



**ECONOMIC ANNALS-XXI**

ISSN 1728-6239 (Online)  
 ISSN 1728-6220 (Print)  
<https://doi.org/10.21003/ea>  
<http://www.soskin.info/ea/>

Volume 183 Issue (5-6)'2020

**Citation information:**

Romanova, A. (2020). Features and trends of the Chernobyl tourism development. *Economic Annals-XXI*, 183(5-6), 134-141. doi: <https://doi.org/10.21003/ea.V183-13>

UDC 338.48:005.5



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## Features and trends of the Chernobyl tourism development

**Abstract.** The author defines Chernobyl tourism as a visit to the exclusion zone, which was formed as a result of a large-scale technological disaster, i.e., an explosion at the Chernobyl nuclear power station in 1986, for educational, scientific, business, recreational and other tourism purposes.

The complexity of Chernobyl tourism is proved and schematically presented. The main types of tourism which can be promoted in the Chernobyl Zone (ChZ) such as cultural, cinema, active, scientific, conference, dark, sentimental, adventure, extreme, industrial, business, event, diplomatic and ecotourism had been analyzed.

Four stages of the development of Chernobyl tourism are disclosed: 1) illegal visits to the exclusion zone (starting from the late 1980s); 2) official visits (starting from the late 1990s); 3) emergence of Chernobyl tourism companies (starting from the first decade of the 2000s); 4) mass tourism (starting from the second decade of the 2000s).

The statistics of visiting the ChZ for the last five years had been analyzed. The number of foreigners visiting ChZ was compared with the total number of foreigners visiting Ukraine. The results of the marketing research of the profile of 1000 random visitors to the ChZ, conducted in November 2019, are presented. The formula of the economic contribution of Chernobyl tourism to the development of the tourism sector of Ukraine and the national economy as a whole has been derived.

As a result of generalization of statistical data, as well as the results of marketing research, a number of features of Chernobyl tourism was formulated and analyzed: uniqueness of this tourism product; phasing of development; tours organization; availability of various types of tourism; dominance of foreign tourists; relatively high cost of the product; narrow segmentation of the product; purposefulness of the tours; the game, television and film industry influence; short trips duration; three-level self-organization of Chernobyl tourism; an increase in the number of illegal tourists; the lack of developed tourism infrastructure; the high interest of foreign investors; the lack of a systematic scientific and strategic approach.

The recommendations for authorities and representatives of Chernobyl tourism promotion companies were formulated to increase the economic contribution of this type of tourism.

**Keywords:** Dark Tourism; Thanatourism; Atomic Tourism; Nuclear Tourism; Chernobyl Tourism; Chernobyl Zone (ChZ)

**JEL Classifications:** F20; D47; F63; L83; Q01

**Acknowledgements and Funding:** The author received no direct funding for this research.

**Contribution:** The author contributed personally to this work.

**DOI:** <https://doi.org/10.21003/ea.V183-13>

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**Чорнобильський туризм: особливості та тенденції розвитку**

**Анотація.** У статті дано авторське визначення Чорнобильського туризму. Доведено й схематично представлено багатокomпонентність чорнобильського туризму. Проведено аналіз основних видів туризму, які можуть розвиватися в Чорнобильській Зоні (ЧЗ).

Розкрито чотири етапи розвитку чорнобильського туризму: 1) нелегальні відвідування зони відчуження; 2) відвідування офіційними делегаціями; 3) поява чорнобильських туристичних компаній; 4) масовий туризм.

Проаналізовано статистичні показники відвідування ЧЗ за останні п'ять років. Подано результати маркетингового дослідження відвідувачів ЧЗ, яке проводилося в листопаді 2019 року. Виведено формулу економічного вкладу Чорнобильського туризму в розвиток туристичного сектору України й національної економіки в цілому. Було сформульовано та проаналізовано ряд особливостей чорнобильського туризму.

Подано пропозиції та рекомендації для органів влади й представників туристичних компаній щодо просування чорнобильського туризму для збільшення економічного вкладу даного виду туризму.

