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Testing the Environmental Kuznets Curve as an indicator for ecological tourism active development in Ukraine

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SUMMARY

The research is devoted to the proving of the existence of prerequisites for the active development of ecological tourism in the Ukrainian regions. The Environmental Kuznets Curve was constructed through the ratio of air emissions and gross regional product per capita during 2005-2018. It was concluded that all studied territories, including Dnipro, Kharkiv, Lviv, Kyiv and Zaporizhzhia regions passed the return point of the curve at the beginning of the second seven-year study period (2012-2018). Furthermore, only Odessa region is characterized by the most stable trends in the greening of tourism in connection with the turning point of EKC in the first seven-year explored period (2005-2011). The existence of social and market preconditions for the active development of ecological tourism in Ukraine and its largest tourist regions has been proved. Further research in this direction are to expand the list of emissions of harmful substances for greater specification of EKC, as well as to specify the directions of regional environmental policy in the field of promotion and dissemination of ecological tourism.



Introduction

The gradual transformation of the main sectors of the world economy under the requirements of sustainable development causes new demands of society for safety, environmental friendliness, and sustainability of goods and services. Such trends are quite significant for the tourism industry as well. Given that this sector has suffered the most from the constraints caused by the COVID-19 pandemic, today it needs to develop an alternative to mass development. It can be sustainable tourism, as well as its subtypes such as ecological and green tourism.

However, despite all the benefits of sustainable and ecological tourism, many scientific sources, including (Ulyanchenko et al., 2020; Richardson, 2021) suggest that most initiatives in this area have been aimed at achieving economic goals rather than protecting resources that attract visitors in particular. One of the consequences of the development of post-industrial society is the spread of "green" trends and the emergence of new, environmentally-friendly consumer requirements. Transformation of environmental costs takes place into economic categories, expanding environmental marketing are expanding, creating levers to stimulate consumer interest in "environmentally friendly" goods - all these are markers of environmental policy of contemporary first world countries.

Moreover, despite the rather significant development of the problem of green and ecological tourism, to this date, the potential of territories for the development of the above types of tourism is still not adequately investigated in the scientific literature. Thus, especially for countries with a transitional economy, which includes Ukraine, these types of sustainable tourism can develop only with a certain level of "willingness" of society to accept and promote ecological and green tourism. Determination of the "environmental orientation" level of the population requires additional research. Accordingly, the purpose of the study presented in this article is to test the Environmental Kuznets Curve as the indicator of the development potential of territories and the readiness of the population to perceive another tourism, different from the mass one, namely ecotourism.

Method

The following general and specific methods were used in the study: analysis and synthesis, statistical method and modeling - to construct the Environmental Kuznets Curve and determine its extreme values, logical-analytical method - to determine the potential of territories for green development.

Results

Ecotourism is traditionally understood and positioned as an important component of sustainable development. Thus, (Richardson, 2021) proposes to use a more general conceptual definition, according to which ecotourism is a sustainable and nature-oriented tourism and recreation. (Ibnou-Laaroussi et al., 2020) states that ecotourism is distinguished by five components (characteristics): environment, environmental sustainability, education, income, and benefits for the local population. We propose to dwell in more detail on such indicators as income and environmental sustainability, which can be described within the Environmental Kuznets Curve.

Usually, in research, the income from tourism (domestic and international), tourism costs, and the number of international tourists are determined as indicators of tourism activity or attractiveness of the region. However, analysis of the main components for the construction of the weighted indicator of all drivers of tourism in a single factor called the "index of tourism development" were used in (Zaman et al., 2016; Kong and Khan, 2019) studies. Besides, the approach proposed in the paper (Horoshkova et al., 2020) on modeling environmental costs for sustainable development of integrated territorial communities is of some interest. Thus, the proposed model allows taking into account the dynamics of GDP per capita and personal income.

With the growth of the welfare of society, as soon as the level of development reaches a certain value, the demand for environmental quality begins to grow steadily. On average, it is growing faster than the demand for goods and services. In the literature, this phenomenon remains controversial, but



continues to be actively studied and is called the Environmental Kuznets Curve. The Environmental Kuznets Curve (EKC) is usually constructed for the interrelation between per capita income (GDP per capita) and volumes of pollutant emissions or according to their particular types (Zaman et al., 2016).

