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Implementation of Nuclear Power Plants instead of "Kosovo A and B" Power Plants as the only Rescue of Coal Resources in the Republic of Kosovo

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ABSTRACT

Kosovo as a state in Europe poses a serious problem of air pollution, due to the production of electricity from Kosovo A and Kosovo B coal fired-power plants, which use coal as fuel. Although Kosovo possesses large coal reserves, the monetary income from the production of electric power from the Coal-Fires Power Plants is very low and too much coal spending, which is a huge resource loss as well as a very valuable natural resource for future generations. Implementation of nuclear reactors may bring profits to this country and coal could have been sold as a raw material in various sectors, thus probably the state could earn about half a billion euros each year, this is due to the non-construction of a nuclear power plant. Kosovo is losing more than 2 billion amounts euro of coal-fired coal for 18 years due to coal-fired power plants. During 2017, Kosovo produced 5 300 000 MWh of electricity. Kosovo had also extracted 8 million tons of coal to produce electricity, while a nuclear reactor needs about 264.99 kg of ^{235}U per year. The aim of this research is to highlight the increment of the price of electricity in the region of Kosovo and therefore standing as-a big obstacle to foreign investment.

Keywords: Kosovo, Power plants, Coal, Pollution, Nuclear reactors, Clean energy

1. Introduction

Kosovo is an independent state in Southeast Europe. It has an area of 10 908 km² and a population of 1.8 million Albanians. Kosovo as a state has a huge problem of air pollution especially in the municipality of Obiliq near the capital city of Kosovo, which is Pristina. "Kosovo A" and "Kosovo B" coal-fired power plants as seen in Fig. 1, are the biggest air polluters. For the past winter season in terms of pollution, Pristina was in the second place in the entire world. Burning installations within large power plants use large quantities of fossil fuels and other materials obtained from natural resources from the earth and turn them into useful energy.

The combustion process leads to the generation of air, water and soil emissions to the atmosphere, which are considered to be one of the main environmental concerns. The main emissions of fossil fuels are SO_2, NO_x, particles, heavy metals and greenhouse gases such as CO_2 [1]. Due to the results achieved during the study of Kosovo coal, we can draw the following conclusions: Kosovo's coal contains a high percentage of moisture, about 44.5%; the composition of the inorganic substance is approximately 21.6%, while organic coal substances contain a high percentage of oxygen, about 32.73%; The amount of oxygen present in the form of functional groups is: 25.37% carboxyl, 26.91% hydroxyl, 11.73% ester and 35.89% etheric (from differences), characteristic of new lignite coal [2].

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On the other hand, it is well-known that nuclear power plant (NPP) produces relatively low air or water pollution. Replacement of fossil fuels for power generation, with nuclear power plants can prevent adverse effects in human health that may result in most deaths attributed to electricity generation. Free energy increases productivity and economic growth. As the cost of electricity decreases, the rate of deployment increases. Transition develops faster and benefits are delivered faster [3]. The object of nuclear power technology is to control nuclear reactions so that energy is gradually released as heat. As well as in the case of fossil-fueled plants, the heat produced by the nuclear power plant is used to boil water and produce steam that then move conventional turbo-generators. Nuclear power plants are large power plants that generate power up to 1400-1500 MWe [2]. In the 21st century, our societies need to address a global energy challenge: meeting the tremendous and growing energy needs by facilitating global climate change and environmental conservation [4].

Fig. 1 *Coal fired- Power Plant "Kosovo A" and Power Plant "Kosovo B" in Obiliq-Kosovo*

Nuclear power has accelerated a very rapid development of the technology in general. Science dealing with nuclear reactor research is nuclear science in which one may divide into nuclear physics, nuclear chemistry and nuclear technology [5]. Nuclear energy is the energy found in the nucleus of an atom. Two nuclear processes can lead to energy release from the nucleus, namely; fission and fusion. Nuclear fission is the fragmentation of atomic nucleus, and nuclear fusion is the atomic nucleus joining. The products of both processes, fusion and fusion are the -release of enormous amount of energy [2].

