

RESEARCH ON THE EXPLOITATION OF COAL IN THE ROȘIA QUARRY THROUGH THE PRISM OF ENVIRONMENTAL PROTECTION

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Abstract: *Lately, more and more Non-governmental Organizations are rising up against the mining industry, but without offering a solution that is at least as viable in the safety and health of the population, which depends on ensuring Romania's energy security. It is recommended to capitalize on an efficient system of supply of solid fuel (lignite), production, transport, distribution and supply, which ensures the continuous supply of all consumers in conditions of accessibility, availability and affordability of prices, taking into account the evolution of environmental quality. surrounding. Research on coal mining at the Roșia Quarry includes specific requirements in order to ensure a high degree of environmental protection during the project, including the organization of the site extension, as well as during the subsequent development of the activity.*

Key words: *mining, coal, energy, environmental protection.*

1. The spreading area of the lignite deposits from Oltenia

The distribution area of the lignite deposits from Oltenia [1] belongs from a geographical point of view to the Subcarpathians of Oltenia and the Getic Plateau, developing parallel to the southern edge of the Southern Carpathians. The subcarpathians delimit to the north the coal-bearing deposits, being composed of Neogene formations with wrinkled structures. Morphologically they are characterized by intracolinary depressions (syncline) of tectonic or erosion nature and hilly peaks (anticline). The Getic Plateau develops on the periphery of the Subcarpathians and is individualized by hilly peaks with altitudes that gradually decrease from North to South.

According to <http://energie.gov.ro/>, the Rovinari mining basin, with the perimeters of Tismana I, Tismana II, Rovinari Est, Gârla, Pînoasa, Roșia de Jiu, Peșteana Nord, Peșteana Sud, is considered the most important in terms of economically due to its circular location adjacent to the Rovinari Thermal Power Plant. The lignite resulting from the mining operations is delivered directly on the conveyor belt in the thermal power plant warehouse. [8]

In the geology of this basin it is differentiated [1] The Paleogene, represented by its upper floors, Eocene and Oligocene.

During the Neogene, both its stages were highlighted: Miocene and Pliocene. The Miocene is represented by all its floors: Aquitanian, Burdigalian, Swiss, Badenian and Sarmatian.

During the Pliocene, the floors were highlighted: Meotian, Pontian, Dacian and Romanian, of which only the upper floors Dacian and Romanian bear coal. Pontian is developed throughout the Rovinari

basin, forming the foundation of the coal complex. It is represented by the horizon of the marls with Paradacna and marls with Valenciennus.

The Dacian is represented by a succession of clays, sandy clays, sandy marls and sands with intercalations of lignite layers, which marks the entrance of the basin in the final state of its evolution.

Based on lithology, the correlation of lignite layers and macrofauna, two horizons were separated within the Dacian: the lower sandy horizon with Pachydacna and the upper sandy clay horizon with coal. The lower horizon is made up of fine and medium sands with clay intercalations. At the top of the sandy complex is the first layer of coal, the first layer correlated as an extension in the region.

The Romanian is deposited concordantly over the Dacian deposits, but with frequent facies differentiations. Thus, within the Rovinari basin, the Romanian consists of an alternation of clays, coarse sands and small gravels with intercalations of lignite layers sometimes associated with levels of coal clays. In this suite with a thickness of 60-80 m are included the lignite layers VIII-XII. The Quaternary includes old and current alluvial deposits and current surface deposits (floods, manure cones, landslides). It is present in its terms: Pleistocene and Holocene.

2. What does the environmental agreement contain ?

The environmental agreement includes the specific requirements in order to ensure a high degree of environmental protection during the project, including the organization of the site, as well as during the subsequent development of the activity, demolition / decommissioning. [2] [5]

The environmental agreement has a framework content and includes at least:

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a. specific requirements in order to ensure the protection of the environmental elements during the project, including the organization of the site, as well as during the activity, demolition / decommissioning, as appropriate, including all conditions necessary to be met by the project owner;

b. the conclusions of the analysis of the security report, as the case may be;

c. the main reasons and considerations on the basis of which it was issued, including information on the conduct of the public engagement process and how the comments of the public concerned were taken into account;

d. description of the main measures to avoid, reduce and, if possible, compensate for major adverse effects on the environment during the project, including site organization, operation, demolition / decommissioning, requirements of specific Community legislation, as appropriate.