**Ключові слова:** темний туризм; танатуризм; атомний туризм; ядерний туризм; Чорнобильський туризм; Чорнобильська Зона (ЧЗ).

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#### **Особенности и тенденции развития Чернобыльского туризма**

**Аннотация.** В статье дано авторское определение Чернобыльского туризма. Доказана и схематически представлена многокомпонентность чернобыльского туризма. Проведен анализ основных видов туризма, которые могут развиваться в Чернобыльской зоне (ЧЗ).

Раскрыты четыре этапа развития чернобыльского туризма: 1) нелегальные посещения зоны отчуждения; 2) посещение официальными делегациями; 3) появление чернобыльских туристических компаний; 4) массовый туризм.

В статье проанализированы статистические показатели посещения ЧЗ за последние пять лет, представлены результаты маркетингового исследования посетителей ЧЗ, которое проводилось в ноябре 2019 года. Выведена формула экономического вклада чернобыльского туризма в развитие туристического сектора Украины и национальной экономики в целом. Сформулированы и проанализированы особенности чернобыльского туризма.

Представлены предложения и рекомендации для органов власти и представителей туристических компаний по продвижению чернобыльского туризма для увеличения экономического вклада данного вида туризма.

**Ключевые слова:** темный туризм; танатуризм; атомный туризм; ядерный туризм; Чернобыльский туризм; Чернобыльская зона (ЧЗ).

## **1. Introduction**

In development of the globalization trends, as well as the experience economy, new types of tourism began to appear and gain popularity. In particular, dark tourism and its unique forms, which exist only on the territory of Ukraine, Chernobyl tourism has become a new type of travelling. Today tours to the Chernobyl zone (ChZ) which appeared as a result of the accident at a nuclear power station are one of the most popular forms of dark tourism in the world. Chernobyl tourism also ranks first place in Ukraine in the ratio of foreign and domestic (Ukrainian) visitors, demonstrating the significant prevalence of foreigners. The world-famous entertainment industry products, such as the computer game «S.T.A.L.K.E.R.» (2007), Discovery Channel film «Chernobyl Life in the Dead Zone» (2015), and historical drama television miniseries «Chernobyl» (2019) produced by HBO also increase the interest in Chernobyl tours. However, despite its uniqueness and rapid growth over the past decade, there is a lack of systematic and fundamental scientific research on Chernobyl tourism. Moreover, Ukrainian state institutions ignore the hundreds of thousands of tourists flowing into the exclusion zone; the state strategy for the development of Chernobyl tourism has not been worked out yet.

## **2. Brief Literature Review**

Chernobyl tourism as a phenomenon of radiation and post-emergency tourism was first systematically studied by S. Mirny. Being a Chernobyl «liquidator» and the expert who has the most significant practical experience in organizing tours to the ChZ, S. Mirny was the first who studied the visiting to the Ukrainian part of the exclusion zone in the context of psychological rehabilitation of affected victims (Mirny, 2001).

Scientific research on the Chernobyl tourism phenomenon began after publications of recommendations of International Atomic Energy Agency as results of Global Chernobyl Forum (2004-2005). International organization recommended exploring the possibilities for promoting specialized ecological tourism in Chernobyl Zone for maximizing the contribution that these

areas can make to the preservation of international biodiversity (International Atomic Energy Agency, 2008)

In 2013 the largest specialized tourist operator in the Chernobyl zone «Chernobyl Tour» with the support of the State Agency of Ukraine on Exclusion Zone Management (SAEZM) developed a complete topographic map of the Chernobyl Zone at a scale of 1:100000 (1 cm represents 1 km) in Ukrainian and English. The map is currently being used by SAEZM, the border service and by the police (Chernobyl Tour, 2013).

Despite the attractiveness of the exclusion zone for tourists from different countries Chernobyl tourism was mentioned in only seven scientific publications over the 1996-2020 period (Goatcher & Brunsden, 2011; Stone, 2013; Yankovska & Hannam, 2014; Mirny, 2017; Romanova, 2018; Dmitruk et al., 2020; Ivchenko & Romanova, 2020).

