

## SUSTAINABILITY, COMPETITIVITY AND FUTURE PERSPECTIVES FOR RURAL DEVELOPMENT TOWARDS BIOECONOMY - TULCEA COUNTY CASE STUDY

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### **Abstract**

*The present study aims to highlight the main features of economic activity in the Tulcea county, with specific interest in agriculture and the rural development sector. Regional goals for the revitalization of the rural area fostering sustainable development towards bioeconomy are based on the general aims of European strategies in this area. The settlement of regional bioeconomy in the Tulcea county and the neighboring areas, has great potential due to the high availability of the biologically based raw materials. Agriculture is well represented and it may become a cornerstone for food processing industry, boosting the economic progress. The paper employed a quantitative and a qualitative analysis using official strategy reports and statistical data in order to review the latest available data regarding the development of economic activities in Tulcea county. The statistical data were retrieved from the tempo on line data base.*

**Key words:** rural development, sustainability, Romanian coastal area, agriculture

### **INTRODUCTION**

To promote an efficient development and revitalization of rural area in Romania, the proper assessment of the current situation is needed. The challenge is to compare the sectors of bioeconomy while capturing their diversity.

Tulcea County is situated in the South-Eastern extremity of Romania, in Dobrogea region, being crossed by Parallel 45, to the west, to the north being bordered by the Danube and east of the Black Sea [7]. The structure of the land areas is diversified, being dominated by the reed-fishery and agricultural uses.

However, agriculture represents the major economic sector in the region, with high importance in bioeconomy area, fostering the establishment of the environment – economic development system [1].

In the Romanian coastal region, the agricultural sector accounts for 32 % of jobs (30 % in the whole country). Generally, the development strategy of this region, observes the Sustainable Development Strategy of UE, namely the overall objective to improve the management of natural resources and to avoid

their excessive exploitation, to recognize the value of ecosystem services [8, 9].

At regional level, the goal should be to reach a superior valorization of the available biomass and agricultural land, and assuring in the same time a sustainable management of natural resources. For a future integration of rural development, it is vital to find a balance towards a new perspective on traditional and high-value production, as well as creating opportunities and jobs for farming, forestry, fisheries, aquaculture and industry.

This paper presents an overview of the most recent available data regarding the development of economic activities in Tulcea county, with impact on the rural development towards a circular bioeconomy of the coastal area situated within its boundaries.

### **MATERIALS AND METHODS**

The data analysed was extracted from a wide range of statistical information provided by NIS database and MARD database. The research has a conceptual and a methodological dimension. The information was subjected to qualitative research methods,

processed through observation, analysis, assessment and comparison of data originating from official databases. The selective analysis of the specialised literature can lead to identification of current status and future trends, thus providing the necessary arguments for an objective conclusion, visualizing correlations between conceptual models.

From a methodological point of view, the technique of indirect research was used, with various articles and specialized studies published until now [2, 3]

The study aims to highlight the main features of economic activity in the Tulcea county, with specific interest in agriculture and the rural development sector.

## RESULTS AND DISCUSSIONS

The current economy of Tulcea county is characterized by a diversified industry, a private-based farming, trade favoured by the existence of all categories of means of transport (road, rail, river, sea and air) as well as tourism accentuated by the valorisation of Danube Delta attractions [4].

As most of the county's surface is included in the Danube Delta Biosphere Reservation with most of Romanian coastline, there is an inevitable conflict between nature conservation, environmental protection and preservation and on the other hand, the need for economic development.

The county's surface is 8.499 km<sup>2</sup>, representing 3.5% of the total area of Romania. The county comprises 51 administrative-territorial units, of which: Tulcea, the county residence - with one third of the population of the county, 4 towns, 46 communes (Table. 1).

From the population's point of view, according to NIS data (2016), over 240,000 people live in the Tulcea county, over 50% in rural area.

Tulcea county has the lowest populatin density of the country, due to the large water surface (Danube Delta and the Razim-Sinoe Lagoon Complex representing 40% of the area of the County).

Table 1. Tulcea County - Facts and figures

Basic facts	Year 2016
Area [km <sup>2</sup> ]	8,499
Population	243,419
• population density	28.6
• population by age (0-19 years)	48,057
• population by age (20-64 years)	159,343
• population by age (over 65 years)	36,019
Number of settlements /total/	51
Number of cities	4
Number of communes	46
Number of villages	133
No of person employment in agriculture	79,600
No of person employment in industry	22,400
Structure of companies according to the number of employees	
• Micro ( 0 – 9 persons )	4,152
• Small ( 10 – 49 persons )	435
• Medium ( 50 – 249 persons )	68
• Large (>250 persons)	10

Source: Own calculation on the basis of data from Tempo on line data base for 2016, NIS

Taking into consideration that almost 30% of the population is employed in the primary sector and an important share of the population is living in rural areas, it is widely recognized that farming activities hold a very important place in Romania's economy [3].

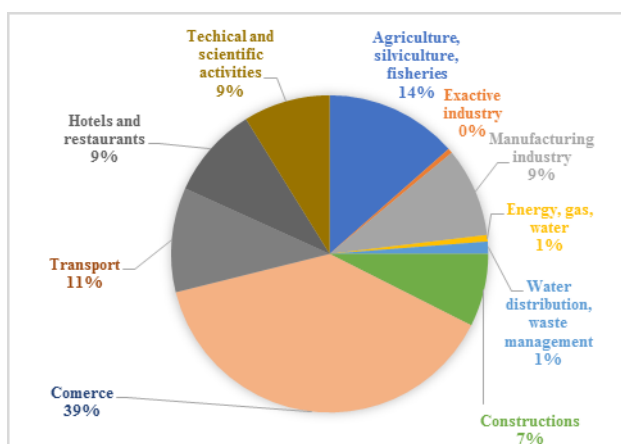


Fig. 1. Companies in Tulcea region according to main national economical accounts

Source: Own design

The companies activating in the area are mostly concerned with commerce (39 %), followed by agriculture, silviculture and fisheries (Fig. 1).

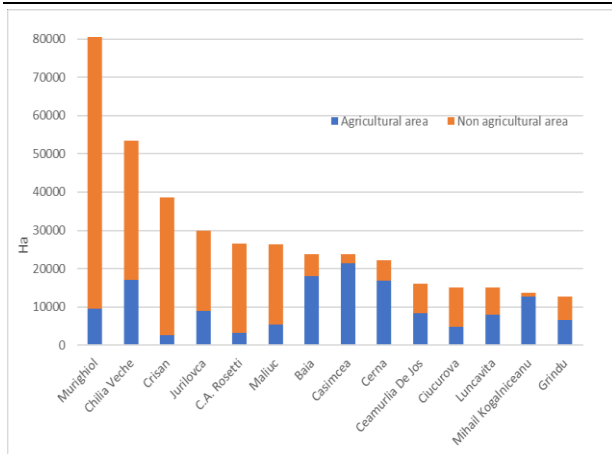


Fig. 2. Land utilisation by settlements, Tulcea County 2014

Source: original data retrieved from data from Tempo on line data base for 2016, NIS

However, agriculture is expected to remain the source of income for most of the population in the study area. 36% of the

localities have over 80% of the area occupied by agricultural crops (Fig. 2.)

As mentioned in official reports, agriculture and forestry account for one third of the total workforce in Tulcea County, followed by fisheries, industry and services [NIS data].

In spite of this, agriculture is a branch with limited potential in the area due to the limited land areas and the low soil fertility (predominantly poorly developed salt and sand and alluvial soils).

The structure of production is dominated by field crops. More than 95% of the total area is cultivated with field crops, mostly cereals (70%), followed by oil plants 11%, sunflower (8%), and rapeseed (3%). Orchards cover only 0.04% the total cultivated area reducing the possibility of having higher agricultural revenues [NIS data].