The environmental agreement for installations covered by the legislation on integrated pollution prevention and control shall be issued taking into account, in addition to the requirements set out above, the following:

a. the emission levels associated with the best available available techniques, for pollutants that may be emitted in significant quantities, or, where appropriate, equivalent technical parameters or measures;

b. provisions for limiting the effects of long-distance or transboundary pollution, as appropriate.

The environmental agreement for projects which have been decided to have a significant impact on the integrity of protected natural areas of Community interest shall include, where appropriate, the following:

a. measures to reduce or eliminate the impact on the protected natural area of community interest, the conditions and the manner / timetable for their implementation;

b. the compensatory measures approved, accepted by ACPM, the conditions and the way / schedule of their implementation;

c. public health or safety considerations or beneficial consequences of major importance for the environment, which justify the need to carry out the proposed project, for protected natural areas of Community interest housing a priority natural habitat type and / or a priority wildlife species of Community interest;

d. other overriding reasons of major public interest on which the point of view of the European Commission has been obtained, which justifies the need to carry out the proposed project.

For projects that negatively affect the integrity of the protected natural area of Community interest and in the absence of alternative solutions, the

central public authority for environmental protection has the obligation:

a. to inform the European Commission of the compensatory measures taken to protect the overall coherence of the Natura 2000 network, for areas of special avifauna protection and sites of Community importance, when the project must be carried out for overriding reasons of major public interest concerning human health, safety public or environmental benefits. In this case, the regulatory act may be issued before informing the European Commission;

b. to request the views of the European Commission on both the proposed compensatory measures and overriding reasons of overriding public interest other than those relating to human health, public safety or environmental benefits, where the project affects a species or type of priority habitat. In this case, the regulatory act will be issued after receiving the European Commission's reply.

The decision to reject the application for the environmental agreement includes:

a. the main reasons and considerations on which the decision is based, including information on the conduct of the public participation process concerned;

b. information regarding the administrative appeal procedure and administrative contentious.

The Roşia Quarry is located on the territory of Fărcăşeşti, Bîlteni and Rovinari communes. Excavation work began in 1973. [4] [6]

3. Measures for the protection of the environment-water component at Roşia Quarry

The measures for the protection of the environment-water component at the Roşia Quarry are [3]:

- arrangement and regularization of watercourses, either from the mining perimeters or from the adjacent areas;

- drying systems, which allow the drainage of water from the aquifer horizons and ultimately lead to the achievement of the technological flow in complete safety;

- collecting, directing and discharging water from the areas to be exploited and coming from drying, infiltration and precipitation works. The exploitation of lignite in the Roşia de Jiu quarry in the period 2016 - 2026 (in the hilly area) leads to the diminution of the groundwater potential by:

- decrease of the volume of supply from precipitations, of the surfaces of supply and storage of the phreatic horizon in the basin;

- increasing the flow rate of groundwater to the depression areas in the quarry which causes rapid depletion of static groundwater reserves (not

extinction). The negative effect of drying sometimes observed immediately by lowering the water level and even drying the wells in neighboring villages was offset in rural areas around the quarries by making their water supply systems from catchments made in the deep aquifer horizons and especially in the aquifer horizon artesian.

Dangerous substances that affect the quality of surface or groundwater are not used in the production process.

- the ecological status of the Jiu River on the Rovinari-Turceni section is good.

Measures to prevent, reduce and, where possible, offset significant adverse effects on the environment are:

a) measures during the realization of the project:

- the equipment and means of transport used will not be washed in the present watercourses;

- all measures will be taken in order to avoid accidental pollution, and in case of such pollution, operative intervention will be taken;

- periodic technical inspections of all equipment used, will be performed up to date, to avoid accidental pollution of water in the work area;

- not to affect the quality of surface waters and not to throw materials of any kind in the riverbeds or on their banks;

- legs and exploitation residues (biodegradable) are not stored in riverbeds to prevent clogging of downstream receivers and flooding;

- equipping the work point with absorbent materials.

b) measures during operation and the effect of their implementation:

- construction and maintenance of guard ditches that collect rainwater, in the pace of progress of opening, preparation and operation;

- application, in case of need, of all measures to prevent and combat accidental pollution according to the provisions in force;

- the maintenance in operation of the administrative premises treatment systems in order to include the discharged waters within the allowed limits and the observance of the technical norms for the operation of the installations;

- prohibition of storage of any type of waste in surface waters;

- the revisions and repairs to the equipment will be made periodically according to the graphics and technical specifications, and the fuel supply will be made only in areas specially arranged for this purpose;

- the handling of fuels is done in such a way as to avoid leaks and their scattering on the ground;

- throughout the operation to ensure measures to verify the discharged waters and to identify pollution prevention and remediation solutions in case of accidental discharges of dangerous substances. [3]

4. Measures for the protection of the environment-air component at the Roşia Quarry

The protection measures of the environment - air component at Quarry Roşia are:

- deforestation, excavation of said areas, strip transport and tailings dump do not produce quantities of dust above the permissible limits and drafts disperse these quantities over large areas.