Within the framework of the study, it is proposed to focus on the most active tourist regions of Ukraine. Following the proposed (Horoshkova and Khlobystov, 2020) approach, and given that the purpose of this study is to test the Environmental Kuznets Curve for different regions of Ukraine as an indicator of the potential for sustainable and ecological tourism, we consider it appropriate to focus on regional incomes. As an indicator of the tourist potential of the region, we chose the gross value added by such economic activities as art, sports, catering, entertainment, recreation, and temporary accommodation (for the period 2005-2018, in the above prices). Accordingly, the regions of Ukraine selected for the study are characterized by the largest share of these very types of economic activity in the total gross value added (Ukrstat, 2020).

To build the EKC for each region, the data for 2005-2018 (excluding Donetsk, Lugansk regions, and the Autonomous Republic of Crimea) on emissions of pollutants into the atmosphere per sq. km and gross regional product per capita were studied. Thus, in our study we will consider the most active tourist regions of Ukraine, such as Dnipro, Kyiv (without city Kyiv), Lviv, Odesa, Kharkiv, and Zaporizhia regions in comparison with the data for Ukraine. Based on the definition of the Environmental Kuznets Curve, we will be interested in the extremes, which reflect the tendency to increase the environmental requirements of the population and, accordingly, improve the environment in the region. If this trend is constant and is observed over a period, we can conclude that there is a demand for sustainable and ecological areas of tourism, and, accordingly, the prospects for the development of a related tourism product.

The data by (Ukrstat, 2019) are divided into two seven-year periods, respectively, the first one covers 2005-2011, the second - 2012-2018. Accordingly, the earlier period of the turning point of the EKC in the region will allow us to conclude that there is a trend towards environmental reorientation and its readiness to accept and spread green tourism as a competitive and viable alternative to mass package tours.

In its turn, it should be emphasized that this is possible only after reaching a certain level of gross regional product and, accordingly, when the population achieves a certain level of income, which will allow the spread of sustainable green trends in the organization of recreation.

Based on the data given by (Ukrstat, 2019), we can build an EKC for each region. It will determine the extremes of the function and according to the classic inverted U-shaped EKC to investigate the trend of ecologization of the economy due to the inverse relationship between income in the region and air emissions per sq. km. after passing the inflection point in the corresponding region (Fig. 1). The data are as compared to the EKC for Ukraine.

For Ukraine, a steady downward trend in air emissions is observed after passing the point, which corresponds to a GDP of UAH 32,000 per person, which corresponds to the 2012 index. EKC's for Lviv and Kharkiv regions follow the trends of indices' changes for Ukraine as a whole, but a steady decrease in emissions is observed somewhat later here - starting from 2014-2015 for Lviv region, and 2013-2015 for the Kharkiv region.



