УДК 330.831.4

ECONOMIC AND POLITICAL ISSUES RAISED BY ALTERNATIVE ENERGIES

Nazyrova K., post-graduate student
V.N. Karazin Kharkiv National University
Université de Nice Sophia-Antipolis
***Ober M.*, master degree student**
Université de Nice Sophia-Antipolis

Economic progress cannot satisfy all the needs in energy. Renewable energy sources are now regarded as one possible solution to the elimination of poverty. There is one major issue – we have to decide "how to progress without the consumption increase" [1].

"Poor or underdeveloped states - where no government is in control - are the source of many of the world's most serious problems, from poverty, AIDS and drugs to terrorism" stated Francis Fukuyama in his monograph « State Building ». It is one of the most important problems rising nowadays. A burning question is how to foster the third-world countries development in order to eliminate those problems on the global level.The main issue in Economics is still the same – how to satisfy unlimited needs by means of limited resources. The problem is that one cannot possibly satisfy needs without technical progress which requires more investments into the human capital. "Human capital is considered to be a set of competencies, knowledge and personality attributes embodied in the ability to perform some work in order to produce economic value. There are the attributes gained by an employee through education and experience"[2].

Nowadays, in order to increase the economic efficiency and productivity, it is absolutely necessary to provide poor countries with the access to energy sources.

Major developing countries depend on traditional sources of energy such as wood and crop residues (classified as the "traditional biomass") for cooking and heating water and kerosene for lighting. It can be explained by the fact that people mostly live in rural areas. The traditional biomass has low efficiency and cannot fully satisfy all energy needs of poor people. Modern forms of energy are very inconvenient in those conditions and they will require high installation costs and it would be very difficult to achieve regular supplies for remote rural areas. Projections as to the future energy demand can be seen in the table below.

Figure 1

Projections of global primary energy demand till 2050 (Gigatonnes of oil equivalent) [3]

	1990	2050		
		High grow	Middle course	Ecologically driven
OECD	4.2	6.7	5.6	3.0
Transitive economies	1.7	3.7	2.4	1.7
Developing countries	3.1	14.4	11.8	9.5
World total	9.0	24.8	19.8	14.2

"Energy demand in future will tend to grow especially in rural areas. Current energy investments total US$290-430 billion per year and the WEC has estimated that the total of US$30 trillion will be required to meet a 70% increase in global energy demand over thirty years. The WEC's scenarios suggest growth in total world energy demand from 58% to 175% by 2050" [4].

After the Fukushima catastrophe people all over the world started thinking seriously about the energy supply alternative. Germany has advanced considerably and they want to totally diminish Germany`s dependence on the nuclear sources of energy completely. Green energy is considered as one of the best solutions; still, high initial costs are sometimes not affordable for some countries. Political conflicts because of the resources' limitations are going on, the USA policy is clearly aimed at Eastern countries that possess enormous petrol resources, but as we described in previous chapters – the consumption of energy is growing according to the Malthusian law: "……..the increase of population is necessarily limited by the means of subsistence, that population does invariably increase when the means of subsistence increase, and, that the superior power of population is repressed, and the actual population kept equal to the means of subsistence, by misery and vice" [5].

Malthus stated that the possible way to satisfy limited need is to diminish world population by means of wars and epidemic crises. Apart from that law stated as 'inhuman', in order to bring up human needs in energy consumption – there`s a necessity to develop and imply the latest scientific achievements in the new technology state. Still – the dependence of world economies on the nuclear power stays incredibly high.

The data in the below table make it possible to compare the number of nuclear reactors – as well as electric energy produced and uranium requirement to estimate the dependence of every country on the 'traditional' sources of energy.

Figure 2

The energy dependence level of the world counties [6]

Country	2007 number of nuclear reactors (power [GWe])	2007 produced electric energy [TWhe] (TWhe/per GWe power)	2008 uranium requirements [tons] (per GWe [tons])
World	439 (372)	2608 (7.0)	64615 (174)
USA	104 (99)	807 (8.2)	18918 (191)
France	59 (63)	420 (6.6)	10527 (166)
Japan	55 (48)	267 (5.6)	7569(159)
Russia	31 (22)	148 (6.8)	3365 (155)
Korea (South)	20 (18)	137 (7.8)	3109 (177)
Germany	17 (20)	133 (6.6)	3332 (164)
Canada	18 (13)	88 (7.0)	1665 (132)
Ukraine	15 (13)	87 (6.6)	1974 (150)
Sweden	10 (9)	64 (7.1)	1418 (157)
China	18(9)	59 (6.9)	1396 (163)
UK	10 (11)	58 (5.2)	2199 (199)
Spain	8(7)	53 (7.1)	1398 (188)
Belgium	7(6)	46 (8.0)	1011 (176)

The adoption of the Johannesburg Implementation Plan influenced the interest in the exploitation of the renewable resources of energy, which are now broadly used by the countries in order to achieve sustainable development.

