

## The polish proposal for environmental protection

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### Cleaner production and biotechnology

#### ABSTRACT

**Purpose:** The article presents the type of environment-related problem, and discusses the development of the concept of the sustainable development from the perspective of the international law. Over the past two hundred years, the mankind has exploited more than 50 percent of all natural resources, including energy minerals. The twenty-first century will be, out of necessity the period of intensive development of energy based on renewable resources. The protection of the environment is a global issue which requires to be specially safeguarded by the international law.

**Design/methodology/approach:** The average geothermic gradient for the Earth's crust (30°C/1km) can give us 10-20 MWe as a result (electrical energy) from one deep borehole heat exchanger. The value of electrical energy may be increased by introduction of a binary system with low-boiling medium into the energy system.

**Findings:** Geothermic power plant of high capacity characterized by the fact that the steam superheater section, which is traditional in a conventional power plants, is replaced by the system of heat exchanger in the form of u-tubes with a single length ranging from 1000 meters to up to several thousand meters, initially placed in a metal casing with a transition to the rock layers of high temperature.

**Research limitations/implications:** From the hot rock mass we can collect renewable resources of „dry” ascending energy from the paleo heat flow coming from the great nuclear furnace - the magma.

**Practical implications:** The subject invention is the use of geothermic energy using a closed water cycle in heat exchangers, made of high-temperature creep resisting steam superheater steel tubes or titanium pipes. Thermal energy of water vapour, which is obtained in this way, is transformed into mechanical energy in the turbine, powering the generator.

**Originality/value:** The role of a condenser can be fulfilled by a cascade system of thermal energy utilization (heat engineering, production of drinking water through desalination process, horticultural greenhouses, recreation, water pools, balneotherapy, heating sport fields, runways at airports and other transportation hubs).

**Keywords:** International law; Environment; Sustainable development; Geothermic power plants; Geo-technical borehole; Heat exchanger

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## 1. Introduction

The protection of the environment is a global issue which requires to be specially safeguarded by the international law. Today, it would be difficult to maintain that it is a matter of a local dimension only. It goes without saying that the world forms one ecosystem, which is global and has no boundaries. The protection of this ecosystem obviously requires close cooperation. Nowadays, the ecological safety, which is a value of its own, should be given the same treatment as life, health or peace. Therefore, the struggle to maintain peace and the respect for the right to live in peace should be treated together with the right to live in a clean and healthy natural environment [1]. The fast growing pollution of the environment contributed to the fact that the protection of the environment has become the topic for mutual discussion not only for scholars but politicians as well. It is a great challenge for the international community to safeguard the environment [2]. The activities to be undertaken in this respect should make use of the international law broadly conceived. The international law for the protection of the environment regulates preventive action undertaken to reduce pollution, and it makes the right and duties of the subject regarding the environment precise. The significance attached to the issue of protection of the environment, and the environment itself, results from the fact that these problems belong to the canon of the human right legislation [3].

The global policy for the international environmental law is formed on the basis of the international agreement, convention, arrangements and resolutions made by international organizations. More and more frequent are the situations when local problems concerning one country only, due to various environmental interactions, transform into global problems. It turns out the activities undertaken by one country, even if they totally fall under the domestic jurisdiction, may have a harmful effect on other countries, or other international territories. Individual ecological damages after some time accumulate and lead to global consequences. It is the policy of a given country, and its law-making constitutional organs, that play a decisive role in the prevention of such damages and holding the guilty responsible for them. The relevant regulations are contained in the domestic law, the community law, and international law [4].

## 2. Environment as the object of legal protection

The Polish definition of the environment comprises the elements identical to those found in the documents of the European as well as the international law. The notion of „environment” is understood as the totality of natural phenomena, including those transformed by human interference, in particular that directed at the surface of the earth, water, air, landscape, and climate. This concept also comprises the transformation caused by mining activities, as well as other diverse biological elements and the interactions among them [5].