The present study is based on the implementation of Nuclear Technology instead of that of the Heat Technology with the fuel of the so-called Lignite Power Plant. A nuclear reactor is designed to reduce the nuclear separation process so that energy is released in a controlled manner. The released energy from the fission is used to generate vapor, the vapor rolls the steam turbine, while the nutrient bars containing the isotopic uranium $^{235}_{92}U$ are immersed in liquid water which is kept under pressure of 70 to 150 atm. Water serves two purposes: as a neutron moderator for neutron slowing down and as a reactor coolant. As a heat transfer medium, water under high pressure, being overheated from the separation reaction up to 300˚C is pumped to a heat exchanger that converts cold water to steam. The storage of a nuclear reactor has received great attention these days. In the reactor that is in operation the fuel elements contain the bulk of the inventory of the total activity. A large number of barriers have been created to prevent of air-leakage products. Fuel is fitted into cladding tubes that have high resistance to corrosion and abrasion and low neutron absorption. For instance, cladding tubes have heat conduction coefficient to transfer the produced energy to coolant medium. Simultaneously, the primary coolant of the PWR reactor is surrounded by thick steel walls, forming a second protective barrier. Coolant water absorbs some of the biologically hazardous isotopes like iodine and so on. Steel and concrete of the building serves as the third defence barrier [6].

2. Materials and Methods

2.1. Capacity of coal fired- power plant "Kosovo A"

The power generation division consists of coal fired-power plants "Kosovo A", "Kosovo B" and chemical separations, located in the Kastriot district, about 8 km from Pristina, the capital of the Republic of Kosovo. The "Kosovo A" power plant consists of five working blocks known as A_1, A_2, A_3, A_4 and A_5. Block A_1 of this power plant started working in 1962 with a power of 65 MW, A_2 in 1965 with 125 MW power, A_3 in 1970 with 200 MW power, A_4 in 1971 with 200 MW and A_5 power in 1975 with a power of 210 MW. The A_3, A_4 and A_5 blocks are functional. Under the current plan, two blocks are used, while one of them is "hot" because of their low readiness, which is due to their age. Blocks A_1 and A_2 are decommissioned, with no defined status, and according to current plans they will remain so until their decommissioning is expected to be completed together with other units. The annual output of electricity from Thermal Power Plant (ThPP) Kosovo A is about 1500 GWh [7]. According to statistics, Kosovo A power plant has produced 2 million KWh during the year 2017.

2.2. Capacity of coal fired power plant "Kosovo B"

Power Plant Division "Kosovo B" consists of two generating units known as units B_1 and B_2. The project and design of this power plant was made by a European company that at that time was called "Stein Industry". The main equipment of this power plant is also produced by well-known European companies: The steam generator (Boiler) is produced by the company "Stein Industry" with the following characteristics: Production of steam 1000 t/h with pressure of 186 kg/cm², Pressure designed 226 kg/cm², hot air temperature 542°C, re-hot steam temperature 542°C - Turbine generator (Turbine) from Man company that has been transferred these days to Alstom GmBH and Electric Generator from Alstom Power Service from France. Control and command system (DCS - P320) is also from Alstom Power Service company from France. The first unit (B_1) of this power plant was commissioned on 10.09.1983 with a power of 339 MW, whereas, the second unit (B_2) of this power plant was released at work on 14.07.1984 with a power of 339 MW. Both units are operational and have an annual availability of 85%. Each of these units lasts more than 7200 hours of work within a year. With the investments that have been made over the last decade and that are constantly being done in this power plant, the condition of the units was significantly improved, with the unplanned outages largely diminished. The two units are in a high technical readiness, as opposed to having an age of more than 30 years. From 2005 to 2015 this power plant on average generates annual output in the generator of about 3 750 000 MWh. In 2013, this power plant has achieved record production in its history since its start-up, the power production amounts to 4 196 314 MW [8]. During 2017, the Kosovo B coal power plant produced 3.3 million MWh electricity.

2.3. Coal mining in hade Obiliq, Republic of Kosovo

The use of coal (lignite) from the Kosovo basin as in Fig. 2 with the underground method started in the village of Hade, Municipality of Obiliq in 1922. Initial production in this year was symbolic with a total of 1 700 ton per year. Initially, coal production and energy capacities were mainly used for Trepca mine requirements, while in subsequent years the mines were production capacities, as in 1948 the output of 250 000 ton / year was noted. Coal exploitation in this mine was completed in 1966 when the separation facility was burned. In this mine, a total of 6 396 434 tons of coal were used. "Dardhishta" Obiliq mine, in this coal mining mine started in 1948 with an initial capacity of 4 899 ton per year. "Zgafella e re" mine in Mirash, Obiliq, in this mine the coal exploitation started in 1955 and lasted only 2 years until 1956 due to the opening of the surface mine in Mirash. The initial capacity were 26 496 tons per year. In year 1956, 63 658 tons were produced. In this mine total 90 127 tons of coal were used. Underground mine "Babush" Lipjan, in this mine the coal exploitation started in 1955. Initial capacity was 700 t. Coal exploitation in this mine was occured until 1993. Kosovo Energy Corporation has produced more than 8 million tons of coal only during 2017.

Fig.2 *Coal reserves in the Republic of Kosovo: 1) Kosovo Coal Basin with 10 billion tons, 2) Dukagjini coal basin with 2.5 billion tons, 3a) Polac coal field with 60 million tons, 3b) Drenas coal field with 30 million tons [9]*

2.4. Uranium as the main raw material for the production of electricity

Although it was known since 1789, the Uranium until the Second World War almost practically had no practical use. This element was not used for anything, while some of its compounds were used as dyes in the ceramics and glass industry. Only uranium mineral is used to obtain radium and that since 1900. Indeed, the uranium isotopic $^{235}_{92}U$ uranium that 0.72% content in natural uranium serves as a direct fission material, while the uranium fertile uranium isotopes ^{238}U (99.27%) serves as a fissionable material. The method for obtaining the uranium depends not only on the type of mineral, but also on the content of uranium in the mineral. Because of the extraordinary importance, uranium is also gained from the very poor raw material. Therefore, many methods have been developed today for the acquisition of uranium, which are distinguished by their nature by the nature of the concentrate from the gemstones [10]. The high volatility of UF_6 (sublimates at 57°C) along with the existence of fluoride in a single isotopic form is considered for the use of this composition in the separation of uranium isotopes through gas diffusion or centrifugation [11]. Nuclear power plants require about 3-5% of nuclear fuel $^{235}_{92}U$ while nuclear weapons are more than 90% $^{235}_{92}U$ [12].

Fabrication of commercial light-water reactor fuel consists of the following three basic steps: the chemical conversion of UF_6 to UO_2 powder, a process that converts UO_2 powder to small ceramic pellets, and a mechanical process that loads the fuel pellets into rods and constructs finished fuel assemblies. The enriched UF_6 is transported to the fuel fabrication plant, where it is converted to uranium dioxide powder as in Fig.3. This powder is then pushed to form small fuel cartridges, which then become heated to make a strong pottery material, then inserted into thin tubes to form fuel rods. These fuel rods are then grouped together to form fuel stations, which are several feet long. [13] This is a very suitable method for the production of pure uranium for the production of future nuclear energy in Kosovo.

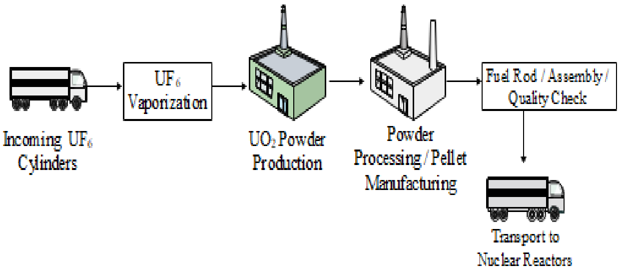

***Fig. 3** UF_6 processing steps up to the appropriate material for nuclear power generation [13]*

2.2 Work with nuclear reactors for the future of nuclear energy in Kosovo

2.2.1 Nuclear reactor safety system

During the reactor's operation, a small number of radioactive compounds will inevitably be released. The total exposure of people living in the area around is usually a small part of the font of natural radiation. Serious problems arise with the radioactivity that comes off when fuel pipes are damaged and safety equipment does not work. In this case, the radioactive contaminants pass into the cold and if the cooling system is damaged, the radioactive products are dispersed in the reactor building. The reactor safety system is based on processed equipment to monitor their condition and control the safety system used to shutdown the reactor in unusual circumstances. A safety system injects neutron poison snow into the coolant in order to absorb the neutrons and stop the chain reaction to proceed further, leading to the reactor shutdown. This is a necessary part of the PWR project. Reactors working generally with light water have high pressure refrigerant. In case of breakdown of the pipes, a large part of the coolant will come out as a vapor and the cooling of the coil will not be realized. To avoid the loss of total cooling of the coil, the reactor is equipped with an emergency cooling system for the coil, which is put into operation if pressure drops on the primary coolant. If there is a defect of a steam inside the building as a result of damage to the primary coolant line, then the spray coolant is activated to condense the vapor stream and to avoid pressure in the building [6]. For the water supply the nuclear reactor needs a large amount of water. This amount of water will be taken from the Gazivoda lake and the alternative option is to supply Albania's Adriatic Sea by removing the salt from the water and by bringing the pipeline into the nuclear reactor to produce steam. Cold water should work all the time to cool the reactor heat pipe, see Fig. 4.

2.2.2 Enriched uranium-235 fuel

A nuclear reactor is powered by enriched $^{235}_{92}U$ fuel as shown in Fig.5a and Fig. 4. Fission (splitting of atoms) generates heat, which produces steam that turns turbines to produce electricity. A reactor rated at several hundred megawatts may contain 100 or more tons of fuel in the form of bullet-sized pellets loaded into long metal rods that are bundled together into fuel assemblies. PWRs contain between 150 and 200 fuel assemblies. BWRs contain between 370 and 800 fuel assemblies. After about 6 years, spent fuel assemblies-typically 14 feet (4.3 m) long and containing nearly 200 fuel rods for PWRs and 80–100 fuel rods for BWRs are removed from the reactor and allowed to cool in storage pools for a few years. At this point, the 900-pound (409-kg) assemblies contain only about one-fifth the original amount of ^{235}U. Commercial light-water nuclear reactors store spent radioactive fuel in a steel-lined, seismically designed concrete pool under about 40 feet (12.2 m) of water that provides shielding from radiation. Water pumps supply continuously flowing water to cool the spent fuel. Extra water for the pool is provided by other pumps that can be powered from an onsite emergency diesel generator. Support features, such as water-level monitors and radiation detectors, are also in the pool. Spent fuel is stored in the pool until it can be transferred to dry casks on site as shown in Fig. 5b or transported off site to a high-level radioactive waste disposal site [13].

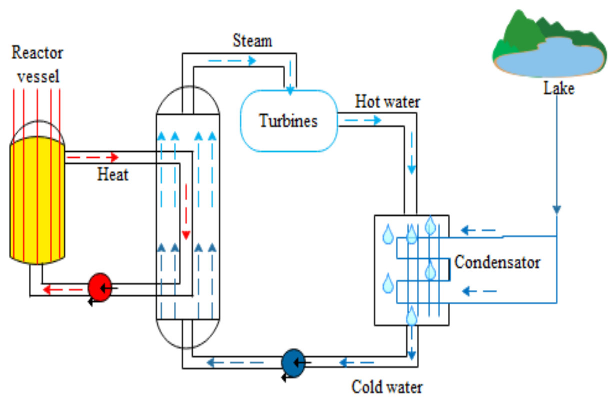

***Fig. 4** A typical schematic PWR reactor coolant system*

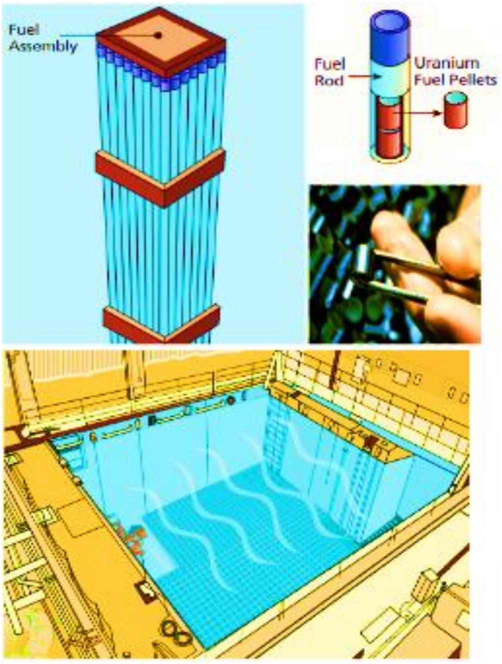

Fig. 5 a) *Fuelled tanks ^{235}U and **b)** Fuel discharge into water as radioactive waste [13]*

