РОЗДІЛ 5

Наукові повідомлення

Green Economy and Sustainable Development: The Vision of Economists*

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The paper analyses the main directions for "green" economy and sustainable development, with special attention being paid to energy efficiency, wind energy, eco-tourism, and the formation of regional recreational facilities. The paper studies the socio-economic problems of sustainable development strategies implementation by enterprises caused by an increased anthropogenic impact on the environment. It highlights the environmental problems, such as water, air and land pollution caused by urbanization, industries, agricultural runoff and improper agricultural practices. It also suggests the directions for successful realization of sustainable development among which recycling, waste management, eco-efficiency increase.

Keywords: alternative energy, ecological economics, green economy, pollution, recreation, sustainable development.

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Introduction. On April 30 – May 3, 2013 in Sumy State University the Nineteenth International Scientific Conference of Students and Young Scientists "Economics for Ecology" (ISCS'2013) was held. For the second year the conference got the support of the UN Development Program in Ukraine. Thus, this year conference "Economics for Ecology" brought together about 100 participants from more than 15 countries such as Belgium, Belarus, Canada, Cyprus, Indonesia, Georgia, Nigeria, France, Russia, Poland, Tajikistan, Tanzania, etc.

The goals of the conference were to discuss the most important and urgent environmental problems with students and young researches, to share experience with student, environmental organizations and to try to find economic solutions for environmental problems. Conference directions were different, starting from the state of environmental policy and educational problems to greening economy and institutional mechanism for sustainable development. The main idea coming through the ISCS'2013 was the necessity to reach sustainability

* ISCS'2013 results http://iscs.fem.sumdu.edu.ua/en/about.php

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development on different levels (local, regional, national, global) and foster the green economy forming.

Innovative solutions and directions for implementation of sustainable development and green economy forming were actively discussed during the conference.

The analysis of social and economic problems of sustainable development implementation and green economy forming

Water pollution. The problem of water pollution is urgent. The main anthropogenic activities which cause water pollution are:

- *Urbanization*, which caused water supply shortage, waste water generation, treatment and disposal.
- *Industries***.** Thermal power plants, engineering industries, paper mills, steel plants, textile industries and sugar industries are the major contributors of wastewater production.
- *Agricultural runoff and improper agricultural practices***.** Traces of fertilizers and pesticides are wasted into the nearest water bodies at the onset of the monsoons or whenever there are heavy showers. Intensive and ever increasing usage of chemical fertilizers, pesticides, and other chemicals cause water pollution. Flood-plain cultivation is another significant contributor to water pollution.

*Air pollution***.** Factories and cars release poisonous chemicals into the air, the chemicals mix with the water in the clouds, and the polluted rain damages trees, lakes and buildings. Producing too much packaging and food waste which are dropped in the streets or end up on the rubbish tip helps diseases spread more easily. Because of deforestation less and less oxygen is being produced. Factories produce dangerous chemicals, which pour into oceans, rivers and streams and cause the death of fish. Chemicals from aerosol sprays and fridges are going up into the atmosphere and destroy the ozone layer, which surround the Earth, because more and more people are getting skin cancer.

Poverty is the major cause and consequence of environmental degradation that threatens the world's health status. The major global environmental challenges include global warming, state of oceans and rivers, air pollution. Growing environmental debts is the major concern to many countries because the cost of remedial actions will be far greater than preventive actions. Poverty is the situation where people and/or community lack basic needs, the resources and essentials to enjoy a minimum standard of life and wellbeing that is considered acceptable in the society. Environment-poverty is a two-way relationship which represents the two global challenges, the mystery as whether to link them or not; it is rather undisputable that poor often become victims of environmental destruction.

*Climate change***.** Climate change is one of the most serious environmental threats facing mankind worldwide. It affects agriculture in several ways, including its direct impact on food production. Climate change, which is attributable to the natural climate cycle and human activities, has adversely affected agricultural productivity in Africa in particular. Available evidence shows that climate change is global, likewise its impacts; but the most adverse effects will be felt mainly by developing countries, especially those in Africa, due to their low level of coping capabilities.

*Eco-efficiency***.** To be sustainable organizations must embrace new objectives: optimize operations to minimize environmental impact and improve social outcomes in a manner that also maximizes performance. No matter what your business is, sustainability is your business. For example, by 2025 buildings will use more energy than any other category of "consumers" (today, in the United States they represent 72% of energy use). In addition, 40% of the world's

current output of raw materials goes into buildings. That is about 3 billion tons annually. Benefits of eco-efficiency refer to increase in economic value with unchanged (or decreased) environmental impact.

Different ecological and economic instruments are used in different countries for insuring eco-efficiency. However, the most popular ones are taxes, subsidies, grants, bonuses, payments, fines, promotions, price control, insurance, and amortization instruments. In general one of the most effective instruments is a realization of a polluter-pays-principle: The polluter-pays-principle, where the costs of pollution prevention, control and reduction measures are borne by the polluter, is not a new concept but has not yet been fully implemented, despite the fact that it is widely recognized that the perception of water as a free commodity can no longer be maintained. The principle is an economic instrument that is aimed at affecting behaviour, i.e. by encouraging and inducing behaviour that puts less strain on the environment. Examples of attempts to apply this principle include financial charges on sewage generated by urban population, industrial waste-water discharges and special taxes on pesticides. The difficulty or reluctance encountered in implementing the polluter-pays principle is probably due to its social and economic implications. Full application of the principle would upset existing subsidized programmes (implemented for social reasons) for supply of water and removal of wastewater. Nevertheless, even if the full implementation of the polluter-pays-principle is not feasible at present, it should be maintained as the ultimate goal

*Waste management and systemic design***.** Alternative production methods are possible when the proper value is given to materials which are currently viewed as merely scraps of production rather than resources that can be made available for other types of processing. There are many opinions about the most efficient processing waste technology. The most common method is incineration. In the EU, the U.S. and Japan observed increasing the number of incineration plants with generation of electricity or thermal energy using alternative fuels. Plants must be equipped with a powerful gas treatment system, preventing air pollution. Also waste is used to produce ecocement to make connection blocks to strengthen the coasts. The demand for this product is 6 million tons per year.

Waste separation is necessary for the rapid selection of raw materials for recycling, less pollution, saving money instead of building specialized separation factories. Germany is one of the advanced European countries in solving rubbish problems. German garbage sorting is a system with a lot of particularities. Thus there are containers for different types of waste near the house. Blue container is used for paper and cardboard, but packets of juice and dirty wall paper you cannot throw out there. There are special containers for glass divided according to the color brown, white or green. Moreover the most conscientious Germans unstick label from the bottles. Plastic bags, foil, cans are thrown out in yellow container. What is more packages should be dry, empty and put together. Brown container is used for organic waste. Preventing the decay and spread of smell, Germans recommend wrapping waste in old newspaper.

*Recycling***.** In Oxford dictionary, the word ‘recycling’ defines as ‘return materials to a previous stage in a cyclic process. In general, recycling means: 1) to treat to extract reusable material; 2) to use again with minimal change; 3) a process using materials (waste) into new products to prevent waste of potentially useful materials, reduce the consumption of fresh raw materials, reduce energy usage, reduce air pollution (from incineration) and water pollution (from land filling) by reducing the need for "conventional" waste disposal, and lower greenhouse gas emissions as compared to plastic production. Also we should encourage recycling because it is the reproduction of new materials which causes the most damage. We must learn to reuse things like plastic bags and glass jars. So collect old newspapers, books,

magazines, used papers, bottles (plastic and glass), and any other things that you could sell in junkyards. There is money in garbage and at the same time we're doing our part in recycling process. The environmental benefits of recycling: 1) pollution reduction; 2) resources conservation; 3) energy conservation; 4) reduction of deforestation; 5) lower distribution costs; 6) improvement of corporate image among regulators, customers and the public.

The directions of green economy forming

A concept of *green economy* is usually includes those sectors of the economy, which are oriented on production of renewable forms of natural capital. Also *green economy* considers the areas of management, which provide products (goods and services) for environmental purposes. The ecologically oriented products, depending on their functions can be assigned as products and services that reduce ecologically distractive impact of human activities. Among the most popular environmentally friendly products are: *scientific products* (know-how, databases, plant varieties, animal breeding, design and technological documentation, etc.); *industrial products* (pollution control equipment, monitoring systems, installations for waste disposal, technology and resource efficiency, etc.), *information services* (environmental consulting services for the collection of environmental information, environmental auditing, etc.), *educational services* (education programs, training, manuals, etc.); *management services* (technologies of social and ecological-economic systems), etc.

