

DORNA BASIN - MAJOR OBJECTIVE FOR DEVELOPMENT OF TOURISM AND AGROTOURISM IN THE NORTH OF MOLDOVA

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PART II

Abstract

Agrotourism is specific for natural areas, connecting with rural touristic areas and, at the same time, a solution to highlight the potential of rural households by exploiting the possibilities of accommodation for receiving guests and providing services for short periods for relaxation, rest and recreational activities, therapeutic cures, but also for business, studies and arts and crafts documentation, meeting a particular hobby, etc., all of these achieved by carrying out activities within or outside rural households (Miron Mihaela, 1996; Bran Florina et al., 1996; Chiran A. et al., 2008; Czosz I., 1996; Ghereș Marilena, 2003; Rey R., 1999; Ungureanu D., 2005).

If we analyze agrotourism, we find that it is a particular form of tourism, more comprehensive, which includes both tourism activities themselves, but also economic activities such as agriculture (production, processing and marketing of finished products) made in rural households.

For tourism and agrotourism development in the north of Moldova, Dorna basin was taken in study, as a representative place in this area.

The agrotourism area, which combines all the local attractions, stirs interest in supporting village infrastructure improvement, strengthen the spiritual life of the Romanian village, creating public service homogenization promoter, at least in urban areas.

Key words: tourism, mountain agrotourism, Dorna basin

INTRODUCTION

The agrotourism economic system can be analyzed as an "open cybernetic system", which is influenced by and influences the external environment (Fig.1):

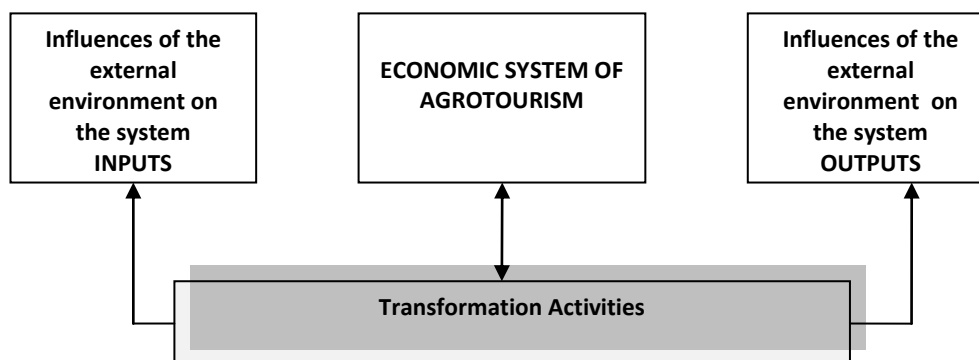


Fig. 1. The cybernetic agrotourism system (after Alecu I.N. and Constantin M., 2006)

Agrotourism can be an important source of revenue growth by combining various tourist services with agricultural activities.

The agrotourism market is subject to the same rules that generally apply to the tourist market, with some peculiarities that manifest at agrotourism level. In most cases, tourism needs satisfaction combines the consumption of integrated agrotourism products with the purchase of other products and services related thereto.

The agrotourism services market itself and the product market may be in a **relation of completion** (when the goods contained in the agrotourism product differ from those of trade - complementary or insufficient), **competition** (goods are identical or replace each other) or **indifference** (no influence on each other).

Rural and agro tourism product consists of **main components** (accommodation, food and transport) and **auxiliary components** (balneotherapy, leisure, sports, education, etc.).

The choice of destinations and tourism product is influenced by several factors (Gerasim T. and Gerasim D., 1999):

- **Natural** - geographical location, terrain, vegetation, fauna and climate; **Culture** - language, folklore, religion, art, politics, etc; **Human** - mentality and hospitality of local people, local government attitude to tourists; **Infrastructure** - utilities (telecommunications, energy and water supply, sewerage), other services such as the transportation, banking etc; **Tourist facilities** - transport, accommodation units, catering, sport, recreation, information etc; **Auxiliary services** - leisure (sports and popular activities), excursions, medical spa cures, herbal baths and tea baths, from local flora, participation in hunting and fishing parties, renting / selling the necessary equipment for the mentioned activities.

MATERIAL AND METHOD

To highlight the influence of a certain area on tourism and agrotourism, the authors referred to a case study, represented by Dorna basin, in the North-East of Romania. They have analyzed several indicators related to natural conditions, but also economic and financial, tourist and agro-tourist guesthouses and services, correlations of the rural tourism and agrotourism with the external environment.

The main focus was on analyzing conditions of soil and climate and numerous attractions offered by the Dorna basin.

RESULTS AND DISCUSSION

Intensification of livestock, a traditional occupation, and the need for rapid milk processing imposed the building of the milk industrialization factory of Vatra Dornei. With its 8 sections (Podu Coșnei, Dorna Candrenilor, Șarul Dornei, Neagra Șarului, Panaci, Ortoaia, Poiana Stampei, Broșteni), the factory produces many kinds of cheese and butter, of which, as a specialty, Swiss cheese stands out.

The tourism background consists of all natural and socio-cultural-historical (anthropogenic) resources for touristic exploitation, which form the potential offer basis of a territory. The tourism background is split into two categories: **natural tourism background** and **social-cultural-historical (anthropogenic) tourism background**, each comprising a complex of specific factors, with different roles, but overall emerging the personality of the entire studied region.

The natural potential is an essential factor of attractiveness. Its presence is directly linked to the existence or absence of tourism activities. Within it there are components of the natural environment, with a different contribution, depending on quantitative and qualitative relations existing in its structure.

The relief of the basin includes altitudes of 800-900 m, surrounded by mountains.

The genesis of the basin - one of the largest basins of the Eastern Carpathians - has generated numerous discussions, often contradictory. The most plausible hypothesis is that of mixed origin, tectonic and erosion.

In the north-east, the Bărnărel is looming (1,321 m) as an extension of the Giupalău massif. From his top, Vatra Dornei appears like a fortress, with huddled houses, with river Dorna flowing through its middle.

Other special views are offered by Pietrosul Bistriței (1.791 m), finished on top with the rocks that gave its name. Bistrița river flows in the foothills of the same name, whose course, following it, offers, down from Chiril, the insight of Rarău (1,651 m) and Pietrele Doamnei (high cliffs with

the appearance of city ruins). To the south there is the Călimani mountains wall. From the Diecilor top (1,301m), the following can be seen on clear days: the plateau formed by Negoiu Unguresc (2,081 m) and Pietrosu (2,100 m) peaks, but also Călimanul Cerbului (2,013 m).

Dorna's natural beauties continue westward. In the heart of the mountains there is the Poiana Stampei basin, covered with forests of fir and pine trees, followed by Măgura Calului, one of the highest passes, and continues with Bârgău (1,300 m), consisting of isolated peaks above which the Rodna mountains massif dominates (Pietrosul Rodnei peak - 2,301 m).

The morpho-touristic background imposes itself through predominantly landscape related valences. The result was a variety of morphological forms what constitute specific categories of tourist attractions.

The touristic climate, influenced by the natural setting of relief from 500 to 2500 m, is one of the contributory factors or, conversely, inhibits of tourism activities. Specific climatic elements, individually or as a whole, act stimulative or restrictive, along with other components of natural tourism background, in the opportunities to practice certain forms of tourism. On the other hand, climatic elements, acting differently on the human body, introduce a very rigorous selection of categories of people compatible (physiologically) to the access or staying in a certain mountain natural ambience.

Solar radiation regime has direct implications in the evolution of the main climate factors influencing tourism activity directly. A specific phenomenon, with implications for economic activities, is the temperature inversions, primarily occurring in cold weather, more pronounced in closed intermountain basins, which favor the accumulation of cold air. Thermal inversions cases frequency reaches a maximum in January, when the average monthly temperature falls below -6°C and occurs sporadically in July, when the average temperature does not exceed 14°C .

Air humidity regime influences cloudiness. In the basin, the maximum cloudiness occurs in winter (from 6.3 to 6.6 tenths) and the minimum in summer (from 4.9 to 5.3 tenths). This makes optimal season for practicing mountain tourism to be in the range from August to September.

Rainfall has an uneven distribution, with a substantial increase in altitude and from east to west. Average annual rainfall is over 600 mm (Vatra Dornei - 672 mm), although variation from one year to another is quite high. For example, in 1912, Vatra Dornei had 1033 mm rainfall, while in 1921 only 470 mm. There are differences between the eastern part of the basin, where precipitation have value close to the annual average, and the western side, where they reach 700-750 mm / year.

For tourism activity, **solid precipitation** has a special importance. At altitudes of 800-1200 m, where most mountain resorts are located, the average thickness of snow is 40-50 cm and has a duration of 100 days (from December to March). Therefore, there are favorable conditions and a sufficiently long period of time for **winter sports**.

The **air temperature** in the center of the basin, in Vatra Dornei, records an annual average of 5,2°C and the average temperatures of the warmest and coldest months vary between 15°C in July and August and -6,1°C in January.

Dorna basin is dominated by **winds that blow from the SW, V and E, NE sectors**, whose speed is generally low (rarely equals or exceeds 20 m/s). Frequently, records show many calm days (30-50 %). (Ungureanu D., 2005).

In Dorna basin the prevailing ionization is negative - this is due mainly to ultraviolet radiation and resinous aerosols produced by coniferous forests. In these specific climatic conditions, the human body reacts differently, especially to sudden changes of weather. These factors, within certain limits, do not influence body condition, they are indifferent or sedatives or, conversely, create a state of relaxation and comfort.

The hydrographic network has a different slant longitudinal profile, with often sunken river beds, frequent falls (cataracts, waterfalls - in the mountains), of variable widths and flows, depending on size category and received tributaries, are bordered by woods or meadows of variable widths. These are factors of attraction which are capitalized particularly in the area of Vatra Dornei and established for recreation and weekend tourism (Dorna river rafting).

Dorna is the largest tributary of the entire course of Bistrita, having to shed an average flow of about 6.5 m³/s. Dorna springs from Căliman mountains and has a route of 50 km. Its main tributary, Coșna, 22 km long, gathers numerous tributaries from Suhard mountains, namely: Runcu, Dieciu, Zimbru, Pietrosu, Diaca, Băncușoru, Făgețel and Ciotina.

Neagra Șarului river springs from Căliman mountains and crosses the eastern part of the basin on 35 km.

Bistrița, called Bistrița Aurie upstream from Vatra Dornei, springs from Rodnei mountains and, to its confluence with Dorna, flows over a length of 70 km, after crossing the basin to the canyon of Zugreni, where it forms a spectacular gorge.

Rivers intensely fragmented the mountains which they cross, carving important access routes to the highest peaks thereof. They reach easily along valleys, railways and forest roads, easing the traffic in all directions.

Dorna basin is located in the spruce forest floor. A certain category of forests serves exclusively the function of tourism, which are included in

forestry classifications as leisure, recreation and health protection forests, located near large urban centers, spa resorts, intense tourist movement mountain areas, along some major roads. They have a special regime, basically not being included in the economic cycle, while the deforestation are, however, localized and only sanitation related.

In Vatra Dornei, green areas, especially tree plantations, introduce variety and picturesque to buildings and streets geometry, they create particular spatial effects and effects of light and color, which increase the power of attraction. The city park, of 50 ha, located right on the river Dorna and extending to below Dealu Negru, is a major focus, concentrating resort hotels, the club, the Orthodox cathedral, villas, guesthouses, etc., also representing a dendrological reservation. Of the 365.4 ha area plot surface, 70 hectares are occupied by green areas.

Dorna basin predominant vegetation consists of conifers family. However, in the upper part of the massifs that surround the Dorna basin (Suhard, Căliman, Bistrița), over 1600-1700 m, a complex of subalpine meadows and bushes is developing. They appear in the Omu and Faraoane massifs. The bushes are made of mountain pine (*Pinus mugo*), dwarf juniper (*Juniperus sibirica*), mountain alder (*Alnus viridis*) and smârdar (*Rhododendron kotskyi*), bilberry (*Vaccinium myrtillus*, *Vaccinium uliginosum*) and mountain cranberry (*Vaccinium vitis - idaea*).

Subalpine meadows are made up of grasses: **părușca** (*Festuca supina*), **fescue** (*Festuca pratensis*), **wind grass** (*Agrostis rupestris*), **bluegrass** (*Poa media*), pieptanarița (*Cynosurus cristalus*) etc. In summer, the high meadows, by their colorful appearance, give the landscape a special charm.

Side mountain meadows are very common and they occupy large areas, representing a quality fodder base. Characteristic herbaceous species form several associations, such as the **Agrosti - Festucetum montanum association**.

Below 1700 m, the highest part of the mountain is covered with spruce forests, that clothe the slopes around until the basinal area. The main element that arises is spruce (*Picea alba*), boreal and boreal - mountain species (in Eastern Europe). Rarely, there are other species, such as rowan (*Sorbus aucuparia*), maple (*Acer pseudoplatanus*) and even larch (*Larix decidua*). Patchy we meet clumps of beech (*Fagus sylvatica*) or birch (*Betula verrucosa*) and willow (*Salix capraea*).

Herbaceous plants which are more common in the spruce forest area are: rabbit sorrel (*Oxalis acetosella*), degetăruț (*Soldanella montana*), perișor (*Pyrola uniflora*), fern (*Athyrium filix femina*) and green moss. In the Dorna basin, along the main rivers (Dorna, Bistrița, Neagra Șarului etc.), there is a meadow vegetation, represented by species of weak essence:

willow, wicker (*Salix alba*, *Salix fragilis*, *Salix cinerea*), poplars (*Populus alba*, *Populus nigra*), buckthorn, alder (*Alnus incana*). In the shadow of poplars, shrubs (shock, sanger, calin) develop, as well as a herbaceous layer.

At the foot of Căliman, towards the Country of Dorna, meadows are dominated by topped spruce, known as "corle" that serve as shelter for livestock. At Panaci there are corles with 15-20 peaks, thick trunk, which give an exotic look to the extensive meadows.

Specific for the Dorna basin is the presence of **acidic peat**, locally called "bog". Marshes also occur in flat areas of the high peaks in the Căliman mountains, as eutrophic swamps, called "**bahne**". Here, we find a protected plant – the sky dew (*Drosera rotundifolia*), a tiny carnivorous plant. When an insect touches its leaves, tiny hairs trap it inside, the leaf closes and the plant digests its prey. By the watering holes of the peat swamp next to Vatra Dornei, the yellow flowers of another carnivorous plant emerge on the surface: *Utricularia vulgaris*.

Besides these rare species, we also find boreal relicts, which have found refuge in the bahne. So is the case of vortex of the earth (*Pedicularis sceptrum carolinum*) or of the dwarf birch (*Betula nana*). High altitude bogs are covered with cushions of moss (*Sphagnum wulfianum* - a glacial relict), punctuated by pools of water, lichens, algae and bacteria adapted to such living conditions.

Also, there are common plants in the bahne, but these draw attention either by their color or by their curious form. Bumbacarița (*Eriophorum latifolium*) moves its stalk under the weight of the small flowers. Alongside, sedges, dwarf willows and orchids grow. Among the orchids, the most common is that with brown-stained purple flowers. In the spring, orange flowers of calcea calului (*Galtha palustris*) appear.

Among protected trees and plants we mention: yew (*Taxus baccata*), **smârdar** (*Rhododendron kotschyi*), **mountain marigolds** (*Trollius europaeus*), **ghințura** (*Gentiana punctata*), **liverworts** (*Hepatica nobilis*), **vulturica** (*Hieracium transsilvanicum*), **sky dew** (*Drosera rotundifolia*).

The fauna of the Dorna basin is structured according to climate and vegetation.

Thus, on the mountain slopes that surround the basin, the fauna is arranged by altitude, contributing to the individualization of specific biocoenosis, with a decisive role in maintaining ecological and food balance. In this mountainous area, there are three main floors: *the alpine meadows and alpine shrubs floor, the conifer forest floor and the beech forests floor.*

The alpine meadows and alpine shrubs floor appears on the heights of the Suhard, Căliman and Bistrița mountains. Low temperatures, large

temperature changes in the air and at ground level, long winters, large snowfall and strong winds determine a small number of fauna species in this floor. We find here: snow mouse (*Microtus nivalis ulpius*), mountain shrew (*Anthus spinoletta spinoletta*). On inaccessible rocks there are nests of golden eagle (*Aquila chrysaetos chrysaetos*), the most powerful raptor from our country, which feeds almost exclusively on living prey. In the mountain pine we find the grouse (*Lyrurus tetrix*) and the mountain lizard (*Lacerta vivipara*) etc.