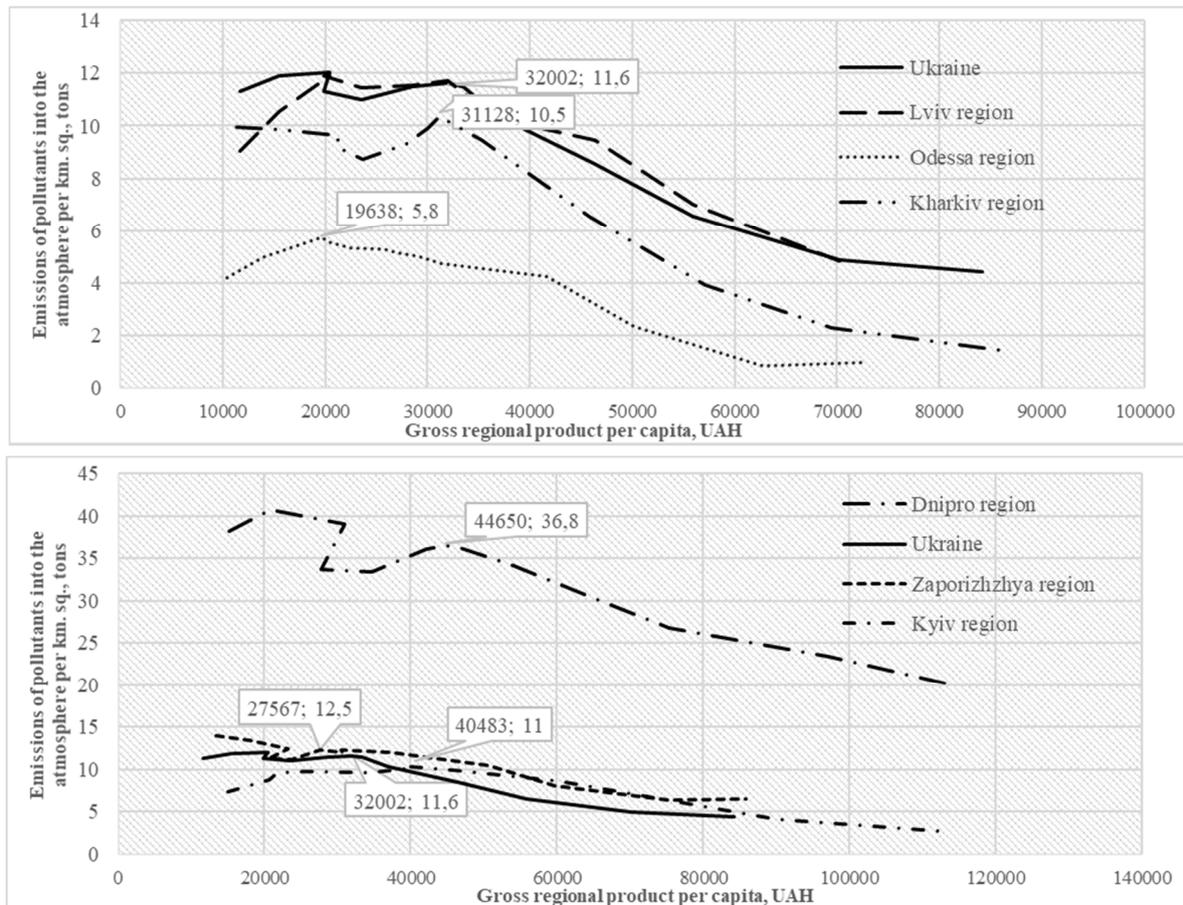


Figure 1 Dynamics of the relationship between volumes of gross regional product and the volume of emissions of harmful substances into the atmosphere during 2005-2018. Note: constructed by authors using (Ukrstat, 2019).

Dnipro and Kyiv regions differ slightly from the all-Ukrainian tendencies. Given the significant level of environmental damage, as well as the historical industrial profile of the regions, to form a sustainable trend to reduce emissions into the air, the required level of GRP is 40,483 UAH per person per Kyiv, which corresponds to 2013-2014, for Dnipro - UAH 44,650 per person, in 2012-2013 respectively.

Traditional recreational regions of Ukraine - Odesa, and Zaporizhia regions are characterized by the earliest forms of ecological trends in the economy. Thus, the turning point of the EKC for the Zaporizhia region corresponds to the level of GRP of UAH 27,567 per person (2011-2012), and for the Odessa region - UAH 1,938 per person (2009). In the Odessa region rather than anywhere else, we observe the most sustainable trend on environmental requirements of consumers.

Conclusions

Based on the constructed EKC, we can conclude that currently, all studied tourist regions of Ukraine have passed the turning point of ECC, which creates a basis for the active introduction of various forms of eco-tourism, because the passing of the inflexion point indicates changes in consumer preferences in the region. All studied regions, except Odesa, as well as Ukraine in general, passed the EKC turning point at the beginning of the second seven-year study period (2012-2018), and only Odesa oblast is characterized by the most stable trends in greening tourism due to the EKC turning point in the first seven-year study period (2005-2011).

According to (Boiko, 2021), market (availability of potential consumers, demand, competition in ecotourism) and social (demographic conditions, income, distribution of tourism expenditures, etc.)



factors, in particular, are singled out of those influencing the development of ecotourism in the region. Within the framework of our research, the existence of social and market preconditions for the active development of ecological tourism in Ukraine and its largest tourist regions, such as Odesa, Zaporizhia, Lviv, Kharkiv, Kyiv, and Dnipro regions, has been proved. Expansion of the list of emissions of harmful substances for greater specifications of EKC, as well as the specification of directions of regional environmental policy in the sphere of encouragement and enhancement of green tourism, are prospective for further research in this area.

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