Alternative energy. Sustainable energy sources are urgently required, as traditional non-renewable energy sources are increasing in scarcity and subsequently in cost. Significant innovation and investment is required to incorporate newly developed sustainable energy technologies into the existing energy infrastructure network. Through the past two hundred years the world has seen unprecedented economic growth with the onset of the industrial revolution. This growth was sustained through increased dependence on non-renewable resources, first with coal, then moving into oil and gas.

Typically very little attention was paid to the long term sustainability of the dependence on low cost energy. It was simply known that where low cost energy was available, industry was able to flourish. As these resources have been depleted, the costs to gather and transport energy have increased, making the cost of production higher.

The most important types of alternative fuels that have real prospects in the near future and can contribute to the energy balance of the country are: *biogas, briquettes and pellets, bioethanol, biodiesel, coal mine methane*. Alternative energy can solve several critical interrelated objectives: *first of all* to *reduce the environmental impact* on the natural environment (a large part of the production of alternative energy produced from waste), and *secondly, to improve energy security* of the country (in particular, reducing dependence on foreign energy sources); *thirdly, the formation of a closed cycle of reproduction* of natural capital (production of biofuels has the closed natural cycles), and *fourthly, to promote social development rights* (the creation and exploitation of alternative energy systems requires the development of green thinking among designers, and the greening of the population life style).

Wind energy. Another major innovation is the small scale gathering of energy from renewable resources such as solar and wind. Both of these innovations reduce dependence on traditional energy sources, but put unique stresses on the existing energy infrastructure that has been constructed over the past 100 years. Technology has advanced to the point where individual consumers are able to purchase and install equipment that harnesses energy from renewable resources such as solar and wind. These customers are then able to input power into the grid as well as use it when required. The electrical grid was initially set up to have power

flow in one direction, from the main generation plant, through the sub-stations to the consumers. Now there are many tiny generation points across the electrical grid inputting small amounts of electricity back into the electrical grid at various times. The advantages of wind power are: 1) wind power does not pollute the environment; 2) wind power, as well as bioenergy, under certain conditions (high wind speed, expensive fuel for conventional power plants) can successfully compete with non-renewable energy sources

Ecotourism creates an economic environment in which the conservation of nature and natural resources is profitable for local people. Ecotourism is required more than other types of tourism. Ecotourism is not only a way to enjoy the wildlife. It is necessary to correct hiking trails, to reduce the amount of garbage. It is also important to work closely with the local community, to act with their consent and share their socio economic benefits. Moreover, eco-tourism is just one of the types of tourism and it can and must make long-awaited and necessary financial resources of the regional budget.

The successful development of rural tourism area should have the following features: 1) clean environment; 2) low level of urbanization and industrialization; 3) limited intensity of agricultural and forest products; 4) favourable agricultural structure (average farm size); 5) a harmonious agricultural landscape; 6) income of people (that would encourage their employment in this field); 7) the free resources of apartments.

«Green» tourism, including ecological, and agrotourism is a not zero-emission production. It can cause contamination of areas, overpopulation, depletion of natural and cultural resources, pollution of water, degradation of land and other negative consequences.

Territorial and recreation complex forming (TRC). TRC is a special form of territorial organization of the economy, which is formed in the interconnected development of recreational and other economic activities on a compact territory, which has specific socio-economic and natural features; territorial system in which several types of economic activities, organizational – and functionally designed to maximize the recreational effect.

Territorial recreational system (TRS) is a form of recreational activity in a particular area, which provides a functional relationship, cooperation and coordination of all subsystems, blocks and elements recreational facilities to provide recreation. In real life TRS as can be seen not often. But this theoretical model badly needed as the sample as a reference to create the most effective systems of recreational facilities, to organize a coordinated and efficient functional interaction of all components and all participants in the recreational process. Such systems are formed on the basis of natural facilities that meet the needs of people in the area because they are viewed as recreational resources. In geography had a fairly clear idea about these resources and their methods of evaluation, including natural physiological and socio-economic elements. Some recreational resources are directly consumed by the population during informal recreation. TRS in a narrow sense consists of natural objects (resources), service establishments and consumers (tourists) that use them.

Conclusions. The most important directions for achieving sustainable development and greening the economy are: 1) the use of renewable natural factors instead of exploitation of non-renewable natural resources of the country; 2) country's transition to sustainable development should be based on the sectors of the economy, which produce renewable forms of natural factors: forestry, organic farming, bio-energy, recreation and tourism, information medicine, creative economy; 3) dematerialization of the economy, which implies reduction in resource consumption, which is a necessary condition for the country's transition to sustainable development.