2.2.3 PWR nuclear reactor

In PWR reactor, the so-called pressure water reactor (PWR), as seen in Fig. 6, the cold water works at about 150 atm pressure. The water is pumped into the reactor and heated to 325°C. These types of reactors have about 82 tons of oxide-uranium introduced into high corrosion-resistant pipes [6]. Steam never enters the reactor room, it is not radioactive. US nuclear reactors, which are generally of the type of pressurized water, use uranium enriched as fuel and ordinary water as a slowdown. Canada also uses pressurized water reactors, but also uses heavy water and natural uranium [15]. In a typical design concept of a commercial PWR, the following process occurs: 1) The core inside the reactor vessel creates heat, 2) Pressurized water in the primary coolant loop carries the heat to the steam generator, 3) Inside the steam generator, heat from the primary coolant loop vaporizes the water in a secondary loop, producing steam, 4) The streamline directs the steam to the main turbine, causing it to turn the turbine generator, which produces electricity. The unused steam is exhausted to the condenser, where it is condensed into water. The resulting water is pumped out of the condenser with a series of pumps, reheated, and pumped back to the steam generator. The reactor's core contains fuel assemblies that are cooled by water circulated using electrically powered pumps. These pumps and other operating systems in the plant receive their power from the electrical grid. If offsite power is lost, emergency cooling water is supplied by other pumps, which can be powered by onsite diesel generators. Other safety systems, such as the containment cooling system, also need electric power. PWRs contain between 150–200 fuel assemblies [13].

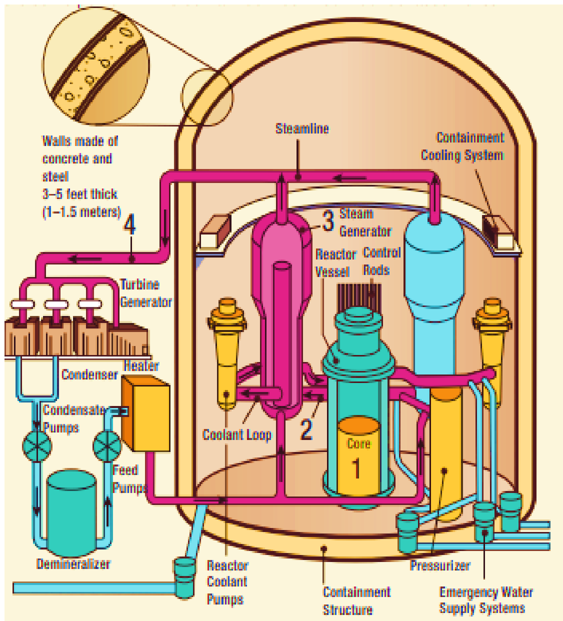

Fig. 6 *Nuclear reactor PWR [13]*

2.2.4 PWR nuclear reactor safety system

While nuclear power plants are designed to be safe in their operation and safe in the event of any malfunction or accident, no industrial activity can be represented as entirely risk-free. Incidents and accidents may happen, and as in other industries, what is learned will lead to a progressive improvement in safety. Those improvements are both in new designs, and in upgrading of existing plants. The long-term operation (LTO) of established plants is established by significant investment in such upgrading. The safety of operating staff is a prime concern in nuclear plants. Radiation exposure is minimized by the use of remote handling equipment for many operations in the core of the reactor. Other controls include physical shielding and limiting the time workers spend in areas with significant radiation levels. These are supported by continuous monitoring of individual doses and of the work environment to ensure very low radiation exposure compared with other industries [16].

2.2.5 Internal control of the nuclear reactor through technological instrumental methods

In the last decades, many advanced measuring devices and techniques have been widely applied in nuclear installations. The fundamental aim of an efficient regulatory emergency preparedness and response system is to provide sustained emergency readiness and to prevent emergency situations and accidents. But when an event occurs, the regulatory mission is to mitigate consequences and to protect people and the environment against nuclear and radiological damage. The regulatory emergency response system, which would be activated in the case of a nuclear and/or radiological emergency and release of radioactivity to the environment, is an important element of a comprehensive national regulatory system of nuclear and radiation safety [17]. In this section, nuclear power reactors measurement methods are discussed. Here measurement methods include indium foil methods, solid state nuclear track detection, time-of-flight technique, microwave propagation methods, optical dosimetry, accelerator mass spectrometry, gamma spectrometry and swept wavelength interferometry, and so forth. These measurement methods can be used to measure neutron flux, reactor fission rate, absolute energy of cold neutrons, radiation field intensity, electronic excitation dose rate, atomic displacement, thermal neutron flux, and volatile fission [18].