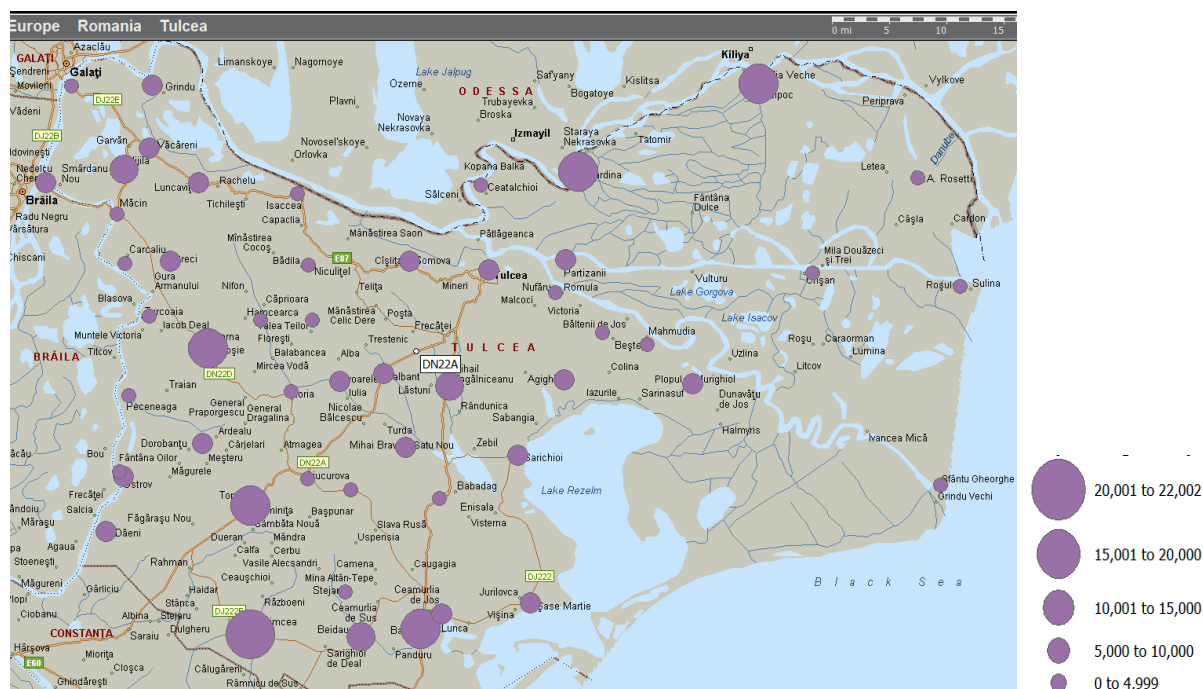


Fig. 3. Major territories with Agricultural area in Tulcea county, 2014 (ha)

Source: [5]

An official report on Danube Delta area Spatial planning project [5] identified the following trends in the agricultural area of the region:

-Western and southern areas, suitable for efficient agricultural exploitation, with large areas of agricultural land, pastures and meadows (Fig. 3);

-The diversity of crops in the agricultural area makes it suitable for sustainable development in the future;

-In the Western part of the region, favorable factors are generated by the proximity of Tulcea, the largest market and contact with the Dobrogea plateau (Malcoci-Murighiol sector);

-Areas with agro - tourism potential insufficiently capitalized due to the lack of adequate infrastructure. In these areas the degree of urbanization is very low;

-existence of 2 areas with a predominantly agrarian profile located as follows: one in the north-west and the other around Tulcea municipality insufficiently used for complementary cultures;

-mixed area predominantly appropriate for vineyards and orchards (Luncăvita, Isaccea and Niculițel) that need development [5].

