"BABEŞ-BOLYAI" UNIVERSITY CLUJ-NAPOCA FACULTY OF GEOGRAPHY

# THE LAND OF FĂGĂRAȘ. REGIONAL GEOGRAPHY STUDY Summary of the PhD thesis

Scientific coordinator: Prof. Univ. Dr. COCEAN POMPEI PhD student: CIMPOIEŞ PAULA OLIVIA

CLUJ-NAPOCA 2015

# TABLE OF CONTENTS<sup>1</sup>

THE TOPIC AND OBJECTIVES OF THE STUDY	
CHAPTER 1. THEORETICAL AND METHODOLOGICAL COORDINATES9	
1.1 Theoretical coordinates	
1.1.1. The concept of region	9
1.1.1.1 General considerations on the concept of region	9
1.1.2 The concept of "land"	10
1.1.2.1 General considerations on the concept of "land"	1
1.1.2.2 The Romanian "lands"1	.1
1.2.3 Other concepts used – general considerations1	2
1.3 Methodological coordinates	
1.3.1 The research principles used1	
1.3.2 The research methodology - general considerations	13
1.3.3 The research methodology of the Land of Făgăraș regional system	
CHAPTER 2. PURSUITS TOWARDS THE KNOWLEDGE AND RESEARCH OF TH	ΗE
REGION	28
2.1 Scientific research on the regional system	
2.2 Documentation sources regarding the Land of Făgăraş	
2.2.1 General considerations	32
2.2.2. Cartographic documents in the 16 <sup>th</sup> -18 <sup>th</sup> centuries	
2.2.3. The Land of Făgăraș in mass-media and cinematography?	
CHAPTER 3. THE HISTORICAL INDIVIDUALIZATION AND THE POLITICAL AN	
ADMINISTRATIVE ORGANIZATION OF THE LAND OF FĂGĂRAȘ REGIONA	۱L
SYSTEM	
3.1 The first documented mention of the Land of Făgăraş3	
3.2 Archaeological records of the age and continuity of habitation in the Land	
Făgăraș	
3.3 The political and administrative organization of the Land of Făgăraş4	
3.3.1 Organization into village communities	
3.3.2 The political and administrative organization of the Land of Făgăn	
during the $9^{\text{th}} - 13^{\text{th}}$ centuries	
3.3.3 The Hungarian kings in Transylvania	
3.3.4 The settlement of the Transylvanian Saxons and the consequences	
the administrative-territorial distribution of the Land of Făgăraş4	
3.3.5 The political and administrative organization of the Land of Făgăn	
during the $14^{\text{th}} - 16^{\text{th}}$ centuries	4
3.3.6 The political, administrative and military organization of the Land	
Făgăraș during the Habsburg domination period	
3.3.7 The political and administrative organization of the Land of Făgăn	
during the 21 <sup>st</sup> century4	7
CHAPTER 4. THE INDIVIDUALIZATION OF THE REGIONAL SYSTEM BASED O	
ETHNOGRAPGIC AND MENTAL CRITERIA	
4.1 Ethnographical aspects of the Land of Făgăraș5	51
4.1.1 Traditional architecture	
4.1.2 Traditional economic activities	
4.1.2.1 Traditional occupations	54

<sup>&</sup>lt;sup>1</sup> The page number corresponds to the page number in the PHD thesis.

4.1.2.2 Traditional crafts	54
4.1.2.3 Traditions and customs	54
4.1.2.4 Popular costumes	58
4.2 The mental space of the Land of Făgăraş	58
4.2.1 The research on the respondents' perception during	the 2012-
2014 interval	58
4.2.2 The respondents' characteristics	
4.2.3 The respondents' degree of familiarity regarding the	1
"the Land of Făgăraș". The belonging to a region – the mental criteria for the de of the Land of Făgăraș	
4.2.4 The respondents' perceptions regarding the limit	
analyzed region	
4.2.5 The respondents' perceptions regarding the expression	on used to
name the analyzed region	
4.2.6 The respondents' perceptions regarding the charac	
inhabitants of the Land of Făgăraș	76
CHAPTER 5. THE NATURAL COMPONENT SUPPORTING THE RI	
SYSTEM	
5.1 The geological component	77
5.1.1 General considerations	
5.1.2 The tectonic units and the lithological composition of the sub	
5.1.3 The mineral resources available and their efficient use	
5.2 The relief component.	
5.2.1 The relief units and subunits	
5.2.3 The slope modeling processes	
5.2.3 The relief – favorable and restrictive factor in the Land or regional system.	
5.2.3.1 The influence of relief on the physical – ge	
components	
5.2.3.2 The influence of relief on the anthropogenic compo	
5.2.3.3 Relief – major touristic resource	
5.3 The climatic component	
5.3.1 The sunshine duration	
5.3.2 Air temperature	
5.3.3 Atmospheric pressure and air humidity	
5.3.4 Atmospheric precipitations	
5.3.5 Snow layer thickness	
5.3.6. Wind	
5.3.7 Extreme weather phenomena	
5.4 The water resources and their role in the particularity of the	
Făgăraș	
5.4.1 General considerations	114
5.4.2 Surface waters	114
5.4.2 Groundwater	122
5.4.2.1 Mineral waters	122
5.4.2.2 Groundwater bodies	124
5.5 The biopedogeographic component	
5.5.1 Fauna and flora	
5.5.2 Protected natural areas	127

5.5.3 Distribution of soils
CHAPTER 6. THE GEODEMOGRAPHIC AND HABITAT-RELATED COMPONENT
OF THE LAND OF FĂGĂRAȘ131
6.1 The geodemographic component
6.1.1 The numerical evolution of the population in the Land of Făgăraş.
6.1.2 The general density of the population137
6.1.3 The natural dynamics of the population139
6.1.4 The migratory dynamics of the population141
6.1.5 The geodemographic structures147
6.1.5.1 The structure by sex and age groups147
6.1.5.2 The ethnic structure153
6.1.5.3 The confessional structure156
6.2 The habitat component160
6.2.1 The morphology of human settlements162
6.2.2 The hierarchy of human settlements162
6.2.3 Polarizing localities. Perceptions of the inhabitants of the Land of
Făgăraș in 2014164
6.3 The built heritage167
6.3.1 Theoretical notions. The legislative framework167
6.3.2 The existing situation of the built heritage of the Land of
Făgăraș168
6.3.3 Future trends to use the built heritage
CHAPTER 7. THE ECONOMIC AND INFRASTRUCTURE COMPONENT OF THE
LAND OF FĂGĂRAȘ185
7.1 The use of the primary sector in the Land of Făgăraş185
7.2 Industry – between past and present
7.3 Tourism and functional individualization of the Land of Făgăraş197
7.3.1 The natural tourism potential and its use for touristic purposes197
7.4 The modern communication ways
7.4.1 Railways203
7.4.2 Roads
7.5 The technical equipment of the territory206

# CONCLUSIONS SELECTIVE REFERENCES

Keywords: region, "land", perception, mental space, system, regional specificity, regional development.