In 1969, in his report on the state of the human environment presented to the UN General Assembly, the UN General Secretary U Thant included into this notion both the physical and biological

surroundings of human beings, regardless of the fact if they are of natural character, or if they are the result of human activity [6]. The Stockholm Declaration of 1972 [7], however, makes the notion of the environment more precise. It incorporates in the concept not only the natural elements, like the earth, and its resources, air, and the living organisms, but also the elements created by human beings, such as working and living conditions, food, clothing, science, education, hygiene and health in particular.

## 3. General assumption of the environmental law of the European Union

The protection of the environment is one of the targets set in the European Union and the European Community treaties. In the Treaty establishing the European Community, the aims and tasks of the Community are provided for in Article 2. This article points out to the necessity to protect and improve the quality of the natural environment. Article 3 [2] states, among others, that the tool to realize this aim is the environmental policy. The Treaty on the European Union, however, makes reference to the issue of the protection of the environment in the preamble only. Article 8 of the Treaty states the will to support the activities leading to the protection of the environment, and present it as one of the motives of signing this agreement. This fact, however, due to the three-pillar construction of the European Union of which the Community was one (e.g. before the Treaty of Lisbon), does not diminish the significance of the environmental activities which figure prominently on the agenda of the EU [8].

Assuming that the objectives of the Union as the Treaty on the European Union comply with those set in the Treaty on the Functioning of the European Union, one can say that the general aims of the Union which are of social, economic, and political character, stipulate, each and every one of them, high level of environmental protection. This is in compliance with the integration rule as set out in Article 11 of TFEU.

The legal character of the European Union task and objectives is made clear by the judicial decisions of the Court of Justice of the European Union, which demonstrate that the regulations concerning the tasks and objectives of the Union are not just of a general type, but are legally binding.

In light of those regulations, one can name three main aims which ensue from the original European Union environmental law:

- high standard of the protection of the environment;
- improvement of the quality of the environment;
- permanent development of Europe and the Earth.

These aims were made more specific in Article 191 of TFEU which states that the EU policy towards natural environment shall lead to the realization of such objectives as the following:

- preservation, protection and improvement of the quality of the natural environment;
- protection of human health;
- careful and rational exploration of the natural resources;
- international promotion of the methods used to solve regional

and international environment-related problems, in particular those concerning the climate change;

- high standard of the protection of the environment with particular consideration given to the diversity of situations which may occur in various regions of the EU [9].

The above mentioned objectives are likely to be successfully realized in practice provided that the energy safety is secured. Only then may one expect that the requirements of the international agreements on the preservation of clean air, earth and water (including drinking water) signed by the Republic of Poland can be met [10].

Today, international environmental agreements are acquiring more and more significance as they provide the basis for the environmental law. It has to be added that there is a great number of various international environmental agreements in use at present.

#### **4. Activity undertaken by the European Union towards sustainable development**

Both the Treaty on the European Union, and the Treaty on the Functioning of the European Union - in the modified version of the Lisbon Treaty - mention the environment-related problems, namely, sustainable development of Europe and the sustainable development of the Earth. The term „sustainable growth” which occurs in a similar context in the text of the Maastricht Treaty, has been criticized and abandoned. It has been replaced by „sustainable development” deemed more useful, and better-known to the international legal community, since it can be found in such documents as the so-called Brundtland Report (the Report of the World Commission on Environment and Development), and the Rio Declaration on Environment and Development [11]. It has to be stressed that the targeted sustainable development is difficult to define, and the closest to grasp the content of this notion is the Brundtland Report, according to which it is a kind of development which satisfies the needs of the present day generations without having to sacrifice the needs of the future generations [12].

The international environmental law is claimed to be one of the fastest-developing areas of the international law. Therefore, more and more attention is being paid to the question related to the sustainable development [13]. Sometimes, the sustainable development is also called eco-development, ecological development, permanent development, integrated development or sustainable growth. This causes terminological confusion, and the way to sort it out is to reach for the definition as it occurs in the UN norms and documents. It reads that by sustainable development of the Earth is meant such a development which satisfies basic necessities of all mankind, and preserves, protects and restores the healthy condition and integrity of the ecosystem of the Earth without menacing the possibility to satisfy those needs for future generations, and without going beyond the capacity of the ecosystem in a long term period of time [14].

