

Ministry of Education and Science of Ukraine
Sumy State University
Oleh Balatsky Academic and Scientific Institute of Finance,
Economics and Management

22nd International Scientific Conference
"Economics for Ecology"
ISCS'2016



Економіка для екології

Матеріали
XXII Міжнародної наукової конференції
(Україна, Суми, 11-12 травня 2016 року)



Суми
Сумський державний університет
2016

Conclusions

Integrated Water Resources Management (IWRM) can be described as the coordinated development and management of water, land, and related resources to maximize the resulting economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. The Dublin principles adopted at an international conference in Dublin in 1992 promotes a participatory approach to integrated resource management on a watershed basis and promotes the recognition of the economic benefits of managing water and related resources.

IWRM is one form of the *ecosystem approach* as a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way (Millennium Ecosystem Assessment 2005). IWRM promotes the management of water and related resources (land, biodiversity, etc.) on a watershed basis. This allows IWRM to be a relevant framework for both small catchments and transboundary basins.

Local government is facing increasing responsibilities in a number of areas, including new roles relating to services delivery (like more regulatory functions), development planning and environmental management. In fulfilling its roles in each of these areas, water resources should be a key factor of consideration, as these will have impact on local government's performance. Yet, local government is not at the forefront of engaging with integrated water resources management.

THE ADVANTAGES AND DISADVANTAGES OF THE TRANSITION TO GREEN TRANSPORT IN UKRAINE FROM THE POINT OF VIEW OF ORGANISATION AND ECONOMY

***Oleksandr Matsenko, Oksana Gladchenko,
Mariya Gaityna***
Sumy State University, Sumy, Ukraine

Air pollution from the point of view of chemical hazards to human takes the first place. According to scientific research, the contribution of air pollution is from 80 to 90% of the total carcinogenic and non- carcinogenic risk which is associated with the influence of the pollution of other contaminants in the environment. Transport consumes a huge amount of

energetic natural resources. A third of all oil produced in the world is spent to ensure the work of transport and automobile transport is the most energy intensive if compared with all other kinds of transport.

The development of transport systems is accompanied by environmental and economic contradictions. From the technical and economic point of view the efficiency of transport systems and the level of satisfaction of population and business in transport services are maximized. At the same time the level of negative environmental impact increases especially in large cities. This contradiction can be solved with satisfaction of the following criteria:

$$PV = \frac{V_o}{t} \rightarrow \max, \quad (1)$$

$$E = \frac{V_m}{V_o} \rightarrow \min, \quad (2)$$

where

PV - efficiency of cargo (passenger) traffic, tons / year;

$V_o = V \cdot S$ is turnover of cargo, tons,

V - volume of cargo per year, tons;

S - average length of route of cargo per year, km;

t - time in which cargo transportation was carried out;

E – ecological capacity of transportation, t / ton;

V_m – volume of transport emissions, tons.

The efficiency of cargo transportation (1) can be represented in the inverted form (t / V_o). Time t is quite a significant factor from the standpoint of economy. Not only the turnover of goods, but also their quality, especially the quality of food depends on this parameter. The average time of overcoming of 1 ton per km in Ukraine is higher than in well-developed countries due to the imperfection of transport infrastructure and the significant degree of vehicles deterioration.

Ecological capacity index (2) is presented in a simplified form without considering the damage from noise pollution, water pollution, utilization of vehicles, and so on. Today one of the most promising areas of its decline is a massive transition to electric cars. Electric cars market in the US and Europe increases twice a year. This helps to improve air quality in cities and reduce fuel consumption. Environmental organizations support these

trends and encourage governments to create new preferences for the leading electric car producers, manufacturers of batteries and charging stations. They also support mass purchases of electric cars and transfers of electric car production enterprises to their countries.

The main advantage of electric cars is the possibility to charge them from ordinary electrical network. However it takes 6-8 hours to charge modern batteries and this time is rather long. At the same time, networks of fast charging stations such as CHAdeMO and Tesla are being built in well-developed countries. These stations produce direct current and use the newest standards which allow to charge an ordinary electric battery for 15-30 minutes. This technology is not available in Ukraine yet. By the way, all electric charging stations are free in Ukraine now. Building a network of charging stations in Ukraine will accelerate the transition to electric cars. We can use the excess electricity, which is currently available in Ukraine due to the crisis in industry.

From a technical position motor efficiency of the electric engine is 70-95%, while the efficiency of the internal combustion engine barely reaches 50%. So an electric car is able to convert almost all energy in batteries into useful work or in other words into passed distance. It is about 10 times cheaper to drive 1 km along the road in Ukraine by an electric car than by an internal combustion engine car, taking into account only the operating costs.

The main competition in the electric car market is between manufacturers of draft batteries but not electric car manufacturers. Modern lithium-ion batteries are heavy, overall and quite expensive. The main competitors in the production of draft batteries are chemical hyper-factories LG Chem, Panasonic, American company Tesla and Chinese BYD. They compete for capacity, compactness and cost. Ukraine could also enter this relatively young market, considering high level of chemical technology development and a considerable proportion of chemical industry professionals. Ukraine could introduce some preferences to such companies.

The main drawbacks of electric cars are their operating conditions. In cold weather about 30-50% of the battery is spent for heating a saloon which significantly reduces motion stock of an electric vehicle. The effect of low temperatures on modern batteries needs additional research. This makes unsuitable to use these cars in cold seasons, for example for taxi services in standby regime.

The network of charging stations is insufficiently developed in Ukraine. This restricts the use of electric vehicles outside the city, creating zones of inaccessibility to their owners. Electric battery replacement is quite a difficult task from organizational and technical point of view and is rather expensive. The recycling of big-sized lithium-ion batteries of electric cars is also a problem from the environmental point of view.

THIRD INDUSTRIAL REVOLUTION AS A WAY FOR GREEN ECONOMY FORMING¹

Leonid Melnyk, Iryna Dehtyarova, Oleksandr Kubatko
Sumy State University, Sumy, Ukraine

Transition to sustainable economy through the Third Industrial Revolution occurs through a three united system of interaction of material and energy, information and synergistic factors. In its course prerequisites for the formation of green economy - "Economy of spacemen" are formed.

There are several key areas of transformation of material and energy base. One of the essential ones is the transition to renewable resources. First of all we are talking about energy resources. "Green" energy (solar, wind, geothermal heat, tidal energy) allows do without fuel and chemical processes of burning it. It means that from production cycles entire industry links that ensure the extraction of mineral resources, reclamation of disturbed landscapes, transportation of raw materials (cars/dry cargo ships - in the case of charcoal or tanks/pipelines/tankers - in the case of oil and gas), fuel combustion in power plants; production, manufacturing of purification equipment and waste management, as well as the processes of creation of engineering and construction companies, which generated power for the realization of all these processes are eliminated. Although, of course, we must not forget that the creation of own installations for generating renewable energy, also require considerable costs.

Talking about the transformation of the information base, we are referring to changes in the content of information principles of the formation of the productive forces and the production systems of

¹ Material is prepared within the framework of SRW "Development of fundamentals of the reproductive mechanism of green economy in the information society" (registration #0115U000684), financed by the State Budget of Ukraine.