# THE TOPIC AND OBJECTIVES OF THE STUDY

The scientific proposal of this thesis coordinator, combined with the desire for knowledge, resulted in the acceptance of the research theme entitled "The Land of Făgăraș. Regional geography study".

This paper is intended to be a regional geography study. The topic of the study is the Land of Făgăraș as regional system. Starting from this idea, this study aims to:

- first, define the Land of Făgăraș region, overlapping several criteria used by specialists in other fields, but also by introducing new criteria (mental, functional);

- highlight the defining features of the Land of Făgăraș territorial system;

- analyze the components of the region, outline the existing dysfunctions and provide solutions to reduce dysfunctions;

- conduct a diagnostic (SWOT) analysis of the region;

- identify territorial dynamics by means of the territorial development lines.

# CHAPTER 1. THEORETICAL AND METHODOLOGICAL COORDINATES

The theoretical concepts used throughout this research are the region and the system region, the concept of "land", "lands" as mental spaces and the perception of the geographical space.

The region has been addressed by well-known specialists in regional science under various forms, among which:

- "the system region, composed of contiguous spaces, dominated by the principle of unity" (Dauphiné, quoted by Cocean, 2010, p. 47).

- "a sustainable bimodular (natural and anthropogenic) territorial system, with several spatial situations, but also with an interference with the main modeling factor, the human" (Vallega, quoted by Cocean, 2010, p. 48).

- "an area characterized entirely by similar features of the territory, which also differ from those of the neighboring areas" (Fenneman, quoted by Cocean, 2010, p. 43).

The region as a territorial system - a concept which is located at the centre of our concerns and which formed the matrix that set the basis of this study - was also studied by Ianoş (2000), who believes that it is composed of elements and relationships, aiming to achieve common goals (p. 21).

The interpretation of the Romanian "lands" as territorial systems is not an element of scientific novelty, as these have been introduced in the literature and analyzed from the perspective of mental spaces by Cocean (1997), Cocean and Ciangă (1999-2000), Cocean (2008).

The "lands" as mental spaces are considered geographical areas perceived, imagined and lived that are superior to other types of mental spaces, due to the inhabitants' strong attachment to the territory (Cocean, 2008, pp. 39-40; Cocean, 2010, pp. 61 -63).

The methodology employed took into account the principle of spatiality, causality, integration, and historicism (Cocean, 2010, pp. 153-156).

The data were analyzed and collected using several categories of methods, a scientific procedure known as "triangulation" (Grix, 2001, p. 84). Here are some examples of methods used in this research: document analysis, observation, historical method, survey, mapping method, chorematic method, regional method.

The survey, an important method used in this work, was carried out over three years (2012, 2013, 2014). The data collection tool was the semi-structured questionnaire. In total, 191 questionnaires were applied, of which 122 were validated and processed for the delimitation of the mental space of the region subjected to study.

It is important to mention that by means of the survey method, information were extracted regarding the residence, sex, occupation, level of education, hometown of the respondent, the town where the respondent grew up, the respondent's father's place of origin, the respondent's mother's place of origin.

The documentation sources used to study the Land of Făgăraş include references, archive sources, media sources, topographic maps, orthophotos, field observations, technical documentation, discussions and interviews with representatives of various institutions and with the local people, and photos.

# **CHAPTER 2. PURSUIT OF KNOWLEDGE AND RESEARCH OF THE REGION**

The first works using the title of "Land of Făgăraș" belong to Densușianu (1885) and Puşcariu (1904). In the following decades, the region has been the research subject of numerous historians, as well as ethnographers, geographers and sociologists.

The historical aspects were addressed by Lukács (1996, 1999), Vâjă (1979), Puşcariu (2006), Literat (1931), Prodan (1963), and Bunea (2010).

The ethnography was studied by Roşculeţ (2002, 2006, 2010) and Meteş (1942), but also by Herseni (1997), Ionică (1996), Irimie (1956, 1957, 1958), Dunăre and Constantin (1968).

Malene (2009), Modorcea (2007) and Meteş (1930) have presented in details the issues related to church life and spirituality in the region.

From the geographical point of view, the Land of Făgăraş was investigated by Popescu (1990). Prodan (1970-1976) provides a collection of the region's urbaria, while Kideckel (2006, 2010) investigates the territorial system during the socialism.

The image of the region is completed also by the cartographic materials in the 16<sup>th</sup>-18<sup>th</sup> centuries and by the print and audiovisual media. A unique character is provided by the cinematographic works illustrating actions taking place in the Land of Făgăraş, such as the movie "Portrait of the Fighter as a Young Man" (2010).

# CHAPTER 3. THE HISTORICAL INDIVIDUALIZATION AND THE POLITICAL AND ADMINISTRATIVE ORGANIZATION OF THE LAND OF FĂGĂRAȘ REGIONAL SYSTEM

The first documented mention of the Land of Făgăraș dates back to 1222, in a royal diploma (diploma of King Andrew the II of Hungary, confirming the donation made to the Teutonic Knights in the year 1211) (Lukács, 1999, p. 149).

Pascu (1971) informs us on the Land of Făgăraş, composed of "numerous and longstanding village communities along both sides of the Middle Olt River and especially on the left bank" (p. 35), whose resistance was materialized in the autonomous nature during the Middle Ages.

During the settlements of Szeklers and Transylvanian Saxons and later, in the 14<sup>th</sup>-16<sup>th</sup> centuries, the region was autonomous, being granted as feud to Vallachia (Papacostea 1993, pp. 77-78). The domination period of Wallachia over the Land of Făgăraș favored the maintenance of a strong autonomous character of the region and enabled the strengthening of the social structures and of some institutions that will last until the 19<sup>th</sup> century (Lukács, 2004, p. 62).

At the end of the 16<sup>th</sup> century, the region became the princely province of utmost importance in the Habsburg Empire. Under the given circumstances, the role of the Făgăraş Fortress was amplified and the building turned from a fortified feudal complex into a castle of Renaissance nobility (Marin, 1991, pp. 42-46).

Starting with the 17<sup>th</sup> century, the form of administrative-territorial organization of the Land of Făgăraș has been constantly changing, turning gradually into a district, part of the county, part of the counties and districts.

Currently (we refer to 2015), the analyzed region comprises 22 administrativeterritorial units in Braşov County (of which 20 communes, 1 town and 1 municipality) and 7 administrative units in Sibiu County (of which 6 communes and 1 town).

# CHAPTER 4. THE INDIVIDUALIZATION OF THE REGIONAL SYSTEM BASED ON ETHNOGRAPGIC AND MENTAL CRITERIA

The regional system addressed in this research comprises two ethnographic entities: the Land of Făgăraş (with the Avrig, Făgăraş and Perşani sub-areas) (Irimie, 1956, pp. 5-6) and the Târnavelor Plateau (with the Târnava Mare and Târnava Mică subareas) (Dunăre and Constantin 1968, pp. 17-19). The analyzed regional system overlaps the Land of Făgăraş completely and the Târnava Mare subarea partially.

From the architectural point of view, the common element of the two ethnographic entities (the Land of Făgăraş and the Târnavelor Plateau - Târnava Mare subarea) is the closed house, with reinforced enclosure. This type is preserved in all administrative-territorial units in the Land of Făgăraş and especially in those located with the short side towards the road (we refer to the European road E68 and the county road 104), as well as in the administrative units Cincu, Şoarş, Ticuşu and to a lesser extent in Ungra and Hoghiz.

Shepherding needs to be mentioned among the representative traditional occupations. As regards the shepherding in the Land of Făgăraş, it has been practiced since ancient times, and during the 17<sup>th</sup> and 19<sup>th</sup> centuries as transhumance (Popescu, quoted by Popa, 2004, p. 183).

The traditional crafts specific to the Land of Făgăraș ethnographic area include pottery, glass painting, weaving, furriery, the last two being specific also to the Târnava Mare area.

The region of study is distinguished by very old traditions and customs, among which the best-known tradition is that of the young men gangs from the Land of Făgăraş. Other customs are preserved and are now agropastoral ("the harvesters' wreath, "the ploughman", "the wheel in flames") and religious (the wedding wishes, "the dead man's apple") traditions of the ethnographic Land of Făgăraş, as well as the "bees" in the Târnavelor Plateau.

The female folk costume has the following characteristic elements: wristband shirts, Romanian blouse with shoulder embroidery (in Avrig area), Romanian blouse with ribbons and crinkles (Făgăraş area), Romanian blouse with crinkles (Perşani area) and the Romanian blouse with shoulder loomed embroidery (the Târnavelor Plateau), the aprons (in the Avrig and Făgăraş areas) and the Romanian peasant homespun skirt (in the Perşani and Târnavelor Plateau area) (Irimie, 1956, 1957, 1958; Dunăre and Constantin, 1968).

The kerchief (vălitoarea) and the peasant head dress (pomeselnec) are used as head coverings in all these areas.

The male folk costume is pretty homogeneous in all the subareas in terms of the shirt, which can be wide-sleeved, with wristband and cuffs called "bențe", in terms of the tight trousers and the floral embroidered closed vest (Irimie, 1956, 1957, 1958; Dunăre și Constantin, 1968).

The investigation of the mental space from the Land of Făgăraş was conducted by application of 191 questionnaires. These were quantified and analyzed using the SPSS program (version 22).

This subchapter presents the research findings on the sense of "belonging to the region", familiarity of inhabitants in relation to the phrase "Land of Făgăraș", perception of

respondents regarding the spatial extension of the Land of Făgăraș and the way the respondents call the region they live in. Another aspect addressed in the study was the highlight of the character traits assumed by the inhabitants of the region and their classification in a behavioral pattern.

The variables chosen were the place of residence (the administrative-territorial unit where the respondent lives), sex, occupation and level of education, hometown of the respondent, the town where the respondent grew up, the respondent's father's place of origin, the respondent's mother's place of origin.

The results of the field survey revealed that all respondents (100%) have heard of the "Land of Făgăraș" and 86% declared that they considered themselves inhabitants of this region. In terms of places of residence, urban residents (94%) have a more developed sense of identity than the inhabitants of the village (83%). Those who were born in the region (91%) said that they considered themselves more attached to it than those who were born outside the region (69%). The feeling of belonging to the regional space is more apparent in case of villagers in the communes of Arpaşu de Jos, Beclean, Drăguş, Făgăraş, Hârseni, Lisa, Porumbacu de Jos, Recea, Sâmbăta de Sus, Şercaia, Şinca, Şinca Nouă, Viştea, Voila, Mândra, Părău, Cârța, Cârțişoara, Ticuşu, Ucea and the town of Victoria. The arguments they bring are ethnographic (in the communes Sâmbăta de Sus, Cârța, Cârțişoara, Părău, Porumbacu de Jos, Şercaia, Şinca Nouă, Ticuşu, Ucea and the town of Victoria), landscape-related (the location in the Făgăraş Depression, proximity to the mountain area), economic (the attraction exerted by the town of Făgăraş, where the people go on certain occasions, including for the celebration of historical events).

Of all the respondents, 56% (68 persons) were convinced that the region should be called the Land of Făgăraş, 6% (7 persons) were convinced that the region should be called the Land of Olt and 35% (43 persons) expressed their confidence that both names were suitable for the analyzed region.

The reasons the respondents chose the name of Land of Făgăraş include: the role of polarizing center plaid by the town of Făgăraş in the analyzed region - "The region I belong to is called the Land of Făgăraş because the settlements are located around Făgăraş" (man, 42, high school education, Şinca), the association with the natural components, for example the Făgăraş Depression - "It is called the Land of Făgăraş because it is one of the largest and better individualized contact depressions of Transylvania". Other reasons are the spatial location of the Land of Făgăraş which is different from that of the Land of Olt and the confusions generated by the use of the latter name - "It's what they say; it's what I've heard. We know that Oltenia is over the mountains" (woman, 72, arts and crafts education, Mândra). The name "the Land of Olt" was most often chosen because of the association with the major water course in the region - the Olt River - "We can call it the Land of Olt because the Olt River crosses the region" (man, 74 years old, secondary education, Recea).

When asked about the psychosocial profile and the character of the inhabitants of the analyzed region, the respondents answered that the inhabitants of the Land of Făgăraş are hardworking people (38%). They are also considered generous (6%), jovial (7%), honest (6%), yet proud (8%). Other features mentioned were ambition, intelligence, traditionalism, beauty, respect, selfishness, indolence.

# CHAPTER 5. THE NATURAL COMPONENT SUPPORTING THE REGIONAL SYSTEM

The analyzed territory summarizes the lithological interference resulting from the association of three different tectonic units: the crystalline-Mesozoic or Central – Eastern - Carpathian area, the Supragetic units and the Transylvanian Plateau or the Transylvanian Basin. The natural resources found in the basement of the region are:

1) Useful mineral substances (Ministerul Geologiei, Institutul de Geologie și Geofizică, 1983, foaia numărul 8)

- metalliferous: accumulations of lead - zinc (gold and silver interferences) from Porumbacu, Arpaş, Nimaia, Bârsa Fierului (showing also pyrite interferences) and from Vulcănița - Gherdana.

- non- metalliferous: the kyanite, pyrophyllite accumulation from Cocoriciu-Moaşa.

- caustobiolite: the eutrophic peat accumulation from Mândra - Șercaia.

2) Materials resources for constructions (Mihailescu and Grigore, 1981):

- sedimentary rocks: sandstone, clay, limestone, dolomite, ballast, sand reservoirs and gravel (pg. 74-85, 299-306).

- metamorphic rocks: marble resources (pg. 299-306).

- igneous rocks: basalt, dacite tuff (pg. 74-85).

Among the geological resources, the building material resources are diverse and regionally important. These are used only for local needs. An example of good practice is the cement production industrial unit located in the region, which belongs to the Lafarge Company.

The individuality of the analyzed territory derives from the combination of the following major morphostructural units:

<u>The Southern Carpathians (the group of the Făgăraș Mountains)</u>

- the Făgăraș Massif (or the Făgăraș Mountains per se)

- the Țaga or Țagla Mountains

<u>The Eastern Carpathians</u> (the southern group)

- The Central Perşani Mountains, also called the Cetății Mountains.

- The Southern Perşani Mountains (also called the Codlei Mountains)

- The Sinca Depression

- The Vlădeni Depression

The Transilvanian Subcarpathians

The regional analyzed system overlaps a very limited segment of the Homoroadelor Subcarpathians

The Transylvanian Depression

The Hârtibaciului de Sud Plateau:

- the Ticuşului hills (the region occupies the Ticuşului Hills, except a narrow segment in the north), the Rodbavului Hills/the Rodbavului Plateau (except a limited segment in the North-West), the Cincului Hills/the Cincului Plateau (the southern-eastern part), the Făgetului Hills/the Făgetului Crest (the Southern part)

- the Făgăraș Depression (is almost entirely included, except for small segments in the north - east and south - west of the basin).

The relief of the analyzed region is presented as a physical support of the physicogeographical components (water system, biogeographic component, the pedological component) and anthropogenic (the township network, the communication network) and has a great esthetic value, causing regional particularities.

The permanent settlements (101 in total) are located at an average altitude between 377 and 662 m. Most municipalities, representing 65.3%, preferred to locate their residential areas at medium altitudes in the Făgăraş Piedmont Plain, followed by the Ticuşului Plateau, Cincului Plateau and Rodbavului Plateau. This behavior can be explained by the favorability of the Piedmont Plain to dwelling.

In terms of gradient, the slope intervals ranging between 0 - 2  $^{\circ}$  and 2.1 - 5 $^{\circ}$  are representative for this region, which gathers the largest number of settlements, 65.

The relief of the Land of Făgăraș represents an attractive tourism resource due to the landscape value of the existing landforms (in the mountainous area) and due to the relief

types in terms of genesis and to the associated landforms and micro-relief forms (the glacial relief) (Cocean and Dezsi 2009, p. 53).

The tourist attractions belong to the glacial relief (mountain ridges, mountain peaks, glacial cirques and glacial valleys on the northern slope of the Făgăraş Massif). In addition to these, the island-like massifs, the relief developed on volcanic rocks, basalts and limestones, dolomites and conglomerates are secondary attractions.

In terms of climate, the regional system is characterized by average annual temperatures around 9°C in Făgăraş, and 2° C in Bâlea Lac, average yearly rainfall amount of 638.5 mm in the lower part of the region and 1451 mm in the high area, average snow thickness between 0.6 and 4 cm in the depression and between 2.5 and 234.3 cm in the mountains, movement of air masses mostly north-western and north-eastern, influences of foehn on the northern slope of the Făgăraş Massif (the big wind), extreme weather events such as thunderstorms at an average frequency of more than 36 days/year and the type of ice deposits which occur on average 34.3 days/year in the mountainous area and 8.7 days/year in the lowland and hilly area.

The water resources belong entirely to the Olt basin and consist of surface and underground resources.

The multiannual average flows during the 2005 - 2010 period range from 97.15 m<sup>3</sup>/s for Olt River at the Sebeş hydrometric station, to 0.19 m<sup>3</sup>/s for Felmer River (right-bank tributary of the Olt River) at the Felmer hydrometric station. The maximum annual river flows reach 86 m<sup>3</sup>/s for the Olt River at the Hoghiz hydrometric station and 131 m<sup>3</sup>/s on the Olt River, when it leaves the area of the analyzed region. For the other tributaries of the Olt River, the maximum annual flows did not exceed 6 m<sup>3</sup>/s in 2005. The lowest minimum annual rate, of less than 1 m<sup>3</sup>/s, were recorded at the hydrometric stations Felmer (Felmer River, 0.05 m<sup>3</sup>/s in 2007), Arpaşu de Sus (Arpăşel River, 0.68 m<sup>3</sup>/s in 2008), Noul Român (Pârâul Nou, 0.63 m<sup>3</sup>/s in 2007).

The hydropower facilities on the Olt River are Voila, Vista, Arpaş, Scorei and Avrig, with an installed capacity of 14.2 MW (Hidroconstrucția SA; Hidroelectrica, 2011).

The lakes in the Land of Făgăraș are divided into two categories, according to their genesis: natural and artificial lakes (reservoirs). The glacial lakes were developed in the Făgăraș Mountains, respectively Urlea, Podragu, Podrăgel, Doamnei, Avrig, Bâlea (Ministerul Mediului și Dezvoltării Durabile and Administrația Națională Apele Române, 2008, p. 54).

The salted mineral waters are characteristic for the analyzed region. The salted mineral waters are used in the Băile Rodbav resort, which is currently (2012) in the administration of the Codlea prison (representative of the Şoarş city hall, July 5<sup>th</sup>, 2012) and in the Băile Perşani resort, which provides accommodation services and treatment facilities. The waters in Băile Rodbav are recommended for the treatment of "diseases of the locomotor system, double-jointedness and capsular ligament instability and muscle - joint instability in children, poor adaptation to thermal contrasts, functional female genital disorders related to nervous system hyperactivity, prepuberal conditions in hyperactive children, activities conducted under cold and wet conditions, activities that require a prolonged orthostatic posture, favoring static muscle stresses, inactivity, obesity, micro-traumas by pneumatic tools" (Berlescu 1982, pp. 265-266).

The groundwater bodies that are located within the limits of the study area are represented by the groundwater body of Făgăraş Depression and by the groundwater body of Perşani Mountains.

The Făgăraş Depression water body is of the porous type and is located on the left bank of the Olt River. The flow ranges between 1 l/s/m and 20 l/s/m and the water body is supplied by rainfall.

Regarding the Perşani Mountains water body, this is of the fissure - karst type and it is supplied by rainfall and snow, while the groundwater is discharged into the Olt Valley and its flow reaches 10-20 l/s, being used as source of drinking water for the population (Planul de Management al Bazinului Hidrografic Olt, p. 87).

# CHAPTER 6. THE GEODEMOGRAPHIC AND HABITAT-RELATED COMPONENT OF THE LAND OF FĂGĂRAȘ

During the temporal interval 1990 – 2009, the population of the regional system decreased by -8.7% (12,078 people). During the same period, two intervals with a positive growth rate (1996 - 1998, 2002 - 2004) and six intervals with population decrease (1990 - 1992, 1994 - 1996, 1998 - 2000, 2000 - 2002, 2004 - 2006, 2006 - 2009) were highlighted.

The overall average density decreased between 1990 - 2009, both at regional level, from 132.4 inhabitants/km<sup>2</sup> to 103.7 inhabitants/km<sup>2</sup>, as well as by residential areas, due to the decrease of the number of inhabitants. In urban areas, the overall average density is 805.8 inhabitants/km<sup>2</sup> (values calculated for 2009), while in the rural area it has much lower values, of 25 inhabitants/km<sup>2</sup>.

The average birth rate for the Land of Făgăraş, for the period 1999 -2009 is 12 ‰. Regarding the average mortality rate at regional level, high values were recorded in 1999, 2000 and 2003 (just over 15‰). The average immigration rate for each locality is positive for the period 1999 - 2009. The average emigration rate has experienced periods of decline and growth, ranging from 12.8‰ to 16.5‰.

Highlighting the structure by sex was performed by calculating the femininity index for the years 2003 and 2013. At regional level, the average femininity index has very similar values. In 2003 a value of 101.7% was recorded, while in 2013 it has a share of 99.8%.

In the Land of Făgăraș there is an average demographic aging index of 78% (2013), the highest values being recorded in rural areas (80.1%) compared to urban areas, where values of 60.5% are recorded.

The demographic dependency ratio is as follows: at regional level, it has average values of 66.2%, while between the two residential areas, the recorded values are higher in rural areas (68.6%), all calculated for the year 2013.

In terms of ethnic structure, in all administrative - territorial units, the Romanian population is in majority. The administrative units with more than 90% Romanians are Arpaşu de Jos (91%), Cârțișoara (96.3%), Drăguş (98.3%), Hârseni (91.9%), Mândra (91.9%), Racoviță (97.7%), Recea (91.9%), Sâmbăta de Sus (92.2%), Şinca (90.2%), Şinca Nouă (97.3%), Turnu Roşu (96.8%), Ucea (94.5%) and Victoria (93.5%).

In 2011, people of Orthodox confession represented 89.2% in the Land of Făgăraş (average values), followed by Adventist persons (1%) and Reformed confession (0.9%). Lower average values are specific to Pentecostal (0.7%) and Greek - Catholic (0.7%) religions.

The residential areas of the settlements in the region have a regular shape (specific to the settlements with German population) or irregular (this category is the majority at regional level).

According to texture, settlements are simple linear, linear tentacular and complex (as the town of Făgăraș). The structure dictates the appearance of residential areas, while at regional level, the residential areas are gathered, largely as a result of physical and geographical conditions (with reduced slope of the lands in the depression) and the mentality of resident populations.

In the Land of Făgăraş, most (72) of the 101 settlements belong to class V, which represents 71.3% of the existing settlements, class IV is assigned to 26 localities in the Land of Făgăraş, commune centers constitute 25.7% of the total number of settlements in this geographical area. The towns Victoria and Avrig belong to class III. The only class II settlement in the Land of Făgăraş is Făgăraş municipality, with a population of 36,555 inhabitants in the year 2013.

In the analyzed region there are 211 historical monuments (according to Lista Monumentelor Istorice, 2010), of which 97 are included in category A, with national and universal cultural value, and 114 are included in category B with a local cultural value. By their nature, built heritage assets are classified into archeological monuments (47), architectural monuments (153), public monuments (3), memorial and funeral monuments (8). Among the monuments that are architecturally significant, 72 have national and universal cultural value, and 81 ore only of local importance.

The built heritage monuments of the Land of Făgăraş dates from: Neolithic, Bronze Age, the Middle Bronze Age, Hallstatt, Latène, the pre - Roman age, the post – Roman age, the early Middle Ages, the classical Middle Ages, the modern and contemporary era. The built heritage dating back to the medieval times, for example the Castle – Fortress of Făgăraş (first documented in the  $14^{th} - 18^{th}$  centuries) has a special symbolic value.

# CHAPTER 7. THE ECONOMIC AND INFRASTRUCTURE COMPONENT OF THE LAND OF FĂGĂRAȘ

Adapted to the relief, soils, and climate conditions, the agriculture in the Land of Făgăraş met the favorable conditions for the cultivation of plants and for stock farming, the depression residential area being the main area of economic development. The analysis of the agricultural potential was conducted by appealing to the data centralized by the General Agricultural Census of 2010 (Recensământul General Agricol, 2010), which provides greater accuracy than the data recorded annually by the National Institute of Statistics.

The agricultural use of the region emerges also from the higher percentage recorded for the agricultural land, prevailing in the administrative - territorial units of Arpaşu de Jos, Avrig, Beclean, Cârța, Lisa, Porumbacu de Jos, Ticuşu, Ungra and Voila, where the higher suitability of lands in the meadow and hilly areas is decisive.