Sustainable development is of great interest to many international organizations, some of which are listed below:

- the United Nations Environment Program (UNEP),
- the United Nations Development Program (UNDP),

- European Institutions such as: the European Parliament, the European Commission, the European Economic and Social Committee.

Sustainable development should be considered an important element of the international law. The most significant international legal documents which discuss the said issue are as follows:

- Agenda 21,
- The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters.

In Poland, the principle of sustainable development has been raised to the rank of the Constitution. It can be found in Article 5 of the Republic of Poland Constitution, and the definition of the sustainable development is included in the Environmental Protection Act. According to it sustainable development is understood as a social and economic development which contributes to the integration of political, economic and social activities, alongside the preservation of the balance of nature and the basic natural processes in order to guarantee satisfaction of basic needs for different communities and individuals of both contemporary and future generations [15].

Still, one of the major challenges for the governments and the international community is the problem of how to balance the economic development and the protection of the environment. This problem sheds light on conflicting interests which are generated in the situation when the interest of individual, sovereign states attempt to meet the requirements of the international law, the community law, and the majority of the internal environmental laws.

The European concepts of the sustainable development should be linked to the implementation in the regional localities of the regulations brought into existence by the international conferences (The Stockholm Declaration, The Rio Declaration, the Johannesburg Declaration). What also proves to be crucial is the cooperation on the local level and the internal policy towards the EU. The European concept of the sustainable development is based on the environmental policy established on the territory of the EU, that is: the first Environmental Action Program - EAP (1973-1976), the second EAP (1977-1981), the third EAP(1982-1986), the fourth EAP(1987-1992), the fifth EAP(1992-2000), the sixth EAP(2001-2010). It also makes use of the Lisbon and Göteborg Strategies [16]. The Lisbon Strategy was passed in March 2000, and it became the major economic program for the EU Member States. It aimed at turning the EU into the most economically advanced body. The Göteborg Strategy supplied the Lisbon Strategy with the idea that the sustainable development is to secure a long-term positive vision of the society for the EU - that is to say, the society which is richer, more just and has a clean, safe and healthier environment. The Göteborg Strategy lists possible threats to the sustainable development [17].

The notion of the sustainable development was made more precise during the 70<sup>th</sup> Conference of the International Law Association which was held in New Delhi on 2-6 April 2002. The members of the committee, focusing on the problem of the sustainable development, pointed to the following major characteristic features of the notion [18]:

- sustainable use of natural resources,
- lack of acceptance for the unbalanced consumption and production,

- joint attempts at solving economic and environmental problems,
- just and fair approach to the members of different generations,
- the time factor - since the sustainable development is a process,
- active participation of the public.

The sustainable development has become a basic objective for the EU after it was included into the Amsterdam Treaty as the major aim to be achieved by the EU. In 2001 the EU worked out the strategy for the sustainable development. It specific the objectives leading towards the continuing improvement of the quality of life for the contemporary people and for the future generations. This is to be done by helping to bring into being communities which will develop in a balanced way, and which be able to self-govern and to explore their natural resources in an efficient way. They should also be able to stimulate the ecological and social potential of their local economies. The activities resulting from this strategy were set forth with the time perspective reaching up to the year 2010. They take into consideration the seven key challenges: climate change and clean energy, sustainable transport, sustainable consumption and production, threats to public health, better management of natural resources, social inclusion, demography and migration, as well reducing global poverty. It is not clear if the above-listed aims and activities will be adequate to handle the situation after 2012 when increased climate changes are expected. Then but also during actual time, this strategy is scheduled for revision.