As for scientific economic research, they are carried out mainly at the level of master's and bachelor's theses of European universities graduates (mainly Switzerland, Poland, Scandinavia, Austria and Germany). However, taking into account the significant economic, social and image benefits for Ukraine from the development of Chernobyl tours, there is a need for systematic national studies on tourism and travelling to the exclusion zone.

### 3. Purpose

The main purpose of this article is to study the characteristics, development trends and economic impact of Chernobyl tourism, as a development phenomenon of the global experience industry, both on the tourism industry and economy of Ukraine as a whole.

### 4. Methods

To analyze the development trends, features and dynamics of modern Chernobyl tourism in detail, create a visitor profile of ChZ, understand the primary motivators for visiting Chernobyl, and measure the amount of receipts to the national economy from Chernobyl tourism sociological research methods were used. In November 2019, a marketing study in the exclusion zone was carried out and 1000 organized tourists to Chernobyl were personally interviewed by ChZ guides. The sample was random; the error was not more than 3%.

### 5. Results

#### 5.1. Multicomponent concept and structure of Chernobyl tourism

Before conducting an analysis of the features of Chernobyl tourism, let us consider the definition of this term.

**Chernobyl tourism** means visiting the exclusion zone, which appeared as a result of a large-scale technological disaster, i.e., the explosion at the Chernobyl atomic power station in 1986, for cognitive, scientific, sentimental, existential, business, recreational and others tourist purposes (Romanova, 2018).

**The multicomponent structure of tourism types in Chernobyl.** Within Ukrainian and Belarus authors tourism to the Chernobyl zone is often referred to either an extreme type of tourism (Dmitruk et al., 2020). Nevertheless, most world researchers classify Chernobyl tourism as a dark one. D. Light provided a comprehensive and critical review of dark tourism and thanatourism research over the 1996-2016 period (Light, 2017). Most researches was inclined to think that dark tourism is concerned with encountering spaces of death or calamity that have political or historical significance, and that continue to impact upon the living (Stone, 2016). Some of them also referred Chernobyl tourism to as dark tourism (Yankovska & Hannam, 2013).

At the same time, we consider it not entirely correct to reduce the tourism functionality of the Chernobyl destination to only two types of tourism. According to the author of the article, the Chernobyl Zone may develop up to 17 types of tourism presented in Figure 1.

#### 5.2. Stages of the development of Chernobyl tourism

##### 1. Illegal visits to exclusion zone (since the late 1980s of the 20<sup>th</sup> century).

Visiting the Chernobyl zone was officially banned from the day of the accident at the nuclear power station on April 26, 1986. However, since the release of the first computer game «S.T.A.L.K.E.R.» in 2007, which virtually displayed the exclusion zone and gained worldwide