As regards the plant culture, the highest values of cultivated areas are recorded by cereals (wheat, corn), distributed predominantly in the meadow and terrace areas (Lisa, Mândra, Recea, Viștea, Voila, Șercaia, Porumbacu de Jos, Avrig). Industrial plants (flax, hemp, sunflower, sugar beet) meet the cultivation conditions Beclean, Viștea, Voila, Avrig and Cârța, while the rest of the area is cultivated mainly with other cultures. The areas cultivated with other arable land crops (potatoes, vegetables) are also extended, the long-established administrative-territorial units cultivating them being Voila, Porumbacu de Jos, Avrig, Sâmbăta de Sus, Mândra, Lisa, Hârseni.

The second sub-branch of agriculture – stock farming – is also developed in the Land of Făgăraş, with a long-established tradition of shepherding in the communes of Cincu (9,495 head), Comăna (11,075 heads), Hoghiz (10,724 heads), Şoarş (17,007 heads), Ticuşu (10,203 heads), Ungra (8,519 head), Voila (8,520 head), Avrig (8,247 head). Pigs represent the largest herd population, especially in Hoghiz, Lisa, Şercaia, Ungra, Avrig, Porumbacu de Jos. Another category of representative animals for the Land of Făgăraş is the equine, followed by bovine animals, with significant values in the following administrative - territorial units: Comăna, Hoghiz, Părău, Şercaia, Ticuşu, Ungra, Voila, while horses are particularly found in the communes of Porumbacu de Jos, Comăna, Şoarş, Ungra, Racoviță, but also of the town of Avrig.

The industry of the Land of Făgăraș is currently concentrated (2011) in the towns of Avrig, Făgăraș and Victoria and in the communes Șercaia, Hoghiz and Ucea.

As they polarize the adjacent rural localities, the industrial units in the urban areas of Făgăraş, Victoria and Avrig, excelled in the industrial sub-sectors dedicated to the chemical, machine building, textile (as this has continued naturally from the medieval crafts) and food industry.

A proof of the social and economic prosperity of the towns in Făgărăş during the socialist period is confirmed by the locals who claimed that "It was quiet, there were no problems. And we did not, as they say, worry for tomorrow" (man, 77 years old, high school education, Făgăraş). "What can I say, it was an important industrial city. Thousands of people had jobs here. The industrial plant had about 12,000-13,000 employees." (woman, 72 year old, vocational school, Făgăraş),"I grew up in this Făgăraş whose industry was flourishing. The large industrial plant, the chemical plant ... extraordinary. Anyway, I remember feverishly how much traffic was in the city. It was formidable. This was something the city would never see again" (man, 60, university education, Făgăraş).

The last decades have imposed an economic restructuring that led to the existence of extensive partially abandoned industrial areas or which were used to reduced capacity. To highlight the current situation, 3 case studies were selected in the representative industrial areas in the Land of Făgăraş (heavy industry): the Făgăraş, Avrig and Victoria industrial sites.

Created from the legislative point of view to encourage entrepreneurship (tax reductions for investors), the industrial parks in Romania have attracted the attention of major international companies, contributing to the economic development of that territory. The Land of Făgăraş makes no exception, with the two industrial parks approved by the Association of Industrial, Technological, Scientific Parks and Business Incubators in Romania, i.e. the Făgăraş Industrial Park (with an area of 10,017 ha), operational and managed by SC Nitroparc S.R.L. and the Victoria Industrial Park (with an area of 5.5 ha) which are listed as "under construction" (Ministerul Economiei, Comerțului și Turismului, f.d.).

The tourism potential of the region is special and is made up of existing landforms, rivers and natural lakes, natural protected areas and built heritage. Tourist accommodation facilities are present in the territorial administrative units Avrig, Şinca, Sâmbăta de Sus, Hoghiz, in the towns of Victoria and Făgăraş, but also in the Cârța - Cârțișoara area.

While the inns/motels define the urban areas, the agro-hostels define the mountainous administrative areas (Avrig, Hoghiz, Făgăraș), where spectacular landscape determined the local initiation of tourist activities.

In terms of railway infrastructure, the Land of Făgăraș is crossed by the tap line 200 (Brașov - Podu Olt – Sibiu - Vințu de Jos – Simeria – Arad - Curtici). The daily railway traffic includes 23 trains, of which 11 are Interregio trains, accounting for 47.8% of the total and 12 are regio trains (52.2%).

The total length of roads in this area is 684.0 km, with a medium density of 23.9 km/1,000 km. Most of this (342.9 km) belongs to the category of county roads, which account for 50.1% of the total, while local roads account for 29.0% (198.2 km), while the national highways gather 20,9% (142.9 km).

Of the 142.9 kilometers of national roads across the region, 95.9% (137.0 km) are covered with asphalt concrete, while the remaining 5.9 km are causeways. Regarding their sustainability, the majority (118 km), i.e. 82.5% of the total are in a good condition, while 8.8 kilometers (6.2%) are roads with an average viability and 16.2 km (11.3% of the total) belong to the category of bad roads.

The drinking water distribution network in the Land of Făgăraş has a total length of 592.7 km (2013), the urban area accounting for 149.1 km (21.2%) and the rural area for

443.6 kilometers (78.8%). On average, each inhabitant has 4.87 m of drinking water supply network, much higher in the rural areas (7.12 m) compared to urban areas (only 2.51 m).

The sewerage system in the Land of Făgăraş is undersized. The 207.1 km are present in only 8 of the 29 administrative-territorial units. Thus, 72.4% of the communes in the analyzed area do not have sewerage network. Related to the total population (121,497 in 2013), the overall density of the sewerage network is only 1.7 m/capita (2.8 m/capita in the urban areas and 0.7 m/capita in the rural areas).

The methane gas distribution network in the Land of Făgăraş has a total length of 465.8 km, of which 19.9% in urban areas (93 km) and 80.1% in rural areas (372.8 km). On average, each inhabitant of this area is allotted 3.83 m of methane gas distribution pipe (1.56 m/capita in urban areas and 5.98 m/capita in rural areas). It should be noted that the town of Avrig does not appear in any statistics with any kilometer of methane gas distribution network, although the same statistics record the gas consumption in the above-mentioned administrative-territorial unit.

#### CONCLUSIONS

The Land of Făgăraș is a functional regional system, a statement resulting from the analysis of existing resources and their exploitation.