## 5. The strategy for the sustainable development for Poland

The necessity to work out the Strategy for the Sustainable Development for Poland occurred when, on 2 March 1999, the Polish Parliament passed the Resolution which obliged the Government, with the deadline expiring on 30 June 1999, to present a document describing the course for the development of the country in the period up to the year 2025 [19]. The Resolution stresses that the notion of „the sustained development” refers to such a model of the development which insists on the equal treatment of the current needs and the needs of the future generations (...). It also makes it clear that the Parliament expects that the Strategy will link the concern about the preservation of the natural and cultural heritage of the nation to the economic progress and the civilizing process which will be open for participation to all social group. The strategy formulated in this form aims at stimulating the developmental processes in such a way as to reduce the destruction of the environment. That is the reason why it focuses on a gradual elimination of the processes and economic activities which may be harmful to the environment and to the people. It promotes the methods which are „environmentally friendly” and speed up the restoration of the environment wherever it is damaged.

The most general task of the Sustainable Development Strategy for Poland is to maintain the present economic growth at the level of 5%.

The strategy indicates that it will be necessary to take into account the following aspects:

- territorial and ecological safety of the country,
- the country’s sovereignty,
- the state of health and the social well-being of citizen,
- observance of the right and duties as set out the Constitution, respect toward the existing legal order, and the necessity for Poland to comply with the international agreements and declarations ratified by the Government.

The ecospace of Poland is neither as rich as that of Canada, Russia or China, not as limited as that of Switzerland or the Benelux. The access to that space has been systematically reduced for dozens of years, mainly due to the „grab and run” type of economy and a total lack of consideration for the limitations of the environment to absorb more and more human interference. The major task of the Strategy for the Sustainable Development for Poland to be carried out until the year 2025 is to repair the negative effects from the past and to increase the said space [20].

As already mentioned above, the legal ground for the sustainable development for Poland is to be found in Article 5 of the Constitution of the Republic of Poland which reads as follows: „The Republic of Poland shall safeguard the independence and integrity of its territory and ensure the freedoms and rights of persons and citizens, the security of the citizens, safeguard the national heritage and shall ensure the protection of the natural environment pursuant to the principles of sustainable development”.

In addition, the Constitution states in Article 74(1) that „Public authorities shall pursue policies ensuring the ecological security of current and future generations [20].

The notion of the sustainable development was also defined in the above-quoted regulation enclosed in the document entitled “The Law on the Protection of the Environment”, dated 27 April 2001. This regulation states the rules to follow in the process of the protection of the environment and the conditions which allow to explore its resources. Its role is double: firstly, it provides for the general rules for the legal responsibility, introduces fines and penalties; secondly, it provides for the regulations concerning the so-called „law of emission” [22].

The issue of ecological safety was also raised act passed on 18 July 2001 - The Law on Use and Conservation of Inland waters. This regulation introduces the principle of avoiding as much as possible the ecological degradation of water and dependent ecosystems [23].

The aims and priorities of this policy have been consistently carried out throughout the decade. This has given a solid foundation for the implementation of Strategy for Sustainable Development for Poland up to the year 2025. The Ecological Policy of the Polish Government has been a success in several areas. As a result, it contributed to the existence of the following:

- legal basis for the rational use of the renewable, and non-renewable environmental resources and their protection against the economic activity of man,
  - central, regional and local institutions for the management of the environment,
  - economic management of the environment based on the principle that „the user and the polluter pay”, and the „win-win strategy”,
  - reduction of the quality and amount of pollutants and a noticeable improvement of the quality of the environment.
- The Government strategy is being implemented by the

following structures [24]:

- Ministry of Science and Higher Education: R&D Programme: Advanced Technologies for Energy Generation,
- Ministry of Environment: National Programme for Geological Carbon Dioxide Storage,
- Ministry of Economy: Demonstration Programme: Clean Energy Industry Based on Coal,
- EU Flagship Program - ZEP Platform. Post-combustion and pre-combustion technologies with the intention to develop „the Carbon Dioxide Storage” part by 2015.
- „The best energy offering for Poland” in the 21<sup>st</sup> century is considered to consist of:
- Developing the Legnica and Gubin-Mosty deposits which in 3-40 years’ time would support raising the production of lignite in Poland to 100-120 mMg per year and maintaining it at that level for at least 100 years,
- Such a level of lignite production would ensure doubling the current installed capacity of lignite-fired power plants to 15000 or 20000 Mwe,
- Developing nuclear energy.