- due to the low number of machines, and they work with electrically driven motors, the activity carried out can be appreciated as an impact generating source with a low intensity and a high degree of zonal extension.

- the atmospheric emissions specific to the lignite mining activity through up-to-date mining works are dusts resulting from open ground sources that involve the activities of sterile / coal excavation, sterile dumps, sterile transport / coal, coal storage and shipment.

- all these categories of undirected sources are considered surface sources. The forecasted impact on the air during the project implementation period is low, the values obtained by mathematical modeling of the dispersion for the concentrations of total dust pollutants in the outside air are below the limits imposed by the legislation in force on air quality. [7]

Measures to prevent, reduce and, where possible, offset significant adverse effects on the environment are:

a) measures during the realization of the project:

- the maintenance in perfect working order of the equipment and means of transport that are used for the forest exploitation, the periodic accomplishment of their technical inspection, and in case of defects are found their remedy in the shortest time;

- imposing speed restrictions for means of transport on the access road;

- the use of equipment and means of transport with high-performance engines equipped with Euro pollutant retention systems;

- endowment of the working point with the water tank provided with a spraying device for interventions in case of fire and for diminishing the amount of dust raised in the atmosphere;

- periodic wetting in the dry periods of the access roads, in order to remove the entrainment of fine powders in the air mass;

b) measures during operation and the effect of their implementation:

- improving the technical condition of the access road by repairing and permanently maintaining it in good technical condition, along its entire length;

- maintaining the equipment and means of transport in good working order; performing overhauls and maintenance in specialized workshops;

- training of the personnel who will work in the workplace, regarding the measures of prevention and extinguishing of fires and of the measures regarding the environment protection;
- drawing up a working schedule for the means of transport, specifying the route and speed of traffic, the mode of transport of the cargo;
- equipping dump trucks with tarpaulins to cover the load during transport;
- endowment of the working point with a water tank provided with a spraying device, for interventions in case of fires and for diminishing the amount of dust raised in the atmosphere;
- capturing the dust at the source by casing the dust generating equipment;
- the movement of coal stocks in order to prevent the self-ignition of coal in very hot periods;
- coal compaction during stack formation;
- the use of protective coatings to prevent air access inside the coal stack, cover the surface and slopes with: coal dust, slag dust in a layer of $10 \div 15$ cm, compacted, anthracite ($0 \div 3$ mm) sprayed with oiled and compacted. You can also use clay bitumen paste (45% bitumen, 25% water, 30% clay), which is applied on the surface of the stack in liquid form, in a layer of $2 \div 3$ mm. The use of clay bitumen paste as a protective layer is possible only when the ambient temperature is above 0°C ;
- the use of inhibitors in order to reduce the qualitative losses of coal;
- in order to prevent the self-ignition of the coal in the outcropping layers, it is not completely uncovered, leaving a tailings layer of approx. 10 - 15 cm;
- it will be avoided as much as possible the abandonment of the coal pillars in the exploited space;
- for the insulation of a fire or an abandoned coal pillar, areas of total backfill or siltation will be created;
- the introduction of foreign materials into coals, especially wood, should be avoided;
- tracking the temperature through probes on steel pipes to the bottom of the stack, where thermometers are lowered, measuring the temperature every 2 m depth; when the temperature exceeds 40°C , the control is done at intervals of 12 h, and if the temperature exceeds 60°C , the coal is consumed immediately;
- rendering in the productive circuit the lands left free of technological loads in order to limit the spread of dust in the atmosphere;
- minimizing emissions to air, through adequate design and maintenance of mining facilities, through appropriate operational procedures and specific emission control procedures. [3]

5. Measures for the protection of the environment component - soil, subsoil at the Roşia Quarry

The protection measures of the environment component - soil, subsoil at the Roşia Quarry are:

- the excavation and deforestation process has the effect of removing the vegetation but according to the *Environmental Recovery Plan and the Technical Environmental Recovery Project Symbol 805-837 / 2014* these lands and the respective vegetation will be restored following the release of the lands from technological tasks.
- the main protection measure against slipping is the observance of the designed geometry which is based on geotechnical studies.
- the excavation area - the quarry will finally have 9 excavation steps between the elevations $+75/85$ - $+280$ m, with the length between 2500 m at the upper steps and 1400 m at the hearth of the quarry;
- the final general slope angle at the quarry $6-7^{\circ}$ on the western side, $12-13^{\circ}$ on the north side and $13-17^{\circ}$ on the south side;
- the height of the working steps 20-25 m at a slope angle of 45° ;
- the width of the berms is at least 180 m.
- dump area - inner dump, will have 9 dumps steps between elevations $+75/85$ m - $+175$ m.
- the height of the dump will be 110 m at a slope angle of 26° .
- working berm of 150 m, ascending.

Measures to prevent, reduce and, where possible, compensate for significant negative effects on the environment [3] are:

- a) measures during the realization of the project**
- during the deforestation works, operations will be performed that have in view the avoidance of the production of torrential phenomena on the slopes and soil degradation;
- all measures will be taken to avoid soil pollution with petroleum products from the equipment and means of transport used;
- the fuel supply of the means of transport will be done at the fuel distribution stations;
- the lubricants necessary for the operation of the equipment will be stored in metal containers, in the materials warehouse;
- the transfer of petroleum products from tankers will be done directly in the storage tank;
- the revisions and repairs of the means of transport will be made only at specialized units;
- no engine repairs, oil changes and refueling of car tanks will be carried out in the forest;
- the circulation of tractors to be done as much as possible only on the routes located in the deforestation area, avoiding travel outside it;
- in the situation when the passage through stands that cannot be exploited cannot be avoided, it is

indicated to use at the wood assembly the equipment that reduces the course of the tractors (cables driven by winches);

- machining the front end of the dragged part or covering with protective cones;
- avoiding the circulation of tractors in the parquet in wet weather;
- taking measures to protect the routes subject to erosion by defending with longons, bed of legs, etc. and at the end of the works the tracks with tracks that will be leveled;
- the access to the forest fund will be made only after obtaining the approval of the land use and only on the access roads established by mutual agreement with the forestry schools;
- the dragging of the trees after cutting should not be done on their route, but on the side without affecting the neighboring plots not cleared;
- it is forbidden to store wood materials in the riverbeds and valleys or in places exposed to floods;
- in case of accidental pollution, the volume of soil will be removed, temporarily stored and remedied by specialized and authorized units;
- when collecting the wood mass, the established routes will be observed, and the accidental repair works performed on the equipment will be done only in the technological platform of the working point;
- no fuels, lubricants or other materials will be stored in the perimeter of the site organization, the leakage or dissipation of which will pollute the soil. Their storage is done in specially arranged constructions. The fuel supply of the equipment working to deforest the forest vegetation will be done with great care to prevent soil pollution;
- the storage of wood waste will be done temporarily on site and the recovery will be done through specialized and authorized units;
- in order to reduce the quantities of dust on the deforested surface, the circulation of the means of transport will be done with reduced speed.

b) measures during operation and the effect of their implementation:

- rendering in the productive circuit the lands left free of technological loads;
- avoiding the advanced deforestation much in front of the land clearing ones in order to remove the regressive erosion of the uncovered land and limiting the action of precipitations and winds;
- storage of fuels, lubricants, waste, residues that would lead to soil pollution, only in areas and perimeters specially designed for this purpose outside the perimeter of operation and in strict compliance with the regulations in force on environmental protection;
- drawing up records of unrecovered waste and whose uncontrolled release may endanger the quality of the soil or other components of the environment;

- the fuel supply of the means of transport and of the equipment will be done from the oil products stations, and in case of technical impossibility the supply of the equipment from the quarry will be done with maximum attention;

- checking the integrity of the diesel containers, and in case a defect is found, repairing it as soon as possible;

- checking the integrity of the concrete platforms on which petroleum products and / or technological waste (used oils, etc.) are stored;

- permanent verification of the condition of the working slopes in the quarry;

- ensuring the necessary conditions for the directed evacuation of surface waters, through gutters executed along the slope; in the conditions in which there is no possibility of directing the waters that accumulate at the foot of the dump outside the perimeter, their evacuation will be carried out by means of the pumping stations;

- in the case of the dump, it is necessary to observe the technological process of dump by which to achieve a continuous and uniform dump, and during the winter to avoid the incorporation of snow and ice in the deposition steps;