The strengths are represented by the existence of geological resources used as building materials, very good operating conditions and transport for magmatic rocks (basalt, dacitic tuff) and sedimentary rocks (ballast, limestone); natural tourism potential, high landscape value of the mountainous relief, glacial relief, mountain peaks with altitudes above 2000 m, favorable climate for winter sports and activities specific to winter) (ice hotel at Bâlea Lac) protected areas of particular European interest, high biodiversity, diversity and uniqueness of elements of built heritage, traditional crafts, very old traditions and customs, particularly valued during fairs and festivals, old tradition of raising bovines. To these are added: the long-established chemical industry tradition; the location of the regional system in the center of the Land, halfway between two urban centers of extraregional significance and the possibility of accessing them through the road and rail communication lines, higher connectivity with neighboring regions, central Transylvania, and Muntenia, availability of road transport routes tourism importance (the Transfăgărășan), Land of Făgăraș inhabitant regional identity based on landscape, historical, economic and social criteria; the availability of human resources are characterized by diligence, cheerfulness, honesty and ambition.

The dysfunctions are caused by poor promotion of the existing resources, the lack of a coherent strategy based on the brand of the Land, geomorphic and hydrological risks (swamps), the anthropogenic impact on the landscape and natural protected areas, as well as the dysfunctions of the aquatic ecosystems (mountain rivers) through the construction of small hydropower plants, poor management of groundwater resources, decrease of the total population at regional level, between 1990-2009, the decrease of young population at regional level, between 2003-2013 interval, the existence of "brownfield sites", the lack of concrete conversion measures and lack of industry in general, low viability of country side roads, lack of projects intended for the road and rail infrastructure; alternative regional identity that can generate confusion regarding the inhabitant identity of other geographic areas (such as Oltenia).

The core of the Land of Făgăraș demonstrates that all information vectors converge towards the depression area due to the major gravity axis represented by the 68 European road/ the  $1^{st}$  national road highway and the tap line 200, doubled by the hydrographic artery of the Olt river, between Bradu and Făgăraș settlements.

The centers that polarize the Land of Făgăraş are located outside the regional system (composed of the Sibiu and Braşov municipalities, polarizing centers of the first rank and town of Rupea, polarizing center of the third rank) and inside the regional system, namely the town of Făgăraş, polarizing center of the second rank and towns of Avrig and Victoria, of the third rank. The polarizing centers of the fourth rank are important in Cincu, Hoghiz, Şercaia, Porumbacu de Jos, Ucea de Jos, Turnu Roşu and the fifth rank centers is Sâmbăta climatic resort.

The polarizing centers of the first rank located outside the regional system are accessed due to their social (for shopping, cultural activities, medical services, recreational and sports services) and less economic functions.

The towns of Făgăraş, Victoria and Avrig are the areas characterized by a positive tropism, due to the economic function that belongs to the secondary and tertiary sector and to the existing cultural attractions.

The communes Soars and Ticusu can be considered areas characterized by a negative tropism, due to its poor connectivity to the southern areas (localities on the left bank of the Olt River), a damaged housing stock, a massive depopulation in the '90s, poor urban facilities and to the poor economic function.

### **SELECTIVE REFERENCES**

#### **BOOKS, BOOK CHAPTERS**

Berlescu, E. (1982). *Dicționar enciclopedic medical de balneoclimatologie*. Editura Științifică și Enciclopedică.București.

Cocean, P., Dezsi, Ş. (2009). *Geografia turismului*. Presa Universitară Clujeană. Cluj-Napoca.

Cocean, P. (2010). *Geografie regională* (ed. a-3-a, restructurată și adăugită). Cluj-Napoca: Presa Universitară Clujeană.

Densușianu, N. (1885). *Monumente pentru istoria țierei Făgărașului*. Arhivele Statului. București.

Dunăre, N., Constantin, C. (1968). *Portul Popular Românesc de pe Tîrnave*. Casa Creației Populare a Județului Brașov.Brașov.

Grix, J. (2001). *Demystifying postgraduate research. From MA to PhD*. University of Birmingham Press. Birmingham.

Herseni, T. (1997). Colinde și obiceiuri de Crăciun: cetele de feciori din Țara Oltului (Făgăraș). Grai și Suflet-Cultura Națională. București.

Ianoș, I. (2000). Sisteme teritoriale: o abordare geografică. București: Editura Tehnică.

Ionică, I. I. (1996). *Dealul Mohului: ceremonia agrară a cununii în Țara Oltului*. Minerva. București.

Irimie, C. (1956). *Portul popular din țara Oltului: zona Făgăraș*. Editura de Stat pentru Literatură și Artă. București.

Irimie, C. (1957). *Portul popular din Țara Oltului: zona Avrig*. Editura pentru Literatură și Artă. București.

Irimie, C. (1958). *Portul popular din zona Perșanilor: Țara Oltului*. Editura de Stat pentru Literatură și Artă. București.

Lukács, A. (1996). Documente false și interpolate privind Țara Făgărașului în secolele XIII-XV. În Z. Petre, S. Brezeanu, Z. Petre, S. Brezeanu (Edit.), *Miscellanea in honorem Radu Manolescu emerito* (pg. 97-106). Editura Universității din București. București.

Lukács, A. (1999). *Țara Făgărașului în Evul Mediu (secolele XIII-XVI)*. Editura Enciclopedică. București.

Lukács, A. (2004). *Autonomia Țării Făgărașului. Trăsături și limite*. În G. M. Hermann, Zsuzsánna Kolumbán, *Autonomii istorice în spațiul carpato-dunărean* (G. M. Hermann, trad., pg. 60-66). Direcția pentru Cultură, Culte și Patrimoniul Cultural Național a Județului Harghita. Miercurea-Ciuc. Disponibil la http://adatbank.transindex.ro/html/cim\_pdf61.pdf [Accesat în 12 iunie 2013].

Marin, A. (1991). *Cetatea Făgărașului*. În F.a., *Făgăraș 700: volum editat cu prilejul a șapte sute de ani de atestare* (pg. 41-47). Editura Arta Grafică. București.

Mihăilescu, N. S., Grigore, I. (1981). Resurse minerale pentru materiale de construcții în România: ghid practic. Editura Tehnică. București.

Papacostea, Ș. (1993). Românii în secolul al XIII-lea între cruciată și Imperiul mongol. Editura Enciclopedică. București.

Pascu, Ş. (1971). Voievodatul Transilvaniei. Editura Dacia. Cluj-Napoca.

Popescu, N. (1990). *Țara Făgărașului, studiu geomorfologic*. Editura Academiei Republicii Socialiste România. București.

Popescu, C. (Producător și regizor). (2010). Portretul luptătorului la tinerețe [film]. România: Filmex Film. Disponibil la https://www.youtube.com/watch?v=yueKNlphvgY [Accesat în 15 august 2012]. Prodan, D., Ursuțiu, L., Ursuțiu, M. (1970). *Urbariile Țării Făgărașului* (Vol. 1). Editura Academiei Republicii Socialiste România. București.