It is quite important to emphasize the fact that developing countries experience a constant need in energy sources, for example - 1.6 billion people in developing countries have no access to electricity and, approximately 2.5 billion people rely on traditional biomass for cooking and heating.

Mainly – the successful achievement of the sustainable development of the world depends on the possibility of socio-economic system to provide poor people with necessary access to up-to-date energy services at the present state.

The United Nations Intergovernmental Panel on Climate Change has stated in its recent Fourth Assessment Report that the level of the global temperature is rising mainly because of the human activities. Everyday human activities influence badly to the balance of eco-system and diminish the quantity of freshwater and food supply. Carbon dioxide and another greenhouse-gas emission originate mostly from the combustion of fossil fuels.

Moreover, many Summits focusing on the problems of limited energy resources were held – their possible solutions concern the investment policy in the development of alternative energies.

In addition to these economic problems, environmental issues have been highlighted. The increase of power consumption throughout the world has proportionally increased the impact on the environment. All developed countries are taking decisions to reduce the pollution they generate. The first option is to set up policies aiming to reduce both households and corporate energy consumption and carbon footprint.

The second option is to find and use ways of generating green energy. In other words, keep producing the same amount of energy to satisfy the demand but lowering its impact on the environment. Let us study this option.

Many years the studies are being held around the world to find green energy supply methods. Governments are aware of the dramatic situation we are facing, so they invest in research to find new ways of producing energy. They do not finance studies only in environmental friendliness, though. Actually, the green energy industry is very competitive because there may be huge return on investments for the most competitive solutions.

Indeed, if a nation sets up a breakthrough innovation, it will be able to raise its energy production in a sustainable way. By sustainable, we mean that the energy production process will be environmentally friendly and cost effective. The cost effectiveness is the key factor for an energy generator to be accepted and developed at a large scale and on a long term basis.

Taking this aspect into account, the new sources to be developed are nuclear, wind, hydro, and solar power.

Although, the study made by Tsinghua university laboratory of power systems (Beijing) has shown that a setup of a certain source does not only depend on its economic efficiency. It actually depends on six key factors studied for the Chinese alternative energies development [7].

Thus, we can see that it depends on the local assets (resources availability) of the country. If a country benefits from large desert places facing the sun throughout the year, it may select solar power as the key energy source.

The choice will also be influenced by four other evaluation criteria shown in the figure above. We can see the management efforts for instance, that stands for the priority in the corresponding institutions of the country. Then comes next aspect called technology innovation referring to technological barriers a project may face. The “social welfare” aspect is influenced by public acceptance. Lastly, the climate change evaluation displayed on the figure corresponds to the impact on the environment the new energy source will have.

We have seen that the green energy supply industry is very competitive due to the tremendous return on the investment it could have for companies and countries.

Let us study the case of the competition between Middle East in the race for green energy technologies.

The Gulf countries are investing in projects to limit their fossil fuel dependence. Abu Dhabi leads the race, followed by Saudi Arabia. OPEC members understand that fossil fuels are an exhaustible power resource and that their huge amount of wind and solar energy will allow them to produce energy for both their domestic use and exports to Europe [8].

It shows the strong economic power they can have if they install renewable energy generators in their countries.

While their fossil fuel exports will decrease because of the lack of resources, their electricity exports may balance.

Thus, in 2007 the Persian Gulf members of OPEC spent $750 million for the study of the viability of clean energy. Abu Dhabi is leading the research program related to solar energy while Qatar focuses on the wind power.

Saudi Arabia was the first GCC (Gulf Cooperation Council) country to initiate green energy projects in the 1980s. They lost their desire when oil prices regained their stability in the late 1980s.

Abu Dhabi does not benefit from tourism as much as Dubai. Thus, in order to show their interest in green technologies, it announced a $22 billion clean energy plan called the Masdar Initiative. It includes the construction of the world's first carbon neutral municipality called Masdar city. It will count 50 000 inhabitants and 1500 companies and solar energy will be the main energy source.

The creation of the Masdar institute of science and technology will permit to develop academic and corporate partnerships. It will also enable the creation, and later, export of high-grade renewable energy technology.

Besides, UAE also expects to low its carbon emissions to market its carbon credits given by the Kyoto protocol, to sell it and monetize it.

Saudi Arabia has started to develop a solar industry aiming to satisfy domestic energy demand. The country benefits from a wide rain-free area and from the most potent kind of sunlight.

In general, to sum up the situation and possible solutions, we can say that power consumption is increasing and it damages the environment. Countries are racing to develop and set up alternative energy sources such as solar, nuclear, biomass, biofuels, and wind power.

Has we have seen above, competition is the enables creativity, innovation and investments in projects. Nevertheless cooperation is a vector of synergies. It can also enable people share their assets. Some bring money, others bring knowledge or equipment. In any case, tremendous productivity can result from an alliance.

Governments and firms have understood this and keep it in mind to develop their strategies and run their research and development programs.

The Gulf countries are more and more cooperating with European countries regarding two aspects. The first one is financial.

