

THE DANUBE DELTA BRAND IN THE NEW BIO-ECONOMY PARADIGM

Mădălina-Teodora Andrei^{1,2}, Costin Lianu², Simona-Corina Gudei²

¹ “Spiru Haret” University, Faculty of Engineering, Informatics and Geography, Bucharest, Romania, 13, Ion Ghica street, district 3, 030045, tel. +40213140075,

²USH Probusiness, Bucharest, Romania, 34-36, Nicolae Iorga street, district 1, 010436, +40216500014,
E-mail: m.andrei.geo@spiruharet.ro, madalinaa71@yahoo.com, clianu@gmail.ro, corinagudei@yahoo.com

ABSTRACT

Generally, wetlands have unique features, sometimes less valued by the economy, and, therefore, get harder in the economic cycle. The Danube Delta, the largest wetland in Romania and one of the most important in Europe, fit into this model being considered an undeveloped economic region but there are opportunities to go beyond this model. Global transformation trends are based on the concept of bio-economy, which creates possibilities for this area to enter a more dynamic economic circuit. For this transformation of the Danube Delta one should ascertain which are the ways of exploiting resources in accordance with environmental and geo-diversity conservation. We consider that any proposals for development of the Danube Delta bio-economy should be based on capacity building at the local business associations level, and a common vision, which can lead to progress. The capacity of the small business communities to create strategic alliances like cluster may be at the core of the new transformation processes. A case study for the progress of the bio-economy in the Danube Delta is related to the activity of the Bio Danubius cluster. The small producers of the Bio Danubius cluster may joint development efforts. In conclusion this paper is arguing that clusters can be a solution for sustainable development of the wetlands.

Keywords: wetlands, the Danube Delta, bio-economy, Bio Danubius cluster, economic value chain

1 INTRODUCTION

The biggest wetland in Romania, The Danube Delta (4152 km² of which 3446 km² are on Romanian territory, 5762.16 km² if we include as well Razelm-Sinoe lagoon complex) is the second largest and the best preserved of the European deltas. As a result, since 1991, it entered UNESCO World Heritage as reservation of the biosphere at a national level (DDBR) and as national park in the International Union for Conservation of Nature (IUCN) classification, but also as wetland of international importance through The Ramsar Convention on Wetlands. This special situation of the Danube Delta imposes a specific economic usage, which takes into account environmental protection, ecosystems' conservation and geo-diversity, including biodiversity. (Pop et al., 2011) The best way to sustainably develop this unique area is through bio-economy. In the European Union Strategy for Danube Region (EUSDR) context, this paper aims to aware about the bio-economic potential of the Danube Delta and, through the Bio Danubius Cluster, to provide the best financing solutions for the sustainable development. The message of the Bio Danubius Cluster is that “in the modern globalized world, where the risks of the unsustainable development model are threatening even our survival, we who are related by the Danube can do otherwise, bringing an unique contribution to transform the Danube region in the only alternative of prosperity that people have available, based on the environment and resources protection, the healthy living, the respect and care for generations to come, and the belief that together we are stronger”.

2 METHODS

The methods of scientific research used to substantiate this study are quantitative methods (statistical data usage, quantification of results) and qualitative methods (directly on field waters' research, implementation of questionnaires) to determine the main objectives and goals of Danube Delta's competitiveness in the bio-economy field and to identify the following aspects : the value chains of the bio economy in the Danube Delta; the bio-economy in the context of the EU Strategy for the Danube Region; organic farming potential of the Danube Delta; the exchange of the best practice and know-how; implementation of the joint projects; financing solutions and business opportunities for: supporting and promoting organic agriculture and food, development of products, services and eco/bio-processes, the promotion, development and support sustainable growth of tourism potential, support for energy efficiency and use of renewable energy, combating climate changes, protecting the environment and biodiversity, the sustainable and competitive development of the primary fisheries sector, increased connectivity, accessibility and mobility, revaluation of heritage, culture and local art, supporting the labour market integration of the population in the disadvantaged areas.

3 RESULTS AND DISCUSSION

At its influx, on the low shore of the Black Sea, the Danube forms a delta, Romania's newest land, which due to the solid flow (67 million tons of alluviums) increases annually by 40 m². From Patlageanca locality, the delta starts initially with two arms Chilia and Tulcea, the last dividing into two other: Sulina and Sf. Gheorghe, including in its perimeter secondary arms, channels, lakes, fluvial harbours and lagoons (in the depressionary areas), but also positive landforms, such as levees. (Coteț, 1973; Romanescu, 1995; Gâstescu, 1993). Transversely, Danube Delta is divided into two major natural regions: fluvial delta (over 65% of delta's total area) and maritime delta (less than 35%, which lies east of the Periprava line, on Chilia branch – Crișan, on Sulina branch – Ivancea, on St. Gheorghe branch – Crasnicol – Perișor). (Giosan et al., 2005) Flat and very large aquatic spaces, covered in varying degrees with vegetation, interrupted by sandy islands of the marine fields, form an active surface specific to the delta and adjacent lagoons, quite different from the Pontic steppes. The Danube Delta falls into the space with semiarid temperate climate specific to the Pontic steppes, but is regarded as the place with the least rainfall from Romania. This active area reacts to the total radiation received and to the general circulation of the atmosphere leading to a mosaic of microclimates. (Gâstescu et al., 1975; Minea et al., 2016) This physico-geographical diversity transfers upon the biodiversity, the Danube Delta being classified in the Pannonian and steppic biogeographic region of Dobrogea and presenting itself as a natural area with a high floristic and faunistic diversity expressed both at the species level and at the aquatic and terrestrial ecosystems level, being identified 29 types of habitats of communitary interest. (Iojă et al., 2010)

Danube Delta, but especially the territory of Danube Delta Biosphere Reservation is a complex area both in terms of natural heritage and the numerous anthropogenic influences exerted mainly by social and cultural groups, by local and central administrations which exert it through strategies and own measures. (Bell et al., 2001) Because of the large expanses of water, living in the Delta is characterized by small population densities (approx. 3 inhabitants / km²), but due to the strategic position at the border between three historical Romanian provinces (Wallachia, Moldova, Dobrogea), on the borders of old empires, the demography of the area stands out through the vast ethnic diversity (Romans – 87%, Lipovans, Ukrainians, Greeks, Turks, Tatars and others) reflected in the local architecture, occupations, mixture of words from the vocabulary of the spoken languages in the delta. (Meiță et al., 2014) The rural population predominates – approx. 90%. The localities from Danube Delta are concentrated mostly along the river branches and occupy small areas of land due to small areas of existing unflooded land, numbering between 25,000-30,000 inhabitants, excluding the city of Tulcea, with approx. 100,000 inhabitants. The most important locality from the interior of the delta is Sulina town, which concentrates about 20% of the total population of the Danube Delta Biosphere Reservation (DDBR).

In terms of the demographic and economic structure, the active population in the analysed region represents according to Population and Housing Census – 2011 data approx. 35% of the total, having an occupancy rate of approximately 80%. There are differences in the structure of the employed population by economic sectors between Danube Delta, entirely, and Danube Delta Biosphere Reservation. Thus, at the level of the whole Danube Delta, the population occupied in agriculture and forestry is reduced (approx. 2%), while the highest shares are recorded in industry, construction, trade, services (approx. 45%), followed teaching, education, culture (prox. 8%), health (approx. 7%), other activities of the national economy totalling approx. 35%. Instead, in the Danube Delta Biosphere Reservation, on the first place stands the population occupied in agriculture and forestry (approx. 30%), then in industry, construction, trade, services (approx. 15%), followed by tourism, transportation and communication (approx. 15%); fishing and pisciculture (approx. 15%); public administration (approx. 13%); teaching, education, culture (approx. 13%); health (approx. 2%), other activities (approx. 4%). That is why, a bio-economic exploitation of the protected areas from the Danube Delta is required in the existing conditions.

Because the most important economic sectors developed in the Danube Delta, for the concept of bio-economy, are the industry and agriculture, we will pay them a more special attention. The specific of the industry from the delta is given by the location of the industrial units in the adjacent area, the greatest development being recorded in Tulcea, a true hypertrophic industrial centre and the main pole of economic attraction, where are found the manufacturing industries, with risk of polluting the area, but also less polluting industries. These are distributed into the two industrial functional areas of the city, eastern and western, being represented by the production of burnt alumina, construction and repair of ships, cans, reed collecting, tourism industry and so on. Inside the delta, the town accessible only by waterway, Sulina, is the most important industrial centre, through the presence of the shipyard and the food industry (cans, bread manufacture etc.).

However, agriculture represents the main occupation from the Danube Delta Biosphere Reservation, with major importance in bio-economy, so that we will insist on those aspects that determine the environment – economic development system. On the territory of the Danube Delta Biosphere Reservation, the agricultural lands represent a ratio of approx. 13%, amounting to a total of 61,453 ha. Out of the area of 61,453 ha of agricultural land, 39,947 ha (64%) are within the dammed and drained agricultural enclosures inside Danube Delta (Șireasa – 5,480 ha, Pardina – 27,032 ha, Tătaru – 2,061 ha, Carasuhat – 2,863 ha, Dunavăț-Murighiol – 2,538 ha), 10,617 ha (17.3%) are within the dammed and drained agricultural enclosures located along Sf. Gheorghe branch, the rest being on the continental levees, on the shore levees of the inland hydrographic network, the river-marine levees and the deltaic plain, in free flooding regime. In terms of the agricultural land usage structure, the highest share is held by the arable land (63%), followed by natural grasslands (36%). Vineyards and orchards occupy insignificant areas on the private lands of the inhabitants. In point of location, the majority of the arable lands are located in the economic area of the fluvial delta, morphologically and pedologically more evolved. In the terms of good management, the agricultural ecosystems from the fluvial delta can have a big production capacity for straws grains, corn, vegetables, potatoes, soybeans and forage plants. Within the dammed agricultural enclosures, the arable lands are used mostly for grain production. The largest surfaces are planted with wheat, corn, sunflower, cole, fodder crops. The agricultural activity on the Danube Delta Biosphere Reservation takes place according to the environmental permits for the lands from the category of “agricultural lands” and based on the permits of farming on the lands that have temporarily exit the waters. In terms of ownership, the agricultural establishments from the Reservation are public domain of local (3044 ha) and county (36 930 ha) interest and are under the administration of the Local Councils and Tulcea County Council. To cultivate these lands within the Danube Delta Biosphere Reservation using the permit issued by DDBRA, is required the use of traditional technologies, is prohibited the use of plant protection products and mechanical means and is prohibited the emplacement of any kind of buildings. Animal breeding – the other branch of agriculture – is an old occupation of the local population from the Reservation’s territory. Over 36% (22,545 ha meadows) of the agricultural lands and to a small extent other non-agricultural lands are used for animal breeding, which is a traditional activity of the inhabitants of the Reservation. Animal breeding in DDBR is done in intensive system. Cattle, horses or pigs are breed in free stabulation on the deltaic levees or on the lands freshly drained from the flood. Sheep breeding is organized traditionally and is practiced mainly on communal pastures (pasturages). Also, surfaces with agricultural usage located in established enclosures, category “arable”, are often used for grazing, as well as surfaces with “reed” or “forest” usage were used as pasture.

It should be mentioned that the area of the Danube Delta Biosphere Reservation has been in the last decades the scene of some major changes in its functionality and status. Although the Danube Delta’s area has been since 1940 the subject of some protective actions, concurrently has faced numerous arrangements and human activities (mainly between 1960 and 1989) which have caused imbalances and negative influences upon its biodiversity. The change of the economic system after 1989 had led to shutting-down the arrangements from the Delta, commencing the process of declaring the area Biosphere Reservation in December 1991. The decentralization of economy has led to the emergence of some other demands imposed by the economic activities based on private initiative, changes in the structure of income and leisure and others.

The spreading of the strictly protected areas throughout the reservation’s area makes any anthropic action produced in a certain part of the area to be felt by Delta’s biotopes. (Andrei, 2008) The primary relationship which must therefore be optimized by applying the concept of bio-economy is between the functioning of the biosphere, on the one hand, whose natural area should retain its integrity and, on the other hand, development of human activity exploiting the resources of this area. (Andrei, 2008) The richness and culture and environmental diversity of the region bring economic opportunities for business development and co-benefits for agriculture, touristic industry, local fishing and aquaculture, development of small and medium enterprises, small handicraft workshops, preservation of movable and immovable assets of the region’s cultural heritage (traditions, art, local cuisine, sites and cultural events etc.), minority groups integration into society and preservation of their cultural heritage, creation of local brands and supporting the transformation of Danube Delta into a national and international brand in order to bring added value to the distinct positioning, structure and functionality of the area, by transforming local constraints into opportunities and benefits. The concept of bio-economy in the area should take into account and regulate the advantages and malfunctions of this area unique in the world. (Butu et al., 2016) The varied natural capital of the Danube Delta represents an important reserve of biodiversity of inestimable value, which can be used in the green economy, but that can easily be destabilized and assaulted by the anthropic processes threatening

the integrity of the natural environment (modification of the hydrological regime, modifying the water circulation, changing the degree of flooding through damming, destabilizing geo-diversity, pollution, etc.), especially through activities nonspecific to the deltaic area: arrangements of large agricultural enclosures (Pardina, Şireasa, Carasuhat), sylvan establishments that endanger the ecological balance and biodiversity's potential, or by oversizing the exploitations specific to the delta: large fishy establishments (Popina, Chilia Veche), large reed exploitation units (Rusca-Uzlina). From direct findings on the field and from the consultations with local action factors, development and diversification of area's economy, especially in rural areas through bio-economy, must be developed in the following directions:

- agriculture: because it is an area that is very well suited for the development of an bio agriculture, fit for a wide variety of agricultural activities, with local (Tulcea municipality), regional (touristic area of Danube Delta and of the Romanian coast of the Black Sea), national and international (are targeted especially the EU countries) outlets. The sustainable development of the agriculture in the area should take into account the restricted surfaces of dry land inside the delta with soils not fully developed because of the sandy substrate and the mineralization of ground the water and fragile before the adverse weather conditions which trigger phenomena such as erosion and desertification. The bio-economy of the area should move towards a direction of success that takes into account the extraordinary agro-touristic potential of delta, which is insufficiently highlighted due to lack of an appropriate infrastructure and the reduced degree of urbanization, but precisely these malfunctions can be turned into pluses for increasing the attractiveness of the area; (Jordan et al., 2007)
- pisciculture: benefits from the exploitation of the largest surfaces of the delta, with generous resources. It can be said that this economic sector had suffered most and has been the most distressed by: reducing the quality and quantity of the fisheries because of pollution, which has led to the drastic decline of the species valuable from the economic point of view; altering the structure on species of the hauls by the accidental introduction of some invasive alien species; insufficient and inefficient exploitation of aquaculture areas with negative consequences on their productive potential; intensification of industrial fishing, of poaching and efficient monitoring of fish stocks with negative effects on fish production, which has also led to the decline of fisheries. A traditional exploitation, a careful monitoring and a reorganization of the fish market can be a viable solution for the bio-economy of the area;
- reed/biomass: its exploitation is based on the high potential of the area. Reed capitalization is favoured by the great wealth of resources and is subject to weather conditions (cropping is done in the winter) and is the relationship between exploitation and processing. The development of this sector may potentiate Danube Delta's bio-economy;
- tourism: distinguishes itself through a special natural and anthropic potential, unique, with multiple possibilities for capitalization and development of various types of tourism (ecotourism, leisure tourism, cruise tourism, heliotherapy tourism, fishing and hunting tourism, sport tourism, scientific tourism, cultural tourism, rural tourism, agri-tourism etc.). For a development consistent with the environmental protection and conservation of this economic sector should be taken into account: the gradual limitation of the mass tourism and the establishment of touristic flows in correlation with the ecological carrying capacity of each ecosystem or area; the need to improve the basic resource for practicing tourism in the protected areas, as tourism is excluded from the strictly protected areas and of ecological reconstruction, but can be practiced in the rest of the delta, especially in buffer zones; the need for ecological education for practicing tourism in the area; the need to use some environmentally friendly touristic equipment; spatial restructuring and planning considering the earlier statements. A strong point in the development of the bio-economy through tourism is connected to agri-tourism, which is insufficiently developed in the villages on the Danube branches and can provide resources and outlets for local, traditional, eco / bio products.

The bio-economic development of the Danube Delta is in full compliance with the national vision defined by the Danube Delta Integrated Development Strategy (DDIDS) until 2030. The strategy aims to ensure a balance between protecting the unique natural heritage of the Danube Delta Biosphere Reservation (DDBR) and the socio-economic development bating an ace the aspirations of local residents by improving living conditions, creating some better economic opportunities and an adequate capitalization of the natural and cultural heritage. The objectives of our study of developing Danube Delta's bio-economy is part of Pillar II of the DDIDS: "Improving economy" and corresponds its vision of developing an area "*with precious biodiversity and vibrant, small/medium scale (artisanal and modern) agriculture and business – where people live in harmony with nature; integrating economies of tourism, farming and fishery; and supported by urban service centres.*" Moreover, the vision is divided into two sub-zones as follows: "**vision for the Danube Delta (the Biosphere Reservation area): a "living delta" (an area where people live and work)**

with balanced support for the environment and the community; a healthy, sustainable local economy – mainly based on nature and culture tourism; and with an inclusive planning process (residents, governments, businesses), and vision for the neighbouring area: a vibrant, modern agricultural and small enterprise area, with a network of urban service centres and a tourism sector that is integrated with the attractions of the area and the Delta.” From this vision derives the following strategic objectives, which are in harmony with our vision and that of the Bio Danubius cluster about the bio-economic development of the Danube Delta: “*conserve the unique environmental and natural resource assets through scientifically guided environmental management, and through empowerment of local communities to be proactive guardians of this unique global heritage*”, and “*develop a sustainable, green local economy capitalizing on the area’s comparative advantages, supported by improved services.*”

Analysing the objectives and the strategic vision of the region we will see that the green economy or bio-economy are in the centre of the regional strategic concerns, in our opinion Danube Delta being the region from Romania with the greatest potential for the application of bio-economy. (Ipate et al., 2015) We believe that the principles of bio-economy can be applied in a regional context in which the local business environment is relatively less developed. In this regard, we examined the trends of bio-economy’s development in Europe noticing that the vector of this new form of economy is represented by clusters or groups of clusters.

The clusters are strategic alliances between regional concentrations of companies, universities, research institutes and public authorities working together to increase the region’s competitiveness. (Porter, 2008b) In our opinion, they are qualified to take over the principles of bio-economy. (Lianu, 2015) On the one hand, they can concentrate the regional economic force and, on the other hand, they can attract the intervention of local authorities, research institutes and universities to common actions for replacing the old value chains and the creation of some new value chains of bio-economy. For example, switching to organic production or consumption or the development of some value chains in which local raw materials (reed, bulrush, mud, etc.) can replace the value chains of chemical or petrochemical industries often presupposes high costs for research, technological development that university centres or research institutes can absorb. We will plead for stimulating these processes in Romania, analysing the conditions of a newly developed cluster in the Danube Delta region. In Romania the phenomenon of regional clustering, namely of developing these collaborative forms is still early compared to other countries with a performing market economy, still existing reticence and lack of confidence of the economic actors towards these forms of association. The agrifood sector, especially of the organic production, represents an area where manufacturers’ association is essential in order to be competitive. (Epure et al., 2009; Barna et al., 2010) Bio Danubius Cluster is a unique example in this regard developing into a favourite and emblematic area for bio agriculture, respectively Tulcea County and the Danube Delta’s area. Using the questionnaire as a method of investigation (Cătoiu, 2002), among the Bio Danubius cluster’s members, has been diagnosed the ability of association and confidence of the members, as well as the way they perceive to interact for the development a sustainable strategic alliance. The decisional problem lies in the fact that the member firms of the cluster, in their concern for the development of their own businesses, need, given the conditions of the major economic and social changes associated to the knowledge-based economy, cooperation in order to become more competitive on the market. In this regard, Bio Danubius cluster can become the key to success in achieving the common goals of the companies, offering solutions to interconnect technological, informational, research-development-innovation resources.

The purpose of the research was: identifying the needs of the member firms of the Bio Danubius cluster, in order to improve, streamline and represent their interests. Through the presented purpose has been pursued the gathering of information necessary to the cluster’s management factors in order to develop cluster’s future strategy. (Kotler, Keller, 2008)

Starting from the purpose, the objectives have been drafted, which led to the identification of the necessary information for marketing analysis. By formulating the objectives was aimed at operational level the obtaining of the necessary information for substantiating the decisions of cluster’s management factors.(Epure et al., 2008)

The main objectives considered have targeted: identifying the socio-economic characteristics of Bio Danubius cluster’s members; identifying the degree of development at national and international level of the companies; determining the importance level of promoting the companies in the online environment; identifying companies’ degree of familiarity with the concept of cluster; identifying the difficulties in implementing the concept of cluster in the South-East region of Romania; determining the level of importance given to the initiative of organizing companies in cluster within similar fields of activity and allied fields; anticipating the degree of development of the entrepreneurial potential by means of the newly

established cluster; identifying the main competitors of the companies on the international markets as countries and as firms; determining the opinion of cluster's members about the importance of involving the research-development-innovation sector in companies' activity in the collaboration with other entities; identifying the ratio of the necessary expenses for research and development at the company's level; identifying the cluster members' opinion regarding the collaboration with the public authorities; determining the level of importance in terms of managerial improvement of cluster members' representatives; determining the level of importance assigned to the organization of workshops in order to develop the Bio Danubius cluster; identifying the communication channels used to promote the companies; analysis of the strengths and weaknesses of the companies; identify the main constraints and their impact on companies' business development.

Research hypotheses:

- in proportion of 100% the respondents are the member companies' managers of the Bio Danubius cluster;
- most of the managers are familiar with the concept of cluster;
- the majority of respondents are men.

The gathering of information was based on questionnaire; **the investigated collectivity** consisting of companies operating in the South-East region of Romania, in Tulcea County, as members of the Bio Danubius cluster, **the observation unit** (which is the subject of research) was represented by companies. **The survey unit** (from where information was collected) was as well represented by companies through their managers. The questionnaire was administered to those 23 member companies of the Bio Danubius cluster. (Enache et al., 2006)

Following the survey and questionnaire application, the research results have determined that the majority of respondents are representatives of SMEs and develop activities in the area of goods and services production (43%). In the service sector carry out activities a percentage of 22%, and in the field of industrial goods production, 9%. 26% of the companies have indicated as main object of activity other activities than those indicated in the questionnaire, namely: agriculture, pisciculture, online trading, research-development. It resulted that most of the companies operate on the domestic market (43%). At the level of the European Union's member states only 30% of companies develop foreign trade activities and at the international level the percentage is of 13%. Only 4% of the respondents are active on all indicated markets. In terms of brand development at company level, the percentage is low (26%). Half of the companies have been registering the brand nationally, 33% internationally and 17% at EU level.

Within the promotion policy, 65% of the companies have promotional activities in the online environment. However, 35% of the companies do not use this method of promotion; the majority of the respondents (47%) indicate e-mail marketing as the main method of online promotion, 27% use business portals, 13% appeal to each of the indicated methods of promotion; the majority of the respondents (74%) consider the promotion of the company in the online environment as being very important.

More than half of the companies (57%) are older than 10 years on the market, followed by (17%) – companies with an age ranging between 1 to 4 years and with the same percentage (13%) are situated the companies with a seniority on the market of less than 1 year and those with a seniority on the market comprised in the 5-10 years range. Regarding the number of employees, (70%) of the companies have between 10-100 employees, 26% of the companies have between 1-9 employees and only 4% have between 101-1,000 employees and regarding the size of the turnover, the respondents in a percentage of nearly 40%, indicate over 1,000,000 euros, followed by 30.43% with a turnover in the range of 500,001-1,000,000 euros and the same percentage, with a turnover lower than 500,000 euros.

Most of the companies' representatives involved in the research are familiar with the concept of cluster. In the area of the Bio Danubius cluster formation, more than half of the companies (52%) confirm that they have joint activities with other operators from the area especially in sales, then in professional training of employees and only 13% of the companies have indicated joint marketing activities and only 4% innovation activities. In the last 5 years only 17% of the companies have implemented innovative projects with other companies in the area, from the category of research projects, regional development projects and innovation projects. For the collaborative activity with universities and research institutes, in the past 5 years, only 52% of the companies have collaborated, half of the respondents have collaborated with research institutes, 33% with local or regional Chambers of Commerce and Industry, 17% with universities. The involvement of the research-development-innovation sector in companies' activity is insufficient, in the collaborations with universities, research institutes or within their own companies. The proportion of the expenditure on research-development at the company level is below 5% for 70% of the companies, 17% of

the companies invest between 5.1-10% in research and development. Over 20% investment in this area achieved only 13% of the companies.

In the relationship with the competitors, more than half of the respondents believe that they compete with other companies for the same customers, 30% of them compete for the same benefits and 13% for the same employees. The companies that develop foreign trade activities have as main competitors on the international markets countries such as Germany, Hungary, Austria, France, Bulgaria, Poland, Italy, Portugal and the Netherlands.

Collaboration with public authorities enjoys pretty good feedback from companies. Companies that collaborate with third party services providers and NGOs have indicated the following catalyst institutions: The Union of Bilateral Chambers of Commerce from Romania, Bio Romania Association, Research Institute of Agriculture Mechanization and Electrification, National Agency for Agricultural Consultancy, Tulcea County Agricultural Advisory Centre, banking institutions, leasing companies, consulting companies for obtaining European irredeemable structural funds.

Most companies have development strategies and the lines of action indicated in the strategies are: establishment of a laboratory for organic products, company's online promotion, the company's participation at national and international fairs and exhibitions, the allocation of a higher budget for company's promotion policy, increasing the quality of customer services, launching and promotion of new products, distribution policy development at national and international level, improvement of the goods logistics at the level of imports, development of a brand at the national, revamping.

The future development potential of the companies as members in the Bio Danubius cluster enjoys good reviews from the companies who have confidence in this type of partnership and it has been observed the importance of developing a strategy for the development and internationalization of the cluster, as well as the development a marketing, networking strategy of the cluster, the two types of indicated strategies in order to be developed enjoy very good reviews from the companies.

All companies consider as important initiative the managerial improvement of the representatives of the cluster's members, in particular by organizing workshops with the view to develop a cluster (96%).

The hierarchy of opinions about the difficulties faced by the implementation of the cluster concept in the region is: insufficient information related to the regional economic situation, lack of interest among companies for implementing the concept of cluster in the region and low number of institutions involved effectively. And in the involvement of the bodies for supporting the implementation of the concept of economic cluster in the first place are listed the companies, then the Local Councils and in the third place the Chambers of Commerce.

For more than half of the companies the situation of the strengths and weaknesses is: the company's management, products' quality, company's experience, services quality (strengths) and financial resources, information resources, a strong brand, logistics, highly qualified human resource, type of business organization, the company's reputation (weaknesses).

Most of the company's representatives (91%) have studies or training in the field of management. Equality as a percentage (28.57%) are situated the respondents who have experience in management within the 11-20 years range and those with an experience of over 20 years, and 23.81% have an experience below 10 years.

The majority of the subjects (34.78%) are over 56, but totalling the previous age intervals it appears that more than half of the respondents are between 36 and 55 years old and 13.04% are young people aged between 27-35. The majority of the respondents (96%), as representatives of the companies, are part of the statistical category – male.

5. CONCLUSIONS

Based on the data and the main results we can see that the mainly model of economic agent acting in the Bio Danubius cluster are SMEs or small producers that have activities focused on the value chain in production with a low to medium processing degree. The connections of these economic agents with the research activity or with the professional training or the academic environment were sporadic or insignificant until the formation of the cluster. On the other hand, the internationalization activity is concentrated on the export mainly of raw materials or primary products processed without complex marketing activities and research or trading on foreign markets under own brand. (Florescu, 1997) The members of the cluster have limited knowledge on foreign markets and prefer to export raw materials to destinations in the European Union. The companies in the cluster are still insufficiently familiar with the concept of cluster and still at the beginning of the road regarding the establishment of strategic alliances in business or the development of

forms of collaboration on the local value chain. Although it is in an early development stage, well managed, the cluster can capture value on the local value chain through bio processing and through the development of new connections with other local value chains of the bio-economy (eco-tourism, reed, bulrush and other local resources capitalization, waste capitalization, etc.). The research conducted has a series of important implications. For the Bio Danubius cluster to function in the new paradigm of bio-economy it is particularly necessary a constant managerial effort to bring together the members in order to understand and realize the importance of the cluster. Also, cluster members' familiarization with the concepts and opportunities offered by bio-economy are essential. Given the low level of research and innovation within the cluster, it is essential the creation of community of practice, which, based on the analysis of the value chains in the area, sets goals for the smart specialization in this field. (Porter, 2008a) Using and applying the methodology of the communities of practice to the regional value chain analyses, clusters in wetlands may identify best strategic option for the sustainable development of those regions based on bio economy principles.

ACKNOWLEDGEMENTS

Our thanks to USH ProBusiness, "Spiru Haret" University's specialized centre for activities dedicated to the entrepreneurial environment, designed to help companies and provide solutions for sustaining competitiveness, which has created the necessary framework for the cluster activities and has put at our disposal all the information which have formed the basis of this study, through "Clusters – Consultancy, training, elaboration of development and innovation strategies" programme, and also "EUSDR consulting, training and project development" programme.

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