Prodan, D., Ursuțiu, L., Ursuțiu, M. (1976). *Urbariile Țării Făgărașului* (Vol. 2). Editura Academiei Republicii Socialiste România. București.

Pușcariu, S. (1904). *Despre boierii din téra Făgărașului*. Tiparul Tipografiei Archidiecesane. Sibiu.

Roșculeț, G. (Edit.). (2002). *Țara Făgărașului. Istorie și cultură*. Negru Vodă. Făgăraș.

Roșculeț, G. (Edit.). (2006). *Țara Făgărașului: istorie, etnografie, antropologie*. Brașov.

Roșculet, G. (2010). *Studii și cercetări*. Editura Universității "Transilvania" Brașov.Brașov.

Stegeran, M. (1991). *Cadrul fizico-geografic*. În F.a. *.Făgăraş 700: volum editat cu prilejul a şapte sute de ani de atestare* (pg. 7-15). Editura Arta Grafică.

# ARTICLES IN SPECIALTY JOURNALS AND IN COLLECTIVE VOLUMES

OLUMES

Cocean, P. (1997). Țara (the land)- a typical geographical region of Romania. *Revue Roumaine de Géographie*, 41-49.

Meteş, Ş. (1942). Contribuții nouă la istoria românilor din Țara Făgărașului în veacul al XVIII-lea. Analele Academiei Române. *Memoriile Secției de Științe Istorice* (XXIV), 316-322.

Popa, C. (2004). Contribuții cu privire la cunoașterea păstoritului din Țara Făgărașului. *Studii și comunicări de etnologie*, Tomul XVIII, 181-188.

# LEGISLATION

\*\*\* (2001). Legea privind aprobarea Planului de amenajare a teritoriului național-Secțiunea a IV-a Rețeaua de localități. Disponibil la http://www.mdrl.ro/\_documente/dezvoltare\_teritoriala/amenajarea\_teritoriului/patn\_elabora te/secIV/lege351.pdf, [Accesat în 10 iunie 2015].

. \*\*\* (2004). Lista monumentelor istorice publicată prin Ordinul nr. 2.361/2010 pentru modificarea anexei nr. 1 la Ordinul Ministrului Culturii și Cultelor nr. 2.314/2004 privind aprobarea Listei monumentelor istorice.

# PERSONAL COMMUNICATIONS

Reprezentant al primăriei Șoarș. (2012). Discuție pe tema "Resursele naturale ale comunei Șoarș. Situația existentă și posibilități de valorificare" (comunicare personală), 05.07.2012, ora 15.00.

## MAPS AND DATABASES

Administrația Națională de Cadastru și Publicitate Imobiliară (ANCPI). *Geoportal ANCPI*. Disponibil la http://geoportal.ancpi.ro/geoportal/viewer/index.html. [Accesat în 15 noiembrie 2012].

Institutul Național de Statistică. *Baza de date TEMPO-online*. Disponibil la http://statistici.insse.ro/shop/, [Accesat în 27 august 2014, 9 iunie 2015, 19 iunie 2015].

METI [Ministerul Economiei, Comerțului și Industriei din Japonia], NASA [Agenția Spațială Americană]. (2011). Advanced Spaceborne Thermal Emission and Reflection Radiometer Global Digital Elevation Model (ASTER GDEM) (versiunea I). Disponibil la http:/asterweb.ipl.nasa.gov/gdem.asp [Accesat în 29 decembrie 2013].

Petrișor Delia, Șerbănescu O., Pîrvulescu Măndica. (1983). *Harta substanțelor minerale utile*, (ed. a II-a), Scara 1: 1 000 000, Foaia nr. 8. În Ministerul Geologiei, Institutul de Geologie și Geofizică, Republica Socialistă România, Atlas Geologic. București: Întocmirea grafică și imprimarea în atelierele institutului de Geologie și Geofizică.

Recensământul general agricol. (2010). Disponibil în cadrul Direcțiilor Județene de Statistică Brașov și Sibiu.

# **INSTITUTIONS**

Administrația Bazinală de Apă Olt Administrația Națională de Meteorologie Centrul Meteorologic Transilvania Sud Consiliul Județean Brașov Consiliul Județean Sibiu Direcția Regională de Drumuri și Poduri Brașov Institutul Național de Statistică

# WEBOGRAPHY

Asociația Munții Făgăraș. (f.d.,b). *Natura 2000 Munții Făgăraș*. Disponibil la http://www.fagaras-natura2000.ro/natura-2000-muntii-fagaras [Accesat in 25 iunie 2015] Asociația Munții Făgăraș. (f.d.,c). *Natura 2000 Piemontul Făgăraș*. Disponibil la http://www.fagaras-natura2000.ro/natura-2000-piemontul-fagaras [Accesat in 25 iunie 2015].

F.a. (f.d.). *Planul de Management al Bazinului Hidrografic Olt*. Disponibil la http://www.rowater.ro/daolt/Plan%20Management/Planul%20de%20Management%20BH %20Olt%20-%20vol%20I.pdf[Accesat în 23 februarie 2011].

Hidroconstrucția S.A. (2005). *Proiecte, Lucrări hidroenergetice, Sucursala Muntenia*. Disponibil la http://www.hidroconstructia.com/rom/proiecte.html [Accesat în 2 mai 2015]

Hidroelectrica. (2011). *Sucursala Hidrocentrale Sebeş*. Disponibil la http://www.hidroelectrica.ro/Details.aspx?page=42 [ Accesat în 2 mai 2015].

Ministerul Mediului și Dezvoltării Durabile, Administrația Națională "Apele Române" (coord.) (2008). Studii pentru cunoașterea resurselor de apă în vederea fundamentării planurilor de amenajare ale bazinlor/ spațiilor hidrografice: Bazinul hidrografic Olt; Situația actuală a utilizării pe folosințe a resurselor de apă; Volumul 1Amemoriu. Disponibil la

http://www.rowater.ro/daolt/Plan%20Management/PLANUL%20DE%20AMENAJARE% 20AL%20B.H.%20OLT/VOL%201A.pdf [Accesat în 23 aprilie 2015].

Ministerul Economiei, Comerțului și Turismului. (f.d.). Harta parcurilor industrialedinRomânia.Disponibillahttp://www.minind.ro/reindustrializare/pdf/parcuri\_industriale\_si\_clustere.pdf[Accesat în22 august 2015].2015].