- to ensure the observance of the slope angles provided by the geotechnical studies elaborated so far;

- to ensure the compaction of the dump, as well as the observance of the slope angles provided by the geotechnical studies elaborated so far;

- in the dumping process, special attention will be paid to the twinning of the dump steps with the final slopes of the quarry, in order not to create favorable areas for water accumulation in the body of the dump or at its base and to increase the stability of the land around the quarry;

- the permanent endowment of the working point with containers adequate for the storage and transport of household waste and their periodic transport to an authorized landfill;

- the vegetal soil will be stored separately and will be used for the renaturation of the land within the environmental restoration works;

- in the exploitation perimeter where the sloping lands have a tendency to slip and through this they can degrade the deposit, measures will be taken for their stabilization. [3]

6. Protection measures NATURA 2000 sites, Roşia Quarry

The project is to be carried out outside the limits of any protected natural area or SIT Natura 2000. In the case of the Roşia de Jiu mining perimeter the distance from the Natura 2000 site RO SCI 0045 Jiu Corridor is 10500 - 4500 m. Given the location of

the project, it is not likely to have a significant impact on habitats and species for the conservation of which sites of Community importance have been designated and does not fall under the scope of art. 28 of the O.U.G. no. 57/2007 on the regime of protected natural areas, conservation of natural habitats, wild flora and fauna, with subsequent amendments and completions.

Measures during operation and the effect of their implementation:

Biodiversity and Landscape:

- avoidance of non-recoverable and disordered losses of some materials (lubricants, fuels);
- measures to limit the dust emissions described by the air environment factor;
- arranging and improving the lands released by technological tasks in order for them to be recultivated.

After deforestation, after the occupation of the agricultural lands and after reaching the final excavation quotas and the depletion of the deposit, the landscaping and afforestation of the land used for lignite exploitation as well as the arrangement for economic return, in order to introduce them in the productive circuit, with the intended use. prior to mining. When permanently removed from the forest fund, it is mandatory to compensate it with a land outside the forest fund, the surface of which cannot be less than 3 times the surface that is the object of the removal from the forest fund.

The lands returned to the productive and agricultural forestry circuit will be integrated in the predominant landscape in the area. The forest to be cleared (along with the meadows and pastures interspersed) is part of a larger body that will remain standing.

Measures to prevent, reduce and, where possible, offset significant adverse effects on the environment are:

a) measures during the realization of the project

- the use of silent equipment and means of transport, in order to diminish the noise due to the deforestation activity, a noise that drives away the game;
 - spraying the access roads in order to reduce the sedimentable dusts in order to avoid their deposition on the canopy of the trees;
 - it is recommended to carry out deforestation outside the breeding periods of the species;
 - the land affected by the exploitation will be returned to the forest circuit with plant species recommended by the competent forestry authorities;
 - judicious use of the afferent surfaces and restriction to the strictly necessary of the deforested surfaces and of those for which the change of use is requested;
- Prevention and reduction of damage to trees adjacent to the deforestation area can be done by applying measures such as:

- protection with protective sleeves or with deflectors of the exposed trees, adjacent to the deforestation area and of those located along the removal routes - close outside the deforestation area;
- the orderly felling of the trees so as to avoid the falling of the parts over the trees outside the deforestation perimeter;
- the correct and careful handling of the wood collection equipment, which should not exceed the deforestation space;
- observance of the established take-off routes;
- the cuts / openings will start from the sheltered area to the action of the dangerous factors and will continue in the opposite direction of action of the disturbing factors that act in the area;
- the phasing of the cuttings starts from the bottom and advances upstream, but also takes into account the exploitation emergencies that can be determined by certain exogenous and endogenous factors of the forest;
- the cuttings will be carried out so that the harvesting of the wood mass does not imply the passage through the adjacent forested areas that will not be cleared;
- the harvesting will be ensured in conditions of increased economic efficiency, but also with the avoidance of the degradation of the soil, the usable seedling and the standing trees from the side bands that are not exploited;
- the erosion and / or devastation of the slopes will be avoided;
- only the areas affected by the project will be cleared, being prohibited the excessive or unjustified exploitation of other additional forest areas;
- openings on large work fronts will be avoided;
- cleaning the soil of debris / stumps, storing and transporting them for recovery; it is strictly forbidden to practice lighting them on site.