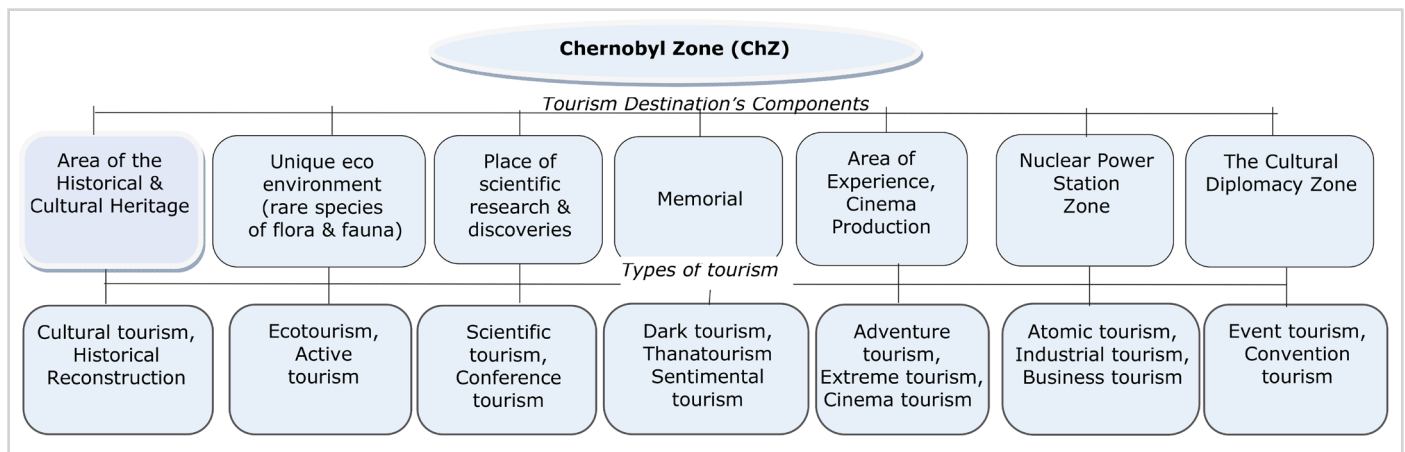


Figure 1:  
**Multi-component Structure of Chernobyl Tourism Destination**  
 Source: Created by the author

popularity, the massive illegal tourism in Chernobyl started. Despite the significant damage inflicted to the Chernobyl zone by illegal visitors, their number is still growing.

**II. Visits of the official delegations (since the late 90s of the 20<sup>th</sup> century).**

Simultaneously with the appearance of the first studies of the Chernobyl zone in the late 90s, official delegations started to visit the territory. This stage is important from the point of view of popularizing information about the Chernobyl zone, which can be visited without risk to life.

In 1998, as a result of applied research (Mirnyi, 1998), the idea of creating the Chernobyl national park (memorial, cultural and natural) for the main purpose to develop tourism in the exclusion zone occurred. The term «tourism» in relation to Chernobyl was first mentioned in the scientific literature in the context of radiation safety of routes («guided tourist routes»), organized taking into account the situation of radiation at that time.

**III. The emergence of Chernobyl tourism companies (starting from the first decade of the 2000s).**

The first tour operator that officially started organizing group visits to the zone in 2005 was the company «Chernobyl Tour». The number of tour operators is gradually growing with increasing demand for visiting the exclusion zone. As some of the tour operators specialized exclusively on Chernobyl tourism, the economic indicators of big specialized operators were much higher than of the small and/or non-specialized ones. Therefore, in 2016, seven the most specialized Chernobyl tour operators brought over 80% of visitors to the exclusion zone. The leader of the Chernobyl tour operators is still the «Chernobyl Tour» company, which in 2018 occupied a share of about 25% of the market of visitors to the Chernobyl zone (Romanova, 2018).

**IV. Mass tourism (starting from the second decade of the 2000s).**

In 2011, the number of official visitors to the ChZ was 9.1 thousand people, and in 2019, the flow to the ChZ increased more than 13-fold up to 124 thousand people. More than 60% of the total number of visitors to Chernobyl have always been foreigners (Figure 2). Mass tourism to the ChZ is also characterized by an intermittent increase in tourist flows caused by the release of entertainment products that have gained worldwide popularity, i.e., the computer game «S.T.A.L.K.E.R.» (2007), Discovery film (2015), and historical drama television miniseries «Chernobyl» (2019) produced by HBO.

When the flows of visitors ran into thousands, the Ukrainian government developed and approved the procedure for visiting the exclusion zone, according to which travel companies received the right to conduct mass excursions in Chernobyl as long as they meet the strict rules of radiation safety (Ministry of emergency situations of Ukraine, 2011).

**5.3. Visitor profile of Chernobyl Zone**

The zone of the largest atomic catastrophe of the 20<sup>th</sup> century attracts mainly millennials born after the accident. It can be explained by the lack of emotionally negative experiences and the fact

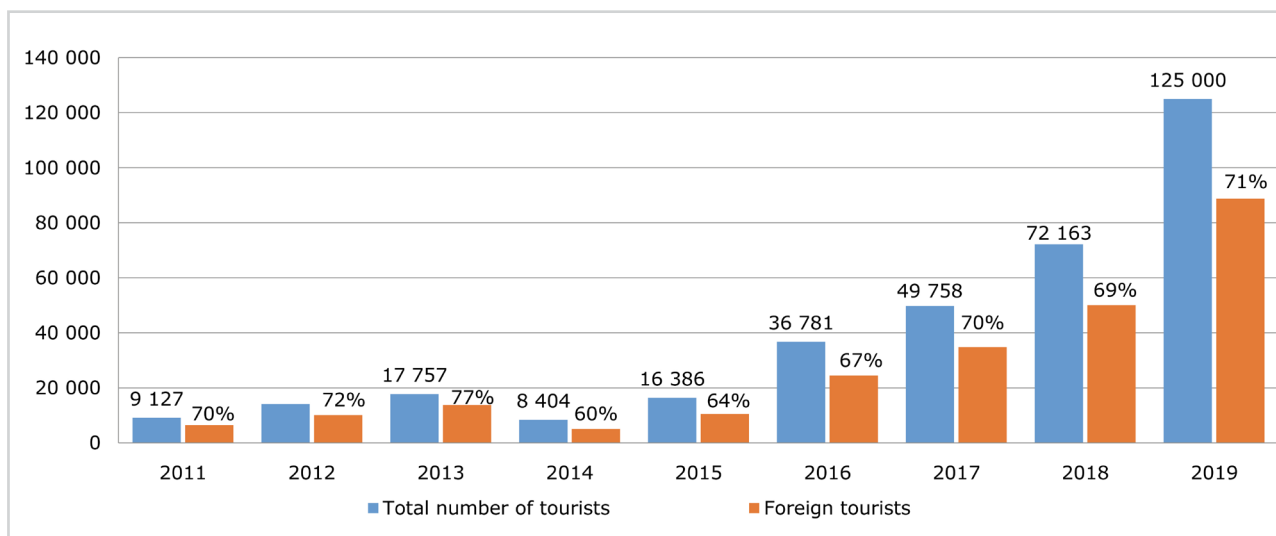


Figure 2:  
**Dynamics of visiting the Chernobyl Zone (2011-2019)**  
Source: Calculated by the author using data presented by State Agency of Ukraine on Exclusion Zone Management (2019)

that they do not perceive the accident as personal tragedy. The average age of visitors to Chernobyl is 31. More than half (52%) of visitors are young people at the age of 21-30 years old, 26% are at the age of 31-40, and some visitors are older than 77 years old; 67% of visitors are men and 33% of them are women.

The study revealed that 81% of foreign visitors came to Ukraine for the first time, while visiting the ChZ was the main purpose of the visit to the country for most of them (55%). The group of respondents who first came to Ukraine for visiting Chernobyl is of the greatest interest for creating a tourism development strategy for both Chernobyl destination and Ukraine in general. When this group analysis show that it includes representatives from more than 70 countries of the world, but still 35% of its total number is made up of UK citizens, 9% from the Netherlands and 8% from China. This means that Chernobyl tourism creates new market niches for the growth of the total inbound tourist flow to Ukraine.

Moreover, 48% of the total number of respondents said that they had come to Ukraine solely for the Chernobyl tour. Considering the overall dynamics and segmentation of inbound tourist flows to Ukraine is very different from statistics on the visits to the Chernobyl zone, we can conclude that the strategy of using Chernobyl as a tourist magnet and a way to increase attendance of the other national tourist sites should be effective. Table 1 shows the ratio of prevailing inbound foreign tourist flows to the ChZ with general inbound flows to Ukraine. The largest discrepancy rate is for tourists from the UK.

Table 1:  
**TOP-10 countries of visitors to the ChZ and their correlation with the total inbound foreign flow to Ukraine, 2018**

Country	Number of foreign visitors to the ChZ ( $N_{ChZ}$ ), persons	% over total incoming flow of foreign visitors to the ChZ ( $D_{ChZ}$ ), persons	Number of foreign visitors to Ukraine ( $N_{Ua}$ ), persons	% over total incoming flow of foreign visitors to Ukraine ( $D_{Ua}$ ), persons	Divergence Coefficient $\Delta (D_{ChZ} - D_{Ua})$ , persons
Poland	4 766	14%	1 144 249	8,04%	5,6%
UK	4 616	13%	78 603	0,55%	12,7%
USA	2 910	8%	153 778	1,08%	7,3%
Germany	2 680	8%	209 447	1,47%	6,2%
Czech	1 997	6%	67 680	0,48%	5,3%
Netherlands	1 802	5%	40 581	0,29%	4,9%
Sweden	1 336	4%	24 554	0,17%	3,7%
Slovakia	974	3%	366 249	2,57%	0,2%
France	834	2%	61 000	0,43%	2,0%
Australia	784	2%	5 743	0,04%	2,2%
Total	34 838		14 229 642		

Source: Calculated by the author using data presented by State Agency of Ukraine on Exclusion Zone Management (2018), State Statistics Service of Ukraine (2018)

**The tourist expenditure.** When analyzing the tourist expenditure during their stay in Ukraine in order to visit the ChZ, it is important to consider the short duration of the stay. The research shows that 95% of the trips last less than a week, which once again emphasizes the motives of the trip, as you can't stay in the ChZ for more than one day. Almost half (48%) of the zone visitors intend to spend EUR 100-300 for the entire trip in Ukraine, not including the cost of traveling to/from the country; 26% spend EUR 300-500, and the expenses of 13% of visitors to the zone during their stay in Ukraine exceed EUR 1000. Tourists from the USA, Canada and China spend most of all while Poles, Czechs, Slovaks and Dutch, whose number is larger, spend less. This trend can also be explained by the difference in trip duration, namely visitors from distant countries (USA, Canada, China) come to Ukraine for a longer period, while Europeans prefer «weekend tour» to Ukraine to visit ChZ.

We used the exact number of visitors to the zone in 2019 (124 thousand tourists) to extrapolate the percentage of each cost group to calculate the quantities of the Chernobyl tourism market volume. As a result of calculations by formula (1), we got the number of EUR 22.6 million for 2019 as the real monetary contribution of the Chernobyl zone to the national tourism market and the national economy in general:

$$R_{ChZ} = 0.48 \sum_{i=1}^n \bar{m}_i k_i N, \quad (1)$$

where:

$R_{ChZ}$  - receipts to the national economy from Chernobyl tourism;

$N$  - the total annual number of visitors to the ChZ;

$k_i$  - the number coefficient for each cost group;

$\bar{m}$  - the arithmetic average of the amount of money that visitors of the ChZ spend in each of the cost groups (in EUR) calculated by the formula (2):

$$\bar{m} = \frac{\sum_{j=1}^n m_j}{n}, \quad (2)$$

where:

$n$  - the number of visitors in each of the cost groups;

$j$  - variations in the amount of costs for each visitor;

0.48 - the coefficient that determines the data of only those visitors who came to Ukraine primarily for visiting the ChZ.

**Sources of information about tourism in the ChZ.** Half of the foreign visitors to the exclusion zone learned about Chernobyl via the Internet. At the same time, 15% of those who mentioned the Internet as a source of information about Chernobyl specifically indicated that they received information from social networks (7% of the total inbound flow); 28% of visitors to the zone got information/recommendations from their friends; and 14% of visitors learned through the HBO Chernobyl. Computer game «S.T.A.L.K.E.R.» became a source of information for 5% of visitors to the ChZ. Other sources such as tourism exhibitions, outdoor advertising, booklets and participation in official visits amounted to approximately 1%. Although the most visitors received information from several sources, the Internet was the main of them.

#### 5.4. Specific features of the Chernobyl tourism

Therefore, the marketing research showed that visiting the Chernobyl zone for tourist purposes significantly changed during 1997-2020 and acquired a number of specific features.

**Uniqueness of a tourist product** formed on the territory of one of the largest technological disasters in the history; the appearance of unique souvenirs, maps, clothes with Chernobyl symbolic.

**Stage-by-stage development**, each stage of which is characterized by the degree of permissibility of public visits and the openness of the zone.

**Combination of different types of tourism**, which is due to the complexity of the Chernobyl zone as a tourist destination. In the ChZ there are opportunities for the development of about 17 types of tourism (Figure 1).

**The prevalence of foreign tourists over locals:** there is a strong imbalance between the number of foreign and domestic tourists among visitors (Table 1) as a result of different perception of the zone by foreigners and Ukrainians. While Ukrainians perceive Chernobyl as a personal tragedy, foreigners consider it like interesting and unique tourist destination. The share of foreign visits

to Chernobyl ranges from 60% to 70%, and the lowest percentage of foreign tourists came in 2014 (the beginning of the military conflict in Donbas). While the total inbound tourist flow to Ukraine was reduced by half, the amount of trips to Chernobyl declined by less than 10% (Figure 2).

**The relatively high cost of this tourism product** in comparison with the other Ukrainian tourism products as well as the relatively large expenses for Chernobyl tourists.

**A targeted segment of tourists and tour operators:** 48% of foreign Chernobyl tourists come to Ukraine with the main goal to visit the zone while the tours are mainly organized by specialized tour operators (Mirnyi, 2017).

**The influence of the game, television and film industry,** namely the rapid growth of tourist flows to the Chernobyl zone in the second decade of the 21<sup>st</sup> century caused by the release and popularization of the experience industry products (Figure 2).

**Short duration of the Chernobyl tours.** Due to the fact that visitor can't stay in the ChZ for longer than 24 hours, and 48% of foreign visitors to the zone come for the main purpose of visiting Chernobyl, 95% of the journeys last less than a week.

**Three-level self-organization of Chernobyl tourism,** where the micro-level is tour operators, the meso level is the association of tour operators, and the macro level is the national tourism industry (Romanova, 2018).

**The increasing number of illegal tourists** («stalkers»), who bring vandalism and fires to the exclusion zone, can reduce tourist attractiveness of the product (Mirnyi, 2017).

**High interest of foreign investors** in the development of the Chernobyl zone as a territory of renewable energy and the tourist zone.

**Lack of systematic scientific and strategic approach** to the development of the exclusion zone.

## 5. Conclusions

Based on the outcome of the study, the recommendations how to increase the flow of Chernobyl tourism without prejudice to the flora, fauna and cultural heritage of the exclusion zone.

- 1) to form a long-term state strategy for the safe, sustainable tourism development of the ChZ;
- 2) include a number of ChZ objects in the UNESCO World Heritage List for their conservation and/or enhanced protection;
- 3) diversify the competitive products of Chernobyl tourism for the specific target consumers;
- 4) to improve the transport infrastructure of the ChZ, restore the railway connection from the city of Slavutich, revive the river traffic along the Pripyat River for a more comfortable and fast arrival from Kyiv to the zone;
- 5) increase the capacity of the ChZ: to equip special checkpoints for tourist groups;
- 6) to modernize the tourism infrastructure of the ChZ by opening tourist information centers; providing accommodation facilities, power supplies, improving mobile and telephone communications; installing bank terminals;
- 7) provide the guides certification taking into account the need to ensure enhanced safety of the tours;
- 8) strengthen the medical safety of visitors by opening medical centers on the territory of the ChZ;
- 9) increase fines for illegal entry onto the territory of the ChZ;
- 10) create a Chernobyl cluster as a tourism product combining tourism to the exclusion zone with visiting the adjacent territories, both for the development of the Chernobyl zone and for the revival of the surrounding destinations.

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Received 3.04.2020

Received in revised form 26.04.2020

Accepted 28.04.2020

Available online 4.06.2020

Updated version of the paper as of 20.09.2020