The conifer forest floor, with particular biotic and abiotic conditions, is characterized by big mammals, some of hunting importance: bear (*Ursus arctos*), deer (*Cervus elaphus montanus*), fallow deer (*Capreolus capreolus*), wild boar (*Sus scrofa*); the most important predators are the lynx (*Lynx lynx*), the wolf (*Canis lupus*), the fox (*Canis vulpes*) and the pine marten (*Martes martes*).

The birds are represented by species such as: the capercaillie (*Tetrao urogalus*), the black grouse (*Lyrurus tetrix*), quite rare, being declared a natural monument. In these forests also live: the mountain woodpecker (*Picoides tridactylus alpinus*), the buzzard (*Buteo buteo*), the eagle (*Buho Buho*) and the owl (*Strix aluco aluco*).

Among reptiles, which go up in the high areas, we include: the common adder (*Vipera berus*) and the mountain lizard (*Lacerta vivipara*) and of amphibians: the brown frog (*Rana temporaria*) and the mountain newts (*Triturus alpestris*).

Among mammals which are typical to coniferous forests we find: the striped mice (*Sicista betulina*) and the dug mouse (*Clethrionomys glareolus*).

The beech forests floor - the trophic basis is more varied and richer, since the average thermal values are higher and the light intensity and duration are also higher in comparison to the conifer forests.

The rodent mammal fauna is represented by: the collared mouse (*Apodemus tauricus*), the squirrel (*Sciurus vulgaris*), the pars (*Glis glis*) etc. In beech forests, we find the following frequently: the badger (*Meles meles*) and large mammals also present in the coniferous area: brown bears, wolves, martens, deer, wild boars, fallow deer, lynx, etc.

The beech bird fauna is also rich. A bird peculiar to these forests is the hazel or hazel hen (*Tetrastes bonasia*). Among birds, we also mention: the mountain tit (*Parus montanus*), the white-backed woodpecker (*Dendrocopos leucotos*), the wood pigeon (*Columba palambus*), the small flycatcher (*Ficedula parva*) etc.

Fish fauna is well represented in the fast mountain waters that litter the land. The trout (*Salmo trutta fario*) area encompasses Bistrița Aurie to Ciocănești, then the two Diece, Coșna, Rusaia, Dorna, Neagra Șarului etc.

The grayling (*Thymallus thymallus*) area begins on the Bistrița Aurie, downstream of Ciocănești. Besides the two species mentioned above we also mention lostrița (*Hucho hucho*), a rare species protected by law, which is in the waters of the Bistrița basin, bluish barbel (*Barbus meridionalis petangi*), sheepshead (*Phoxinus laevis*), zglăvoc (*Cottus gobio*) and broad snout (*Chondrostoma nasus*).

Swamp fauna. Among the swamp fauna components, many are relicts and boreal elements. Among vertebrates, we mention: the forest bud (*Anthus trivialis*), the meadow bud (*Anthus pratensis*), the great spotted woodpecker (*Dendrocopus major*).

Mountain fauna shows less economic importance today, but especially scientific. A limited number of species falls partly within the scope of hunting and fishing activities, activities that should be under strict control both of forestry bodies and protection of the environment institutions, respectively the Nature Monuments Commission.

CONCLUSIONS

1. From a climate perspective, Dorna basin is in a mountainous area with cool climate, with long periods of thermal inversions, particularly in winter, when the average temperatures drops below -6°C in January and during the summer, in July, do not exceed 14°C . Average annual rainfall is 600 mm, but the variation from one year to another is quite high. The basin is dominated by winds that blow from the SW, W and E, NE sectors, whose speed is generally low (rarely equals or exceeds 20 m/s).

2. Along with the harmony of the typical mountain landscape, dominated by spruce forests that descend to the basin, which intertwine with rich meadows, these elements of anthropic capitalization of a generous potential give a strong personality to the Dorna area, a brand image that is very favorable to tourism development.

3. The natural potential of the Dorna basin (*topography, climate, tourism, rivers, forests, subalpine and mountain side meadows, grassy vegetation, acidic bogs, fauna, etc.*) is an essential factor of attractiveness. Its presence is directly linked to the existence or absence of tourism activities.

4. Dorna basin presents particular characteristics in all departments of the natural setting, which provides complex possibilities of capitalization in terms of tourism.

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