

THE ISSUES OF ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS BY PERI-URBAN COMMUNITIES – ENVIRONMENTAL ASPECT ON THE EXAMPLE OF THE TOWN BOYARKA

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On its way to the EU, members of communities are faced with the task of achieving the goals of sustainable development. However, the level of awareness about SDGs is quite low among population of Ukraine and building commitment to the values of progressive society is among the important tasks, faced by local authorities and national education system on the whole.

Another side of this problem is that there is considerable gap in well-being and modernization of large cities and small communities, which are limited in resources and at the same time, do not have clear targets for the sustainable future set beyond the state requirements on energy efficiency or resources management.

From the environmental point of view, particularly important is the viability of ecosystems, which are especially imbalanced at urban territories. The main focus on the way to achieving sustainable environment is on preserving the self-healing abilities and dynamic adaptation of such systems to pressures, rather than preserving them in some "ideal" static state. This task can be quite challenging for communities with limited resources due to lack of understanding the problem and approaches to building community resilience.

The first step towards the control over the environmental situation is to define the sources of disturbance and follow the dynamics of the state of environment in their impact area. The monitoring can be conducted instrumentally and through the citizen control, which raises the question of ecological awareness development.

The city of Boyarka, Kyiv-Svyatoshinsky district, Kyiv region, is located 22 km from the capital in the southwest direction. The population is over 36,000 people.

The potential sources of impacts on the environment are PJSC "Vents", LLC "Metal Furniture" and Plant of polymer products "Elite Décor Industry". The condition of green spaces around them was evaluated as a bioindicator of the overall environmental status. The results demonstrated that the study areas are in satisfactory to poor condition and the most alarming sign is low immunity status of trees, which is seen in the increased incidents of diseases. Additionally the condition of air at these sites was evaluated, using data from automated air quality control systems. The index of air quality for these facilities over the summer period fluctuated considerably with 8% of readings being rated as low. However, according to Boyarka City Council, there were no environmental complaints to specialized departments of the City Council over the past 5 years.

Therefore, the problem of sustainable development in the town is compromised by both – the effects of industrial facilities and the low level of interest to the problems by local population, being not aware about their role in supporting environmental balance and having poor action competence in the field.

ECOLOGICAL FEATURES OF GREENHOUSE GAS CONVERSION USING THE EXAMPLE OF CO₂ PHOTOCATALYSIS

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With the increase in the level of carbon dioxide (CO₂) in the atmosphere, climate change has become one of the most important problems that threaten the existence of our planet. The rapid development of industry, consumer society, and the use of fossil fuels have led to a significant increase in CO₂ emissions. In this regard, today there is an urgent need to develop sustainable and environmentally friendly methods of reducing CO₂ emissions. One of these methods is CO₂ recycling. Due to the application of this process, it is possible not only to reduce the impact of CO₂ on the Earth's climate but also to turn it into valuable resources.

Photocatalytic conversion of CO₂ into organic substances is important and relevant for several reasons:

1) CO₂ is a major driver of climate change, and its conversion to chemicals through photocatalysis can help reduce atmospheric CO₂ and mitigate the effects of climate change;

2) the production of organic substances from CO₂ can reduce dependence on fossil fuels and other non-renewable resources, making it a sustainable approach to chemical synthesis;

3) photocatalytic conversion of CO₂ is environmentally friendly because it uses light energy and renewable raw materials to produce valuable chemicals without generating harmful by-products or waste;

4) conversion of CO₂ to organic substances can create new economic opportunities and create sources of income while reducing the use of carbon; carbon capture and use;

5) the study of the photocatalytic conversion of CO₂ requires the development of new materials, catalysts, and reaction systems, which can lead to scientific progress in the field of materials science and catalysis.

Decarbonization is the reduction of CO₂ emissions due to the use of energy sources with a low carbon content, achieving a lower emission of greenhouse gases into the atmosphere.

The main examples of decarbonization methods are: