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## Rural tourism in the Danube Delta: Between the empirical and theoretical approach

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# RURAL TOURISM IN THE DANUBE DELTA - BETWEEN THE EMPIRICAL AND THEORETICAL APPROACH

RUXANDRA-EUGENIA POP<sup>1</sup>

## **Abstract**

*Within the COASTAL project (Collaborative Land-Sea Integration Platform), funded by GA 773782, through Horizon 2020, six different coastal regions in Europe are analyzed, in order to study the synergy between rural and maritime economic activities, in order to generate policies and solutions for the business environment, respecting the environment, improving the living standards of the inhabitants, increasing the area from an economic point of view. Regarding Romania, the area of interest on which the case study is carried out is the Danube Delta. After analyzing the literature, meetings with stakeholders working in both coastal and rural areas, we tried to model through specific software programs of economic activities in the Danube Delta: agriculture, fishing and rural tourism. In this paper we will present the main results obtained from the empirical and theoretical perspective through which we looked at the activity of rural tourism in the area of interest.*

**Key words:** rural tourism, VENSIM modelling, marketing, environment pressure, rural development

**JEL CLASIFICATION:** Z32, C54, O11

## INTRODUCTION

As tourism becomes increasingly important for economies around the world, the sustainable development of tourism is also becoming an important concern at European level and beyond. This is also the case of the Danube Delta area, defined, according to the Integrated Strategy for Sustainable Development of the Danube Delta Area (2016), as an attractive area - with valuable biodiversity and dynamic business environment, with low / medium economic activities both in both traditional and modern fields - where people live in harmony with nature, integrating economic activities in the tourism, agriculture and fishing sectors". In fact, the population of the Danube Delta is a basic primary resource, on which tourism depends, and the existence of rural communities in a certain place at a certain time can be used to justify the development of tourism itself. For tourists who come to the Danube Delta, especially foreigners, they want to experience the way of life of the locals in the Delta, to know the customs and traditions of the area, cultural and gastronomic.

According to the statistical data taken from the database of the National Institute of Statistics, in the Danube Delta area, referring to Tulcea County, the number of domestic tourists coming to the Danube Delta increased considerably between 2015-2020, this number increasing even by 60 %. A special case is represented by the situation delimited at the level of 2020, in the context of the Covid-19 pandemic. Thus, the number of Romanian tourists who went to the Danube Delta increased, managing to reduce the deficit in the area to only 8.8%, this happening given that the number of foreign tourists decreased from 47,056 visitors (2019) at just 4721 visitors (2020), a categorically dramatic drop of up to 90%. In fact, during the meetings we held with stakeholders, some of the tourism specialists stated that, unlike other areas in Romania, the pandemic will be beneficial for tourism operators in the Danube Delta, because more and more tourists locals will choose to spend their vacation in this location.

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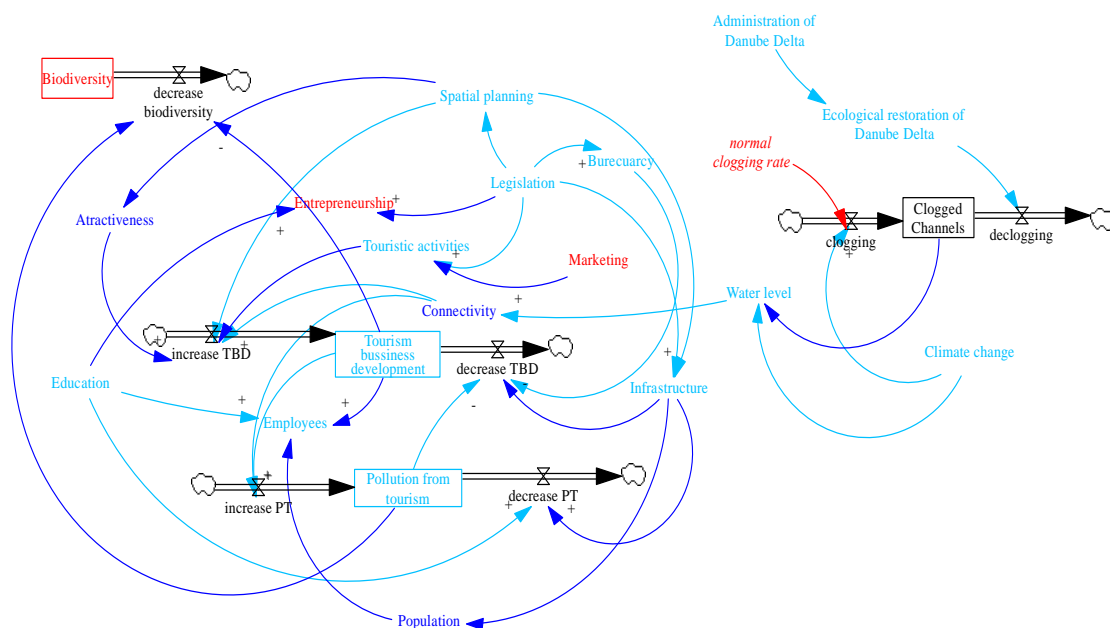
## MATERIALS AND METHODS

As the title of the paper shows, the empirical approach, identified in this case by workshop-type meetings, with a strong interactive and practical character, attended by stakeholders in the field of tourism, as well as the theoretical approach, present in the case of by going through the national and international specialized literature, the consultation of the reference statistical databases, were the basis of the process of processing the different variables of interest for the tourist activity in the Danube Delta. Following this process, a model was developed using the VENSIM program, a software used to support the modeling of dynamic systems.

## RESULTS AND DISCUSSION

The first meetings with stakeholders held together with experts in the field of tourism, which had as main theme "Rural tourism, leisure and other rural activities" and "Rural development", led to the initial CLD diagram as they were described in the deliverable. "D13 Pilot SD Models for Coastal-Rural interactions". For both rural and coastal tourism, the meetings' outputs were similar for the rural and coastal tourism outlining that tourism has significant potential as a driver for growth for the local economy.

**Figure 1. The structure of the model for Rural Tourism in the Danube Delta**



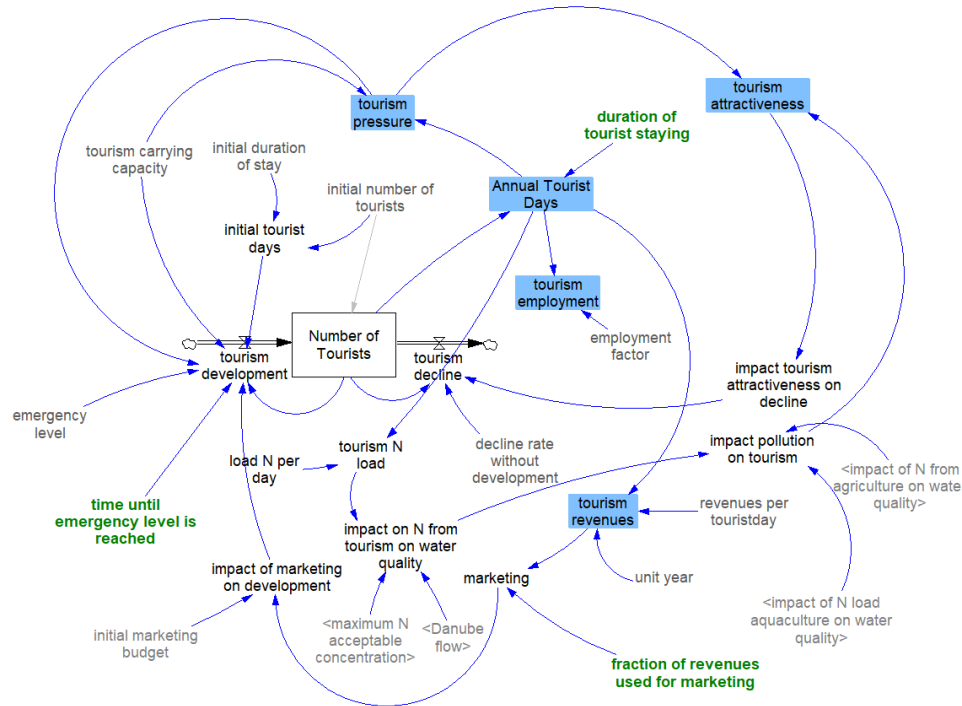
Source: <https://h2020-coastal.eu/assets/content/Deliverables/773782-COASTAL-WP4-D13.pdf>

However, the protected areas restrictions are limiting its growth which is usually accompanied by significant changes. Thus, the need for ecotourism was emphasized, as well as its diversification (*touristic activities*) leading to slow tourism in the benefit of the protected area (*biodiversity*) and local people (*workforce*). Destination planning and development strategies (*marketing, social events*) are important steps towards the greening of tourism.

The sub-model structure has as main balancing loop *Tourism-Pollution-Biodiversity - Tourism*. Thus, the sub model considers that the increase of tourism has as main consequence the increasing pollution which led to biodiversity decreasing, and the area attractiveness decreasing. Once the biodiversity has decreased the area is no more a touristic attraction. Pollution from Tourism, Tourism business development, Biodiversity and Clogged channels stocks in the sub model structure. The sub model drivers are *Climate change, Legislation, Administration of the Danube Delta Biosphere Reserve, Education, Spatial planning, Marketing*.

Subsequently, holding other meetings with tourism stakeholders, the variables were renamed, based on their views and perspectives on the importance of the purpose of the obtained model, which is to determine how far the rural tourism of the area can be developed, without damaging the balance with the environment. Among the main variables included in the model to be presented below, we can mention, in particular: **number of tourism** (stock variable), tourism pressure, tourism carrying capacity, employment factor, marketing budget, emergency level and time until the emergency level is reached, tourism development and tourism decline.

**Figure 2. The structure of the dynamic model Rural Tourism**



Source: <https://h2020-coastal.eu/assets/content/Deliverables/773782-COASTAL-WP4-D14.pdf>

The model (figure 2) includes representative data identified in Tulcea County, to maintain the accuracy and significance of the data we used as input for the model presented. The model includes a single stock variable, called Number of tourists, determined over a period of 30 years, taking the year 2020 as the beginning of the simulation and the end of the simulation until 2050. We have included in the model specific quantitative input variables, such as accommodation capacity, employment rate, level of urgency, time to reach the level of urgency, income generated by daily tourism activity, share of income used for marketing, initial number of tourists, initial length of stay of a tourist, the rate of decline without the development of the area. These variables are used as constant variables, based on calculations made with data from the National Institute of Statistics, in most cases, but also based on other scientific publications of interest for the model presented. Second, the model includes auxiliary variables, which are calculated and forecasted with a specific given formula, based on the first category of variables mentioned: initial tourist days, annual tourist days, employment in tourism, also the model worked with variables and run determined interactions. with the search function, following the shape of the Figure that experts and stakeholders in the field of tourism believe should be designed, such as: the pressure of tourism, tourist attractiveness, the impact of marketing on development.

Regarding the variable number of tourists, it is calculated based on the difference between the development of tourism and the decline of tourism:

Table 1 presents some equations introduced in order to define some variables in the model:

**Table 1. Tourism model equations introduced in the VENSIM program**

<i>No.</i>	<i>Variable name</i>	<i>Conceptual definition</i>	<i>Operational definition</i>
1	<b><i>Number of tourists</i></b>	Number of tourists who will visit at some point the Danube Delta	$\text{Tourism}(t - dt) + (\text{tourism\_development} - \text{tourism\_decline}) * dt$
2	<b><i>Tourism pressure</i></b>	The increase of the pressure will ensure the environment following the increase of the tourist activity in the area	Tourist Days/tourism carrying capacity, with Look up function, the higher the number of tourists
3	<b><i>Tourism revenues</i></b>	Revenues obtained by all economic agents in the Danube Delta area	Annual Tourist Days*revenues per touristday/unit year
4	<b><i>Tourism employment</i></b>	Evolution of the number of employees in the tourism field in the Danube Delta area	$\text{employment\_factor} * \text{Tourism}$

Source: introduced equations VENSIM model functionality, <https://h2020-coastal.eu/assets/content/Deliverables/773782-COASTAL-WP4-D14.pdf>

## CONCLUSIONS

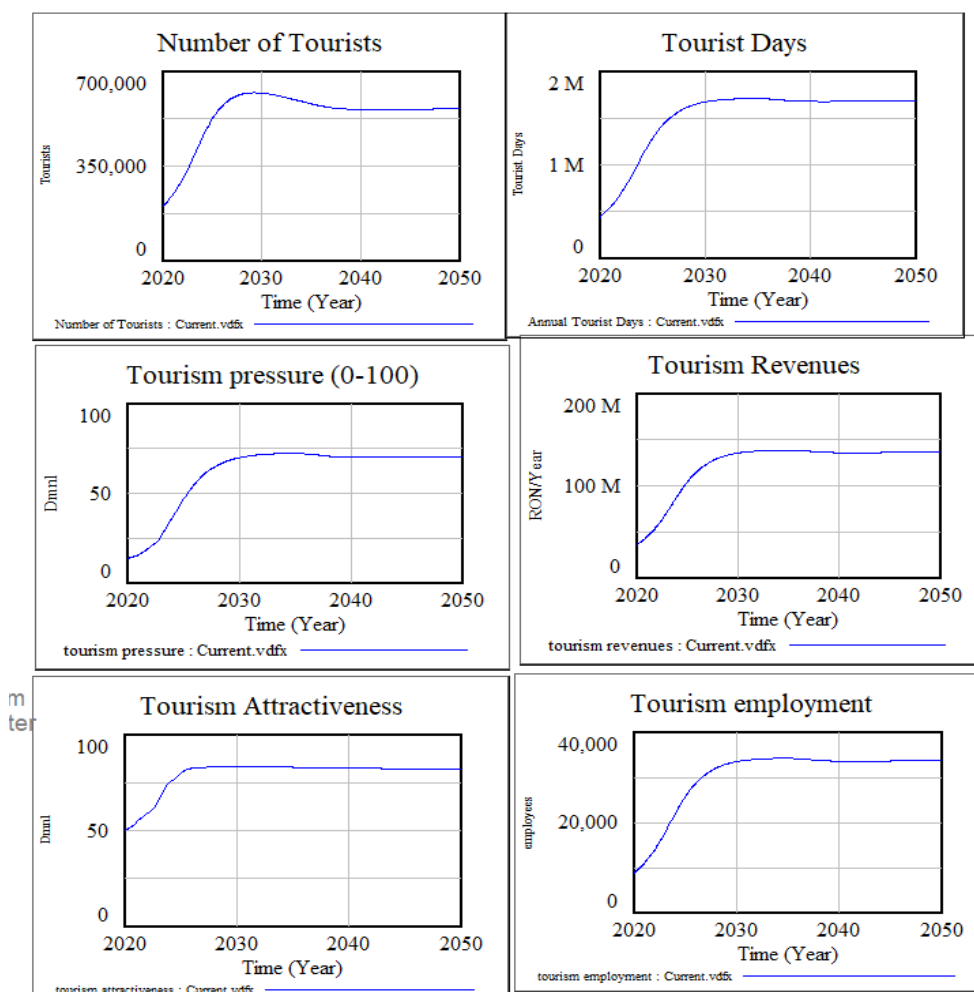
Figure 3 shows the main results obtained after running the model generated in VENSIM, edifying for the conclusions section of this paper.

Thus, regarding the number of tourists who will come to visit the Danube Delta, there is an increase in their number until 2031, and then this value decreases slowly between 2032-2040, starting with 2040 the number of tourists remaining constant. It is interesting that the variable fraction of income used in marketing has a large impact on the oscillation of the number of tourists, but also on other variables, such as: average length of stay of a tourist, number of nights, income from tourism, tourist attractiveness of the area, employment in tourism.

A larger marketing budget leads to a faster increase in the number of tourists, due to the increased level of development of the area, but the time frame in which the values of the presented variables increase is shortened. After this increase, all variables follow a decreasing trend, then remaining constant.

We can also add that the faster the number of tourists in the area or the average length of a stay increases, the more the tourism activity has a negative impact on the environment. Once the environment is affected, the number of tourists will be characterized by a downward curve. Generating higher revenues in the short term is not always the most efficient or effective method of developing a tourist area, which is also relevant for any management strategy to promote the Danube Delta area, it is necessary that its implementation corresponds to certain short, medium and long term goals.

**Figure 3. Results obtained after running the Rural Tourism in the Danube Delta model**



*Source :resulted graphs in VENSIM program*

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