Abu Dhabi has set up the "Masdar plan" that includes the creation of the first hydrogen power plant which may cost $2 billion. In order to cover the costs, Abu Dhabi aims to attract foreign investments from people and companies that understand renewable energy potential profitability. Foreign companies are also investing in the projects: British Petroleum and Rio Tinto (both British Companies) created a joint venture (Hydrogen Energy International Ltd.) to invest in Masdar project. Besides, Credit Suisse invested $100 million [9].

Nevertheless, cooperation between the Gulf states and European countries is not only financial. It also concerns the energy production and distribution. North African nations are also involved in the TREC program.

The European Union is considering a transcontinental project with North Africa allied with Saudi Arabia. It will consist of an energy grid composed of solar thermal power plants and wind turbines in order to produce power and export it to Europe. The energy produced by CSTP will be sent through transmission lines.

Policymakers are facing a number of problems concerning the limited resources and the use of new technologies in order to maintain and develop the world production. The forecasts tell us that the world is running short of the number of traditional resources of energy. Consequently, at

the same rate of consumption the sources will end in only 50 years.

Naturally, prices are rising constantly and make people search for possible solutions in order to replace the existing dominants –oil, natural gas, gasoline by other energy powers.

Major debates are going on between the number of economists and geologists. Geologists presume that the peak of consumption will be soon be over and the resources exhausted, at the same time economists state that the higher prices on production will foster the development of technology and the exploitation of a new energy sources.

Possible solutions are already taking place as the major oil companies explore and invest in the sources of alternative energies.

In Germany solar panels are everywhere – in dwellings, offices etc. – the costs are returned for 10 years and now other states are exploring the possibility of similar programs.

Conclusion. Facing the decrease of fossil fuel resources, states fear an energy crisis. We are already experiencing an imbalance between supply and demand. The problem is getting worse and worse. The supply diminishes because of the lack of energy resourses and the demand rises because of economic development.

The second significant issue is the impact that our energy consumption produces on our environment. Pollution can no longer be tolerated as it has been during decades.

In order to solve both problems, countries are working over the development of alternative energy sources. This race to the technology creates tensions between states, but we have seen that cooperation can be the key to an optimized research process. It is governments' role to make sure that everything possible is being done to maximize our technology evolution to replace current energy supply systems by more sustainable models.

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Today renewable energies are regarded as a new innovative instrument for the better cooperative solutions in economics and policy. We are facing a new era of world technologies that are developing all the time. Furthermore, many new non-governmental organizations have been created recently. They are in charge of the sustainable development survey and they create special foundations to finance the implementation of new energy technologies. Countries all over the world turn to renewable sources of energy to eliminate pollution and solve political conflicts arising due to natural resources limitation.

Key words: Non-Governmental Organizations, sustainable development, new energy technologies.

ЕКОНОМІЧНІ ТА ПОЛІТИЧНІ ПИТАННЯ, СПРИЧИНЕНІ АЛЬТЕРНАТИВНИМИ ДЖЕРЕЛАМИ ЕНЕРГІЇ

Назирова К.З. аспірантка
Харківський національний університет імені В.Н.Каразіна
Університет Ніцці Софія Антиполіс
Обер М., магістр
Університет Ніцці Софія Антиполіс

Сьогодні поновлювані джерела енергії розглядаються як новий інноваційний інструмент для покращення спільних рішень в області економіки і політики в даний час. Ми стоїмо перед ерою нових технологій, що розвиваються весь час. Крім того, з'явилося багато нових неурядових організацій, створених в останній час. Вони несуть відповідальність за сталий розвиток та дослідження їх створення спеціального фонду для фінансування впровадження нових енергетичних технологій. Важливо відзначити, що країни по всьому світу звертаються до поновлюваних джерел енергії для усунення забруднення навколишнього середовища та вирішення політичних конфліктів через брак ресурсів.

Ключові слова: неурядові організації, сталий розвиток, нові енергетичні технології

ЭКОНОМИЧЕСКИЕ И ПОЛИТИЧЕСКИЕ ВОПРОСЫ, ВЫЗВАННЫЕ АЛЬТЕРНАТИВНЫМИ ИСТОЧНИКАМИ ЭНЕРГИИ

Назырова К.З. аспирантка
Харьковский Национальный университет им. В.Н.Каразина
Университет Ниццы София Антиполис
Обэр М., магістр
Университет Ниццы София Антиполис

Сегодня возобновляемые источники энергии рассматриваются как новый инновационный инструмент для лучшего совместных решений в области экономики и политики в настоящее время. Мы стоим перед эрой новых технологий, которые развиваются все время. Кроме того, появилось много новых неправительственных организаций, созданных в последнее время. Они несут ответственность за устойчивое развитие и исследование их создания специального фонда для финансирования внедрения новых энергетических технологий. Важно отметить, что страны по всему миру обращаются к возобновляемым источникам энергии для устранения загрязнения окружающей среды и решения политических конфликтов из-за нехватки ресурсов.

Ключевые слова: неправительственные организации, устойчивое развитие, новые энергетические технологии

Надійшла до редакції 21.04.2012 р.