total number of employees. Maybe the year 1997 is more important when, although only one interest conflict took place, 100% of the employees took part to it as well as 2005 when, again during only one conflict, 97% of the employees participated.

Table no. 11. Interest conflicts during crude oil extraction and processing activity between 1993 and 2005

Year	Number of conflicts	Number of employees	
		Total	Participants to the conflict
1993	2	2500	1800
1995	5	2944	1788
1997	1	2700	2700
1999	3	5563	4801
2001	1	184	124
2003	1	1140	350
2005	1	2268	2200

Source: Romanian Statistics Year Book from 2006-page 142; year 2004-page 114; year 2002-page 116; year 2000-page 122; year 1998-page 154; year 1996-page 169

A company needs people who, by their activity, enrich not only the experience, but also the collective wisdom, people who are able to discover new things, people who improve and rationalize the work process, who work against routine, against traditionalism. The current scientific-technical revolution imposes such an affirmation of man.

The quality and competence express the substance of qualified manpower, practically being inseparable. Their essential knowledge is performed watching them as a unity. The quality of the worker is offered by his professional knowledge which allows him to fulfill his work tasks. It indicates the work potential formed based on a special education. The double quality of those who work offers the possibility to perform them. The competence is the manpower quality itself. It reflects the capacity, the worker's skills in the work process, in fulfilling the tasks. When the place occupied in production is in compliance with the knowledge, with the intrinsic qualities the worker has, he reaches the maximum competence. On the contrary, in case his work capacity evolution and his professional education do not keep up with the progress rhythm, with the new exigencies appeared in the work process, he reaches different incompetence levels. The quality and competence level is different from a stage of development to another, as the exigencies of practicing each social function are in a permanent dynamics.

The need of a superior quality of the workers organically comes from the new qualitative progress requirements of "going ahead". The increased role of high qualified persons is imposed by the promotion within production of the scientific conquests and advanced technique. The increased addiction of development to the assimilation within production process of the scientific conquests and advanced technique represent, nowadays, an indisputable fact. The always increasing efficiency can be obtained only by replacing the work means and old technologies in time and by having new achievements with superior efficiency, but which are unconceivable outside the human capacity for creating, assimilating and integrating the scientific conquests and technique.

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