If all government projections actually materialise, by 2030 Poland will then be forced to buy electrical energy or hard coal equivalent to approximately 50 mMg a year.

## 6. The environmental protection by the future energetic emerging technologies

What constitutes a fair response to climate change is the main question underlying many of the unresolved issues in the climate change debate. It is behind the question of the level of commitments by industrialized countries, the type of participation to be undertaken by developing countries, the structure of the various trading mechanisms, and the nature and magnitude of financial obligations (Farhana Yamin from Kyoto Protocol).

The development of energy technologies is often impeded by „bottle necks” which requires the development and application of basic science and cross cutting technologies. Also real breakthroughs in the energy sector come quite often from progress in basic materials science that underpass energy technologies due to the radical upgrade in the properties of the materials. This topic aims at ensuring a genuine chance for „emerging ideas” to be funded. It is to provide rewards for, high risk/high impact science and to vigorously promote multi-disciplinarily [24].

There are various methods of obtaining renewable energy and various uses for it, but only large capacity energy from geoplutonic formation for power plants with zero carbon dioxide emission could be a full substitute of conventional power plants.

Geothermic Power Plant is a power which uses geothermic energy, i.e. „*the Earh’s thermal energy contained in the magma, rocks, water vapour, gases and water filling rock clefts*”. Over the past two hundred years, the mankind has exploited more than 50 percent of all natural resources, including energy minerals. With such intense economic development of the world and wasteful exploitation of energy resources, there is concern that in

the present century all energy resources as well as most other natural resources of the world will be depleted. After the period of

dominance of coal and steam (the nineteenth century), oil and gas (the twentieth century), the twenty-first century will be, out of necessity, the period of intensive development of energy based on renewable resources. Only those countries which will have access to such energy and which will be able to enjoy the benefits of the Earth uncontaminated by human action, and which will secure required amount of drinking water, will survive and will be able to normally exist.

The proposal presented is a realistic practicable idea for a substitute to system power plants, consisting in the construction of combined heat and power plants using renewable resources of geothermic energy. It represents an endless renewable source of energy coming from nuclear reaction in the Earth’s nucleus, where the temperature reaches 7.000 centigrade (Figs. 1 and 2).

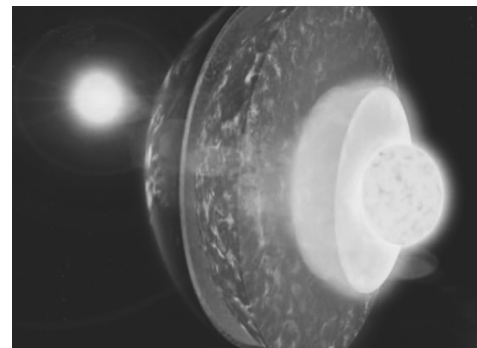


Fig. 1. The Earth as a natural nuclear power station

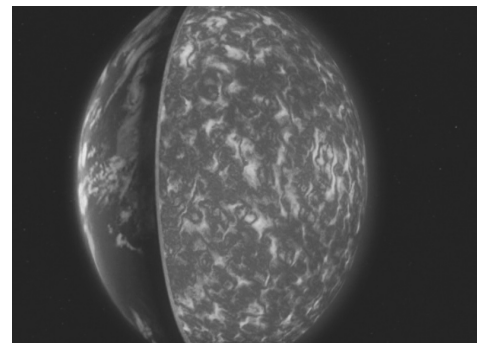


Fig. 2. Magma, the great potential of energy

## 7. Problem statement and theoretical as well experimental background

The presented project is a possible to implement concept of a substitute for conventional energy, involving a construction of power plants that use renewable geothermic energy. This project is a dissenting against nuclear energy, conventional energy based on burning coal or lignite, storage of carbon dioxide in geological reservoirs, or environmentally damaging technology of shale gas exploitation.