2.2.6 Control the industries using proportional–integral–derivative (PID) controlers

Proportional–integral–derivative (PID) controllers are widely used in various industries including nuclear facilities. Therefore, various methods of PID gains tuning have been developed and several methods have been used to optimize these gains for load-following in the nuclear power plants. Intelligent methods, such as fuzzy logic, were adopted at the forefront of these efforts. A comparative study of fuzzy, PID, and advanced fuzzy controls to simulate a nuclear reactor operation based on the experimental data. A fuzzy-PID controller has been designed and optimized to control the nuclear reactor power and to use the genetic algorithm to improve the “extending” precision. Their simulation results demonstrated good performance of the fuzzy-PID controller. The water level control of a PWR was investigated which was based on radial basis function neural network and PID controller. The results showed remarkable robustness, adaptive ability, and higher control accuracy of this method has used a physical approach to design proportional–derivative (PD) power-level control for a PWR [19].

The best-known controllers used in industrial control processes are proportional-integral-derivative (PID) controllers because of their simple structure and robust performance in a wide range of operating conditions. However, the PID controller, being linear, is not suited for strongly nonlinear systems. Fuzzy Control is often mentioned as an alternative to PID control. Most fuzzy controllers used in the industry have the same structure as incremental PI or PID controllers. The parameterization using rules and fuzzy membership functions makes it easy to add nonlinearities, logic, and additional input signals to control law. Therefore, in recent years, fuzzy logic controllers (FLC), especially Fuzzy PID controllers have been widely used for industrial processes owing to their heuristic nature associated with simplicity and effectiveness for both linear and nonlinear system [20].

2.2.7 The impact of nuclear reactors on environmental issues

Attempts have been made to assess the environmental impact of nuclear power not only based on emissions, but also considering ionizing radiation from nuclear waste. However, even if a serious nuclear accident can cause considerable damage to humans and other living organisms for a very long time period, the impact on the overall assessment is minor given the fortunately limited probabilities (whether calculated or based on radiation damage statistics) for such accidents [21]. There are many environmental benefits arising from the generation of electricity from nuclear power. These are accompanied by a minimal detrimental environmental impact, which is strictly regulated and monitored to a far greater degree than any other comparable industry. Because it does not produce greenhouse gases or acid rain emissions, the generation of electricity from nuclear energy is a vital component of a sustainable energy future for our planet [22]. At local and in some cases even at regional level, the environmental aspects of energy production and use have become of paramount importance, serving as warnings of what could be in store on a wider scale if serious consideration is not given to the environmental implications of man's demands for energy. Although nuclear power stations do not emit fly-ash or noxious gases into the atmosphere as fossil-fuel-operated plants do, the radioactivity released from the products of nuclear fission has been the main focus of public concern about the expansion in the use of nuclear power despite the stringent control measures and precautions take [23].

In the Republic of Kosovo, the construction of a nuclear reactor in the future would protect the environment from carbon monoxide and heavy metals as well as ash dump from coal burning would not exist. Kosovo as a state on the territory of Europe is a major challenge with environmental pollution.

2.2.8 Wastes generated by the nuclear reactor and their management

Radioactive (or nuclear) waste is a by-product from nuclear reactors, fuel processing plants, hospitals and research facilities. Radioactive waste is also generated while decommissioning and dismantling nuclear reactors and other nuclear facilities. There are two broad classifications: high-level or low-level waste. High-level waste is primarily spent fuel removed from reactors after producing electricity. Low-level waste comes from reactor operations and from medical, academic, industrial, and other commercial uses of radioactive materials [24].

After being removed from the reactors, used nuclear fuel bundles are stored for 7 to 10 years in storage bays (pools of water), which provide cooling and shielding against radiation. The pools for the used nuclear fuel are constructed in-ground and are seismically qualified (which means they are built to meet seismic standards for earthquakes. They are housed in buildings that are separated from the reactor buildings. The walls and floors of the pools are about two meters high and made of concrete reinforced with carbon steel. Robust, heat-resistant and water-tight liners are installed in the pools to prevent water from leaking through possible defects in the concrete. The pools are inspected regularly, under the supervision of Canadian Nuclear Safety Commission (CNSC) specialists. Since the accident in March 2011 in Fukushima, Japan, all nuclear power plant operators in Canada have acquired additional transportable equipment (such as portable generators and pumps) to ensure that pools can be filled with water, regardless of an accident's severity. Operators have also installed special devices in the fuel pool buildings to remove hydrogen from the air without the need for external power. These devices effectively reduce the risk of an explosion or fire from hydrogen build-up, which may occur during an accident [25]. We know that Kosovo as a country is not the home of nuclear reactors, however in cooperation with experts from other friendly countries can manage the post-reactor work well in the future. This can be accomplished with a high concentration, as Canada still works as a powerful state. Regarding the cost of waste processing, it is difficult to set a value because it depends on the annual amount of electricity produced by nuclear reactors. During the year there are time periods that more electricity is produced, while in another period of time less electricity is produced. It is important for us to be able in the future to manage radioactive waste.