7. Noise and waste protection measures, Roşia Quarry

Measures to prevent, reduce and, where possible, offset significant adverse effects on the environment are:

a) measures during the realization of the project

- use of will be done with reduced speed in order to diminish the noise and vibrations that can be caused;
- observance of the transport routes and of the approved transport schedule;
- the storage of wood waste will be done temporarily on site, and the recovery will be done through specialized and authorized units;
- following the technological process of deforestation, the household waste produced on the site of the site organization will be stored in

containers specially designed for this purpose, provided by the quarry administration.

- metal waste and other reusable waste are disposed of according to special management plans and recovered by specialized companies;

- construction waste (decommissioning of temporary constructions, barracks if applicable) is disposed of by transport and storage at an authorized site or used as landfills.

- in order to benefit as much as possible from the eco-protective role of the forest, small areas will be periodically cleared, strictly necessary for the technological process for a period of at least 6 months.

- no type of waste will be deposited in the riverbeds or in the immediate vicinity; *equipment and means of transport with high-performance motors equipped with noise attenuators*;

- the transport of the wood material from the exploitation perimeter to various beneficiaries.

b) measures during operation and the effect of their implementation:

- isolating, as much as possible, the installation and choosing the quietest technologies;

- encapsulation of conveyor belts in areas where noise is a local problem;

- the maintenance in perfect working condition of the equipment working in the quarry and of the transport ones, the periodic accomplishment of their technical inspection, and in case of defects are found their remedy in the shortest time;

- use of approved equipment;

- the means of transport will circulate in the inhabited area during the day, between 07-18;

- the movement of vehicles through populated areas will be done at low speeds, so that the noises do not exceed the allowable limits imposed by STAS 10009/1988;

- orientation of sensitive points according to the prevailing winds.

- the size of the distance between the noise sources and the protected buildings.

- sound-absorbing ground (grass and vegetation) - shielding by:

- descending into the ground or creating screens located between the installations and the sensitive points;

- with a more psychological result, vegetation screens (efficiency 1 ... 2 dB for 10 m of dense vegetation with permanent leaves).

Measures to prevent, reduce and, where possible, offset significant adverse effects on the environment are:

- compliance with the *Waste Management Plan for the extractive industry - Roşia Quarry, Gorj county, approved by no. 504 / 19.01.2013* by the National Agency for Mineral Resources:

- the total height of the inner dump - 110 m;

- height of dump steps - max. 15 m;

- working berm - min. 125 m;

- total number of dump steps - 9 steps.

- in the lithological composition of geological formations consisting of a succession of clayey and sandy complexes (where the coal layers are interspersed), have the following structure:

- clays and marly clays - 66.7%;

- dusty clays and marly clays - 20.5%;

- dusty sands - clays and sands - 12.8%;

- the tailings are deposited under the conditions of the rock mixture resulting directly from the excavations, as unselected material, with a pronounced homogeneity of the granularity and non-uniformity of the geotechnical parameters.

8. Conclusions

Romania, with a long tradition in the mining industry, has sufficient reserves of coal (coal and lignite) that can ensure the continuity of production for more than 150 years, being one of the most important coal producing countries in Europe, the seventh place among producers of coal in the member countries of the European Union, and one of the major producers of lignite, and in the world ranks seventeenth place in the production of coal.

The latest data show that coal is currently used to produce 40% of the world's total electricity, and its utilization has increased by more than 50% in the last 10 years.

The importance of the energy sector (resources - energy industry - consumption), a strategic sector for any state, is best underlined by the fact that, even in the case of Romania, energy represents a product with a great economic, social, strategic and political value.

In recent years, in Romania, coal accounted for approx. 30 ÷ 40% of the energy mix (1/5 of burning coal and the rest of burning lignite), followed by hydro with 28%, nuclear 20%, 7% wind energy, etc.

In the context in which Romanian hydrocarbons (oil and natural gas) are depletable in the medium term, and imports increase at unsustainable prices, coal remains the main fuel available for the production of electricity in thermal power plants. The more intensive use of coal (domestic and imported) will require improved technologies, including in terms of reducing pollutant emissions.

For existing coal-fired power plants (coal and lignite), a number of rehabilitation and modernization techniques can be applied to improve thermal efficiency.

We specify that coal-fired power plants (Rovinari, Turceni) contribute to the energy security of the population and through the modernization

stages the protection of the environment, including the human factor and compliance with European emissions standards is taken into account.

It's being suggested:

- rethinking the system of exploitation and capitalization of mineral and energy resources.

- rethinking and rethinking the national and mining energy systems as strategic systems under state control.

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