The modern world trends in socio-economic conditions do form a favourable environment for the advanced green development of the economy.

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**«Зелёная» экономика и устойчивое развитие:
взгляд экономистов**

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В работе анализируются основные направления формирования политики «зелёной» экономики и устойчивого развития, среди которых особое внимание уделяется вопросам энергосбережения, развития ветровой энергетики, экотуризма, формированию территориальных рекреационных комплексов. Проведён анализ социально-экономических проблем реализации стратегий устойчивого развития предприятиями, вызванных усилением антропогенной нагрузки на природную среду. Освещаются такие экологические проблемы, как загрязнение воды, воздуха и земельных ресурсов, вызванные процессами урбанизации, промышленным производством, нарушениями в сельскохозяйственном секторе. Предложены направления реализации политики устойчивого развития, среди которых переработка и утилизация отходов, повышение экологической эффективности.

Ключевые слова: альтернативная энергетика, загрязнение окружающей среды, зелёная экономика, рекреация, устойчивое развитие, экологическая экономика.

**«Зелена» економіка та сталий розвиток:
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У роботі аналізуються основні напрямки формування політики «зеленої» економіки та сталого розвитку, які обговорювалися під час проведення Дев'ятнадцятої Міжнародної наукової конференції в м. Суми «Економіка для екології», що відбулася на базі Сумського державного

університету з 30 квітня по 3 травня 2013 року. Проведено аналіз соціально-економічних проблем реалізації стратегій сталого розвитку підприємствами, викликаних посиленням антропогенного навантаження на природне середовище. Проаналізовано проблеми, що виникають у результаті недотримання екологічних стандартів та норм ведення господарської діяльності. Зокрема, приділяється увага проблемам, що виникають внаслідок господарської діяльності більшості підприємств гірничої, хімічної, металургійної галузей, а саме погіршення стану повітря. Серед інших не менш важливих причин, що ведуть до погіршення якості повітря та зменшення обсягів кисню, є скорочення лісних масивів. Це безпосередньо є однією із причин, що впливає на здоров'я населення.

У статті приділена увага питанням підвищення еко-ефективності з метою забезпечення стійкого розвитку підприємств та реалізації політики «зеленої» економіки. Підвищення еко-ефективності відіграє велику роль у досягненні цілей сталого розвитку. Як правило, дефіцит того чи іншого виду природних ресурсів, який відчувають економічні системи, носить відносний характер і є наслідком неефективної роботи підприємств. Серед основних пріоритетів, які мають отримати особливий акцент у стратегіях сталого розвитку підприємств можна назвати зміну характеру всього виробничого процесу з метою мінімізації негативного впливу на навколишнє середовище, підвищення ефективності підприємств та поліпшення соціальних результатів. Приділено увагу питанням ресурсоощадливих технологій та зменшенню енергоспоживання.

Серед інших не менш актуальних глобальних екологічних проблем сьогодення, яким приділяється увага у статті є бідність населення багатьох країн світу. Бідність вважається не тільки однією із головних причин, але і наслідком погіршення стану навколишнього середовища, яка загрожує населенню багатьох країн світу. Основні глобальні екологічні проблеми включають в себе глобальне потепління, катастрофічний стан океанів і річок, забруднення повітря та інші. Зміна клімату є однією з найсерйозніших екологічних загроз, що стоять перед людством в усьому світі. Особливо суттєво цей вплив відчувається в сільському господарстві. Погіршення ситуації відбувається відразу у кількох напрямках: погіршення стану земельних ресурсів, зниження якості вирощуваної сировини, і, як результат, – зміни у розвитку переробної галузі. У статті наведено приклади щодо зниження продуктивності сільського господарства. Найбільш несприятливі наслідки будуть відчуватися в основному в країнах, що розвиваються, особливо в Африці, у зв'язку з дуже неефективним рівнем вирішенням проблем такого характеру.

У статті також приділяється особлива увага питанням енергозбереження, розвитку вітрової енергетики, екотуризму, формуванню територіальних рекреаційних комплексів.

Ключові слова: альтернативна енергетика, екологічна економіка, забруднення навколишнього середовища, зелена економіка, рекреація, сталий розвиток.