2.2. 9 The monetary value of construction of the nuclear reactor

The industry has failed to prove that things will be different this time around: soaring, uncertain costs continue to plague nuclear power in the 21st century. Between 2002 and 2008, for example, cost estimates for new nuclear plant construction rose from between \$2 billion and \$4 billion per unit to \$9 billion per unit, respectively, according to a 2009 UCS report, while experience with new construction in Europe has seen costs continue to soar [26].

3. Discussion

Electricity price in the Republic of Kosovo is almost the highest in the region compared to other Balkan countries. During the day the electricity price is € 0.07 per KWh while at night it is € 0.03 per KWh. If we compare electricity prices with other developed countries, especially the US, the price of electricity per KWh from coal fuels is very low around \$ 0.021, if electricity is produced with gas then the cost per KWh is about \$ 0.0751, as well as the production of diesel electricity at a cost of \$ 0.0809 KWh. These prices were taken from the commission's report on electricity in the US as the average of the price of electricity from burning various fuels for electricity generation during 1995-2005 [27].

3.1 Analysis of the results for the profitable future of clean energy nuclear reactors in Kosovo

With a full burn or fission, approximately 8 kWh of heat can be generated from 1 kg of coal, approximately 12 kWh of 1 kg of mineral oil. About one kilogram, ^{235}U contains two or three million times equivalent energy to petroleum or coal. Natural uranium 1 kg - after a corresponding enrichment and used for energy generation in light water reactors - corresponds to almost 10 000 kg of mineral oil or 14000 kg of coal and enables the production of 45 000 kWh of electricity [28]. After solving several different equations, we concluded that about 264.99 kg ^{235}U / year are needed for production of 5 300 000 000 KWh / year, see Fig. 3 to obtain this amount of pure uranium about 8832 kg UF_6 are needed. With the amount of Uranium (U92) one can earn no more than 91 160 000 € if it is calculated with the USA electricity price from nuclear power plants which reaches the average value of 0.0172 kWh per €.

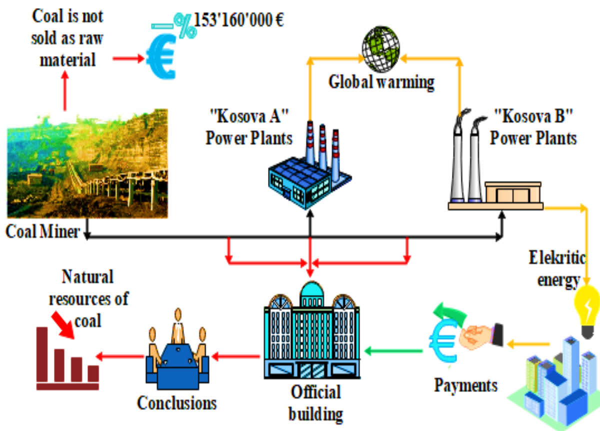

Fig. 7 *Use of coal as fuel for the production of electricity from the power plant and coal resource losses calculated on the monetary issue*

In comparison to the income from the power plants "Kosovo A" and "Kosovo B" a nuclear power plant can be more profitable as one can see in Fig. 9. The main priority for the future nuclear power plants to be constructed is to use the minimum amount of fuel is required to produce electricity (Fig. 8), as long as fossil fuels are fully associated with air pollution.

Non using coal as fuel for producing electricity but trading it instead in various industries, may lead to enormous profits for the state of Kosovo; Kosovo's state may invest in various sectors to develop the industrial economy state, as well as in the private sector, see Fig. 9. However Kosovo should produce about 8 000 000 tons of coal costing € 418 160 000 to produce 5 300 000 000 kWh/year which leads to the conclusion that from generation of electricity annual gains are around € 265 000 000 see Fig. 9. This study it is proves that € 153 160 000 of coal value are lost every year, Fig. 7 shows detailed information of how coal as natural resource is being exploited little by little by producing electricity from power plants. As a result of the high price of electricity, foreign investors don't demonstrate any investment interests in Kosovo and this creates a possible barrier to unemployment. The operation of the nuclear power plant will open the way for coal trading see Fig. 8 and Kosovo will earn about € 400 000 000 only from coal; see Fig. 9.