From the point of view of functionality, rural settlements are classified according to the economic activities [4] prevailing as:

-Agricultural settlements - *Ceamurlia, Mereni, Jurilovca, Pecineaga*;

- Tourist settlements - *Murighiol*;

-Tertiary mixed settlements - Agricultural: *Valea Nucarilor*;

-Tertiary - industrial settlements: *C.A. Rosetti, Mihail Kogălniceanu, Niculițel, Topolog*

-Fishery and tertiary settlements: *Sf. Gheorghe, Crișan*.

Industrial enterprises are mainly located in urban centers (Tulcea, Babadag, Isaccea, Macin and Sulina), but there are also several companies in rural settlements (Niculițel, Topolog, Mihail Kogălniceanu and others). The industrial enterprises produce trawlers for fishing, pots, dormers, alumina and ferroalloys, refractory, furniture, timber, garments, canned fish, meat and milk preparations, alcoholic beverages, bakery, etc [7].

In Tulcea County, 10 quarries for building stone were authorized. These are mining exploitations from Măcin, Greci, Turcoaia, Cerna, Bididia, Somova, Isaccea, Luncăvita, Denistepe and Bașchioi.

Regarding the land-sea interaction, the regional strategy of development for the South East area of Romania [6] points out that the permanent assessment of the risks and impacts of the natural, traditionally unstable conditions is complemented by information on the anthropic impact, which negatively influences from ecological and economical point of view the coastal zone.

The main anthropogenic pressures identified in the Romanian coastal zone with significant

impact on the environment come from the development of socio-economic activities in the area.

Among these can be mentioned the following activities [6]:

-Tourism

-Agriculture and food industry

-Ports and sailing. Industrial shipping

-Construction of vacation homes in tourist areas;

-Petrochemical refining industry

-Extractive industry: ores, sand from coastal areas of small depth

-Shipbuilding;

#### ***Future prospects***

Regional goals for the revitalization of the rural area concerning sustainable development towards bioeconomy are based on the general aims of European strategies in this area. The settlement of regional bioeconomy in the Tulcea county and the neighboring areas, has great potential due to the high availability of the biologically based raw materials. Agriculture is well represented and it may become a cornerstone for food processing industry, boosting the economic progress.

The development of reed/biomass sector may potentiate the county's incomes, and especially the coastal area including the Danube Delta [1].

Moreover, the agricultural sector is a great producer of large amounts of residues which may be used as raw material in the circular economy. For example, straw shows the highest potential, of which the most promising are wheat straw and rape seed straw. Maize stover can be extracted from grain maize production, also [10].

For a balanced evolution of the land sea interactions, the strategy should go beyond traditional uses of resources including innovative bio-based technologies.

A better use of waste and the recovery of resources, such as nutrients, is recommended, thereby contributing to resource efficiency and circularity. Thus biogas plants and wind energy represent a good opportunity of the area.

The resources of the region are practically unlimited - the Dobrogea Plateau is one of the five areas with wind energy potential in the

country that have attracted the attention of investors. Wind farms were built in different areas of the county (Baia, Valea Nucarilor, Topolog, Măcin) [7, 8].

Due to the existence of Danube Delta Reservation and the coastal area of Black Sea, various forms of ecotourism may become available in the region,

Agriculture is essential to food security and is also a primary base for local entrepreneurship, employment and social development in many countries around the world [11]. But it can only contribute to sustainable and socially-inclusive economic development when stakeholders, policy makers and entrepreneurs in the sector are promote business opportunities, adapt to the challenges and continuously innovate [11].

## CONCLUSIONS

At present, the development of Tulcea County's economy is highly dependent on agricultural production while other industrial and commercial activities are implicated with a marginal role. For the near future, agriculture and ecotourism is expected to remain the major economic activity for the residents of Tulcea county, and more specific the coastal region and the surrounding areas.

The analysis of long-term impacts of agricultural activities and intensification of tourism for shoreline development is highly recommended as part of a resource efficient transition towards circular bioeconomy.

Cultivation practices, sustainability issues, legislative restrictions, technical limitations and competitive applications are to be considered.

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