Emission-free Geothermic Energy project, depending on the geothermic gradient (*a value specifying the temperature increase*

*In the Earth's crust, accompanied by a unit increase in depth. It is usually expressed in °C attributable to an increase in depth amounting to 1 kilometre. The average geothermic gradient for the Earth's crust is 30°C/1km), and can give us 10-20 MWe as a result (electrical energy) from one deep borehole heat exchanger.*

The value of electrical energy may be increased by the introduction of a binary system with low-boiling medium into the energy system. The value which specifies the increment in the Earth's crust, accompanied by a unit increase in the temperature, is referred to as „*the geothermic degree*” (it is usually expressed in the number of meters per 1°C of temperature increase. *The average geothermic degree for the Earth's crust is 33m/1°C, but there are areas where the degree is a few meters/1°C, as well as areas where it exceeds 100 m/1°C.*

Four to eight heat exchangers (the number of exchanger, in principle, is unlimited, it must take into account the need to control heat offtake), are placed in boreholes with steel casing reaching through the water-bearing geological layers (aquifers), (a pre-requisite for environmental protection) up to the level of crystallites (in Poland it is up to 3200/4000 metres); from which they are driven at the same angle as the casing, in order to achieve the desired depth of the Orogene massif.

The subject invention is the use of geothermic energy, using a closed water cycle in heat exchangers, made of high-temperature creep resisting steam superheater steel tubes or titanium pipes. Thermal energy of water vapour, which is obtained in this way, is transformed into mechanical energy in the turbine, powering the generator.

The problem of selecting a steel for superheaters is analogous to that for piping, at least in respect to resistance to rupture by flow, ductility at rupture, forgeability, weldability and hot oxidation.

## 8. Concluding remarks

The sustainable development has become the main indicate of how to implement the principles for the protection of the environment. It also contributed to the fact that the natural environment is thought in a holistic way. Progressive degradation of the natural environment has given the issue of the environment the world dimension. Attention is being paid to the rational exploration of the environment. This has an impact on the people's frame of mind regarding the environmental issues. This also contributes to the fact that people make an effort to spare the non-renewable resources. In this way, the ecological policy has become an element of the strategy for the sustainable development: it is a policy which protects the environment against bad influence. The law says unanimously that it is the duty of every person, both private and legal, of the state and the government administration in particular, to protect the environment [31,32].

It has to be emphasized that the program for the protection of the environment has become even more imperative due to the fact that individual states are to be held responsible for environmental damages and noncompliance with the obligations ensuing from the treaties on the protection of the environment.

Our proposal presented is a realistic practicable idea for a substitute to system power plants, consisting in the construction of

combined heat and power plants using renewable resources of geothermic energy (hot rocks). Humanity has used thermal energy obtained from the depths and the surface of Earth for a long time. There are various methods of obtaining geothermic energy and various uses for it. It represents an endless renewable source of energy coming from natural nuclear reaction in the Earth's nucleus, where the temperature reaches 7000 centigrade. Mass production of electricity from the Earth's heat possible in Iceland, due to the volcanic nature of those resources and the shallow depth at which they occur was difficult in other countries, due to the high cost of drilling to great depths. This barrier has been overcome by us through using a special drilling technique. The emission free project of Geothermic energy with the temperature of over 250 centigrade from which we can obtain about 30 MPa of pressure on the turbine will give as a result field 10 - 20 MWe from one deep heat exchanger.

The present invention relates to a closed loop, geothermic system for production of clean energy contained in the magma, rock, water vapour, gases and water filling rock clefts.

In course of years, the production of clean energy generated from geothermic sources would increase, and the coal resources could be used in chemical plants to produce e.g. plastic, or in a gasification process for the needs of modern power plants built of coal fuel cells modules.

The natural coal resources should be used in an economical way and saved for future generations, in accordance with the sustained development rule [24-27].

Projects under scientific names: (Geothermic of prof. R.H. Kozłowski and Plutonic of prof. B.M. Żakiewicz), synergic heat extraction, which are coherently supporting each other, for extracting plutonic dry heat from hot rocky formations and utilize it throughly to be beneficial for Nation.

### 8.1. Geothermic (Geo-Plutonic) Energy as a separate vote to traditional CCS of CO<sub>2</sub>

According manager of DIW, Christian von Hirschhausen [28], Capture-Condense-Storage CO<sub>2</sub> Technology, is very expensive and in contrast to 2003 calculation, not 20-25 euro but 100-200 euro per 1 tone of CO<sub>2</sub> storage, we should to pay. In case of this authentic calculation, energetic efficiency fall to 36% from the level of 44%. It stands to reason that Bundesregierung (Germany) to go away from this technology.

Considering the above formulated task as extremely challenging and sophisticated, our group of expert has been encouraging to present the exact solution in form utilizing our technologies as follows:

- CEEC (Complex Extraction of Energy from Coal to get in touch with prof. Bohdan Maciej Żakiewicz technology), integrated with:
- CEEG (Complex Extraction of Energy from Geo-Plutonic sources based on which to achieve:
- Optimizing of capturing and sequestration of CO<sub>2</sub> which is generated by power plants operation with coal products.
- Reducing the generation amount of CO<sub>2</sub> to 100 kg/Mwe.
- Reducing the cost of capturing the CO<sub>2</sub> up to 10% of the current cost.
- Reducing the aggregated cost of energy production and CO<sub>2</sub> capture, to reach the cost of 0.15 euro/kWe.

### 8.2. Geothermic (Geo-Plutonic) Energy as a separate vote to the nuclear energy

An independent group of scientists has found that the global resources of uranium ore will be exhausted in the second half of this century. Even assuming that in the future we will mine deposits of ores containing 0.01% of uranium, this will still not save us from exhausting this fuel in late 2070 [29].

The construction or any proposal for extending nuclear energy generation based on a limited quantity of uranium ore are pointless in the longer term, especially as the cost of constructing a nuclear power plant is only recovered after 30-40 years (if any). The current annual world consumption of nuclear fuel amounts to 79 kilotons for a year, whereas the capacity of mines is around 50 kilotons. The remaining shortage of 29 kilotons is covered with uranium from the nuclear arsenal of the US and Russia [30].

This is the main reason, near the problems of nuclear wastes store, why Germany is moving away from nuclear power generation, even though it had spent an astronomical amount of 6 trillion German marks on this industry. Nuclear power is also useless as a remedy for climate change. The best proof of this is that France, even though it is the only country in the world with such a huge concentration of nuclear power (77.8% of all electricity generated), is still one of the main emitters of GHGs.

### 8.3. Geothermic (Geo-Plutonic) Energy as a separate vote to the lignite and to the hard coal burning

The burning of lignite in the 21<sup>st</sup> century is a common barbarous processing. Our proposal is the Complex Energy Extraction Humine Acid & Methane with use of microbes colonies and subsequent extraction of Energy with use of CEEC technology - from brown coal/lignite. CEEA technology (of Prof. B.M. Żakiewicz) is inducing the microbes into the large field developer by the system of Super Daisy Shaft equipped with multitude of Jet Stringer's through which microbes are delivered to the ore body. The world can be greatly benefited producing larger amount of agricultural products which means larger amount of food.

As a substitute we are planning to put in the motion: Complex Energy Extraction from processing of currently disqualified coal deposits; products: highest quality synthesis gas, high temperature steam, low cost electrical energy, high content of hydrogen, oxygen, nitrogen

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As far as we know a numerous group of scientists who in 1992 decided to create the academy of science: the World Academy of Materials and Manufacturing Engineering, was

gathered around Prof. Leszek Adam Dobrzański and as a result of that to create the Worldwide Journal of Achievements in Materials and Manufacturing Engineering (JAMME). The leadership in those both important enterprise in the democratic procedure was entrusted to Prof. L.A. Dobrzański.

Dear Professor Dobrzański, Dear Leszku Adamie!

During celebration of 20<sup>th</sup> AMME conference in connection to the 65<sup>th</sup> anniversary of yours birthday we would like to wish you, on behalf of Cracow University of Technology community, further satisfaction from the enormous scientific and teaching achievements. Thank you very much for almost 40 years of brilliant cooperation.

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