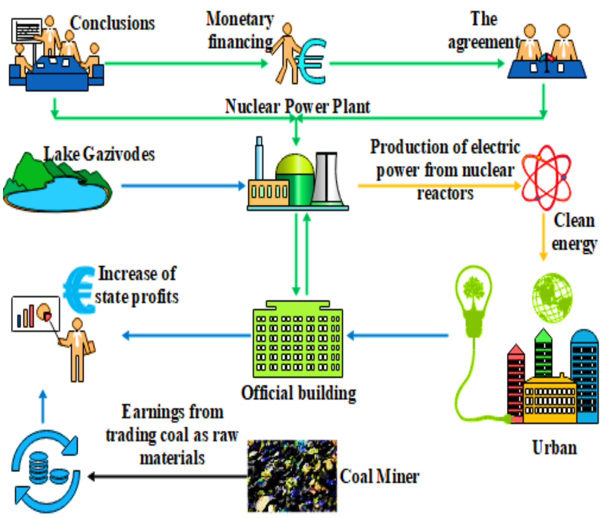

Fig. 8 *Description of nuclear power plant construction diagram and analysis of profitable results from nuclear energy*

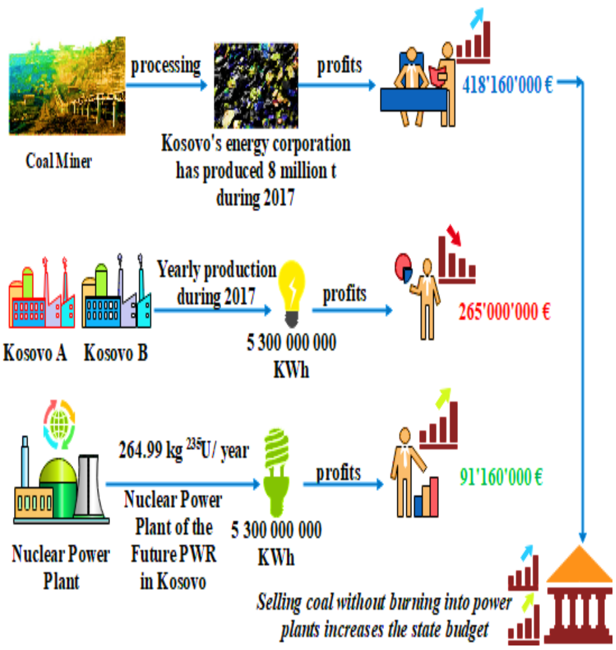

Fig. 9 *Monetary study of electricity generation from the power plant and nuclear power plant by forming roads for the direct sale of coal as fuel*

4. Conclusion

The key factor that has led us to explore this field is the construction of a nuclear power plant in the future by replacing the "Kosovo A" and "Kosovo B" power plants as the biggest polluters in the Balkans. Power plants in the Obiliq municipality are contaminating heavy metal soil passing through underground waters and large electricity production is releasing a large amount of carbon monoxide (CO) and nitrogen oxides (NO_x). These pollutants are causing enormous problems for residents living in those regions, therefore half of the population could face are having problems with their frying organs due to various diseases caused by heavy metals that are released into the atmosphere. More than 80% of the land in Obiliq where "Kosovo A" and "Kosovo B" plants are located are not fertile, serious contamination by heavy metals. Wastes from the aforementioned power plants are causing a great risk to the offspring because the so-called Mirash landfill is contaminating almost all groundwater with heavy metals which are including carcinogenic organic compounds. A nuclear power plant could not possibly lead to a conflict with other countries, and would certainly lead to the economic development of the country and the improvement of the living standard of its citizens and would certainly lead to the economic development of the country and the improvement of the living standard of its citizens. This can also be assumed by various statistics and calculations, according to which the Republic of Kosovo is losing more than 153 160 000 € coal per year. On the other hand, the last 18 years Kosovo lost about 2.7 billion euros. Why Kosovo as a state lost so much money? Due to the lack of gas or oil resources in Kosovo, that could replace coal as a fuel. During the past, several studies that had been performed in the region of ex-Yugoslavia, could not accurately predict the numerous negative consequences in the environment, the public health and the economy of the country, caused by the extraction and usage of fossil fuels in power generation. Consequently, the construction of nuclear power plants to produce electric power in the future, may be considered as the vital solution to the prosperity and long living of people of Kosovo.

Conflict of Interest

The authors have no conflict of interest.

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