
PhD THESIS

RESEARCH ON SUSTAINABLE RURAL DEVELOPMENT OF AGHIREȘU COMMUNE CLUJ COUNTY

(SUMMARY OF PhD THESIS)

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1. Introduction

The present PhD thesis, bring to attention the research prepared for the Aghireșu commune, Cluj county, regarding the concept of development under sustainability conditions, in order to be able to ensure a favorable evolution of society, in the long term. For sustainable development of an area effective strategies are needed, rigorously and responsibly applied (CALIN L.A., et al. 2016).

The environment has an extraordinary capacity of recovery but it needs enough time.

Unfortunately, many times the necessary time is missed, to ensure the restoration of renewable natural resources and the protection of non-renewable resources through efficient consumption (MARIA STANCU, 2012). For an real sustainable rural development, both for our future as well as the following generations, the perception of the concept of social-economic evolution must be changed, this should be as favorable as possible for the environment (MĂRĂCINEANU, F. et al., 2006).

For the authentic romanian rural space, with harmoniously combined geographical characteristics, sustainable strategies are needed, which reduce the degree of accentuation of inequalities and at the same time the degree of aggravation of environmental problems. In this context, sustainable development represents the right solution, through which the necessary balance can be achieved in Romania as well. This development with well-defined principles will be favorable both for the present generation and for the following generations (MASON J., 2013).

The PhD thesis it is presented in 150 pages, to which are added the 20 pages with summaries in Romanian and English, being structured in 8 chapters, where are a number of 70 figures and 61 tables. For this Phd thesis, a number of 154 bibliographic sources from both the country and international literature were consulted.

2. Characterization of the environment and rural area

In the organizational structure of the territory, rural areas represent the largest part of the countries. These regions usually with peasant characteristics have a special importance regarding the development programs and the way of implementing the projects, because the socio-economic evolution must be planned in relation to the objectives of the entire nation (MAN T., MATEOC-SÂRB NICOLETA, 2007).

The Commission for Agriculture of the Council of Europe, established that more than 85% of the surface of the European continent is represented by rural areas, having a particular influence on the proper development of the population (DOGARU. N., 2013). The importance given to the rural area is also mentioned in the Recommendation 1296/1996 of the Parliamentary Assembly of the Council of Europe, regarding the elaboration of a specific document for this issue in the form of the European Charter of the Rural Area, and in this project it was specified that rural space, is constituted from the lands for the culture of plants and animal breeding, as well as the non-agricultural land area (MĂRĂCINEANU, F. și colab. 2007).

The rural area is made up of villages and small towns, with areas used for craft activities, services or industrial activities, mountain areas arranged for spending free time, nature reserves and biotopes (SURD V., 2002). The evolution of the rural environment is a problem that people have faced over time, because it requires a necessary development that protects the natural environment while maintaining a balance between modernization and socio-economic evolution.

3. The current state of research on sustainable development and the content of the concept of sustainable rural development

The concept of sustainable development is topical, but concerns in this regard began to take shape since 1972. Thus, in the capital of Sweden, in Stockholm, during a United Nations Conference on development, the term eco-development was debated (GABRIELA BODEA, 2014).

Then followed numerous international conferences of particular interest, which had as their main theme, the concern for the problems of economic growth. The discussions took place in the context of a society that evolves and comes in antithesis with pollution, with the depletion of resources, with the numerical increase of the population and the need to ensure the necessary food. Therefore, in 1987, the Brundtland Commission, presented at the UN Conference, the report *"Our Common Future"*, which supported the concept of sustainable development as a development model for the future. The Commission defined this particularly necessary concept as that type of evolution that responds to the needs of the present without compromising the ability to respond to the needs of future generations (POHOAȚĂ, I., 2005).

During the conference of the United Nations Organization for Environment and Development, in the summer of 1992 organized in Rio de Janeiro, in Brazil, the Rio Declaration was approved, regarding the environment and development. The stated purpose was to establish a new strategy of economic, industrial and social development at the global level and better cooperation between states. This declaration contained a number of 27 principles regarding urgent international problems and proposed solutions, aiming to achieve the goals for sustainable development. It should also be noted that during this meeting, where 182 heads of state and government participated, being a large-scale meeting called the *"Earth Summit"*, the *Agenda 21* was also presented, which proposed a strategy for the development of society in sustainable conditions. Next meeting for monitoring, it took place after 10 years (MĂDĂLINA-IOANA RUS, 2015).

During the United Nations Summit on Sustainable Development, in Johannesburg, South Africa, in 2002, which was attended by representatives from 148 countries, being the third UN conference on the environment, the progress made towards sustainable development was noted. Therefore, the participating countries agreed to continue the reforms to which they had committed themselves, stipulating that in the short term the following should be achieved:

- protecting water resources and managing them appropriately for efficient global consumption;
- halving the number of those who do not have adequate sanitation conditions to 1.2 billion;
- increasing the use of sustainable energy sources and restoring depleted fish stocks (<http://www.earthsummit2002.org/es.2002.pdf>, 2016).

4. Functions, particularities and structure of rural area

The history and evolution of these territories, presents the rural space as a precious space, which can fulfill its functions only if it preserves the patriarchal character and remains an attractive environment (VEDINAȘ, T., 2015).

For rural areas, the European Charter defines the following functions:

- a) **The economic function**, considered as a basic function;
- b) **The ecological function**, is expressed by the rehabilitation of the degraded lands;
- c) **The socio-cultural function**, which represents the complex relationships between people, through which culture and tradition are preserved.

From a social-economic point of view, rural area has the following structure:

a) **the rural peri-urban area**, bordering area of big cities and industrial centers with a radius of variable length between 10 and 50 km. This area is characterized by a higher level of education and living, but by a negative influence in terms of pollution from the urban environment. The population is heterogeneous and mostly works in cities, and economic development is strongly influenced by the urban environment, having the advantage that the proximity to the city constitutes a market for agri-food products.

b) **the intermediate rural area**, represents the largest part of the rural space. Agriculture predominates in this area, in the structure of which there are mostly cereals, technical plants, orchards and vineyards as well as farms for raising animals, all of which are at a high level of production due to technological evolution.

c) **the peripheral rural area**, where the socio-economic perspective is not favorable due to the less favorable natural conditions, agricultural and forestry exploitations, being difficult to access due to the greater distance from the supply-retail centers, the population is decreasing and mostly aging, being called disadvantaged areas (DOGARU. N., 2013).

5. Particularities of the natural environment for research

The study area, Aghireșu commune, is located in the Cluj Hills area, at 447 m altitude, on the upper course of the Nadăș river. It borders in the north with Sălaj county, in the south with Căpusu Mare commune, in the west with Izvoru Crișului commune, and in the east with Gârbău and Gilău communes. Also is located in the southwestern part of the Someșan Plateau between the interface area and the

premontane area of the Apuseni mountains, including the Căpuș-Nadaș hill area. Aghireșu commune, on the administrative side, is composed from 11 localities as follows, Aghireșu, Aghireșu-Fabrici (residence of the commune), Băgara, Macău, Dorolțu, Inucu, Arghișu, Dâncu, Ticu-Colonie, Ticu și Leghia. The relief of the commune is predominantly hilly, with altitudes between 400-500m, the commune being crossed by the Nadășului valley. The affluents of the Nadășului valley, with lengths of several kilometers, have wide valleys, not too deep, forming depression spaces in the reception basins where the hearths of the villages are located (source: Strategic Plan for Social-Economic Development Aghireșu Commune, Cluj County).

6. Research objectives

The purpose of research within the PhD thesis were oriented to the evaluation of the development potential in sustainable conditions of the rural area and in particular the identification of the land improvement activities carried out within the Aghiresu area. It was also for research of the documents regarding the existing works to improve the quality of life of the inhabitants of the commune and future projects for the sustainable and sustainable development of the study area, affected by pollution.

The objectives in this study were as follows:

- Identifying the real possibilities with for developing the rural space under sustainable conditions, an environment of particular importance for the socio-economic evolution of the society, in Aghireșu commune, a well-known mining area;
- The identification in the specific documents located in the archives of ANIF Cluj and OSPA Cluj, as well as the archives of the Aghireșu local council, of the types of works, hydrotechnical and pedo-ameliorative constructions for the prevention and removal of specific risk factors on the territory of the commune;
- Establishing residents' perception regarding sustainability projects.

7. Material and method

The research methods used to achieve the objectives refer to the study and analysis of existing archives for sustainable development works in the studied territory.

The experimental protocol was composed of three main activities: - the inventory of hydrotechnical works in the Nadăș sub-basin; identifying sustainable investments for sustainable development in Aghireșu commune; applying a questionnaire, on a representative sample of respondents, from the study area, to identify the potential and future directions of socio-economic development of the commune. Based on the completed questionnaires, the data were interpreted in the Microsoft Excel program, and the results obtained were presented in tabular or graphic form depending on the relevance of the data, using statistical tests such as the Student's Test, Anova, one-way HSD and Pearson's correlation (ARDELEAN, M., 2015)

8. Research results regarding the influence of projects and works for a sustainable development in Aghireșu commune

The results of this PhD thesis follow the presentation of the objectives necessary for the sustainable development of the community and the main directions of sustainable rural development, related to the work strategy both at the local and regional level for the Aghireșu area.

The sustainable development, especially of the rural environment, is a necessity that must be understood as well as possible by the community members, for a positive evolution of the environment. For such a development, several related activities are needed that concern the improvement of the comfort of the population, the reorganization of the territory, infrastructure, the conservation of resources and the maintenance of the ecological balance for pleasant landscapes to visit.

From the set of necessary activities that must be carried out for sustainable rural development, land improvement activities are a very important category, for the protection of the environment and from which the whole community benefits, even if there are often situations where works are postponed due to lack of the funds. In recent years, at the national level, because many areas of agricultural land were no longer cultivated, the funds allocated for land improvement works have also decreased. This fact determined the reduction or often even led to the lack of involvement for the start of irrigation works, erosion control, drying, drainage.

Climate changes in recent years, both globally and locally, have shown us all the more that we are in situations that can bring unpredictable, aggressive and even destructive weather phenomena to both agricultural crops, forests, and also constructions and private property (EUGENIA ȘERBAN, 2008)

At the European Union level, the surface of rural space has a weight of over 80%, on which the perspective of use starts from the principle of equity and the use of these areas in a sustainable way (MĂRĂCINEANU F., 2010).

9. Results regarding the inventory of land improvements activities in the studied area

The existence of these types of works has demonstrated its usefulness and necessity over time, as we find in specialized studies as well as in the territory where a harmonious, well-kept aspect can be observed and without damage to the environment where they were applied. In order to capitalize on the production capacity of agricultural lands, hydrotechnical and pedo-ameliorative construction works are necessary. According to the investments made by ANIF Cluj, large-scale works took place on several areas of land in Aghireșu commune. In this way, more than 450 hectares of land were returned to the agricultural circuit through specific

arrangements and works. The data regarding the hydrotechnical works carried out were collected from the Aghireșu local council, as well as from ANIF Cluj.

For the area of the Nadăș river basin, in the Aghireșu area, such works were carried out before 1990. Also, specific works were accomplished, in Romania, on hundreds of thousands of hectares 60 years ago, when significant funds were allocated for land improvement works. Considering the fact that in 2018, approximately four years after the completion of the last land improvement works, several situations of warping of the drainage channels as well as a lot of dry vegetation that blocks the drainage of water, it will be necessary to clean them. From the existing situation it can be understood that there is a need for periodic maintenance, care and cleaning of these constructions. Otherwise, by abandoning the works, they will deteriorate and clog much faster and will also no longer have the necessary efficiency for which they were foreseen and constructed (DÎRJA M., T. SĂLAGEAN, 2015)

10. Results regarding the projects for sustainable development implemented in Aghireșu commune

From the inventory of projects to improve the quality of life of the commune's inhabitants, we found that the connection of homes to utilities was a priority.

Therefore, among these projects was, first of all, the construction of the sewage system for the collection of household water, in one of the large localities in the Aghireșu commune. It was carried out through the European SAPARD program, through which the sewage system was introduced in Aghireșu-Fabrici, a locality with 3,200 inhabitants, a project worth 823 thousand Euro, carried out between 2002-2007.

In 2009, the sports base, in the center of the commune, was modernized, because the old buildings were totally damaged, a project worth 54 thousand Euro. After the sports base, another important project in the same location is the sports hall, built at european standards and equipped with a field for handball, tennis, volleyball, indoor football, being equipped with bleachers, sanitary facilities and a central heating system. The project was approved by the National Investment Company, for modern sports hall projects, sustainable investment, in the amount of 792 thousand Euro, from the year 2017. Between 2007 and 2009 in Aghireșu-Fabrici, the sidewalks were repaired , and the green spaces in the central area were restored and fenced. At the same time, a park was created in the central area of the town, with funds from the Ministry of the Environment.

In 2016, the investment regarding the public home for the care of elderly people in Aghireșu was completed. With the non-refundable financial support of AFIR, the project of modernizing communal roads, equipping and rehabilitating the cultural center in Aghireșu was implemented, sustainable and very useful projects for the inhabitants of the commune, with a total eligible value of 113 thousand Euro.

11. Establishing residents perception by applying the questionnaire

As a result of applying the questionnaire, we demonstrated that there is a close connection between the perception of the inhabitants of Aghireșu commune and the main directions for its development. The analysis of the variables taken into account confirmed what we assumed, that there is a directly proportional link between the socio-demographic characteristics of the respondents.

These results obtained from data centralization can be used in future projects for the socio-economic development of the commune. We noticed that there is an evolution of local sustainable agriculture, which can be based in the future on the exploitation of ecological resources.

The human resource from the rural area represents the main pillar which must be further supported and specialized for a favorable medium and long-term evolution. The education and continuous training of rural residents contributes to a real development in step with global evolution.

12. Conclusions and recommendations

- In the hydrographic basin of the Nadăș River, for the area of Aghireșu commune, several land improvements have been executed over time, works planned for a long period, subject to the direct effect of natural factors.
- Regarding the inventory of hydro-pedo improvement works in the studied area, it was observed that most of them were executed out on large areas, more than 60 years ago.
- In the 2014 - 2015 period, were executed, land improvement works on the territory of the commune in the Inucu valley and the Macău valley, activities through which approximately 450 ha of land were returned to the agricultural circuit.
- For the sustainable development of the commune, several projects have been implemented, including: consolidating and modernizing the road infrastructure, connecting homes to technical and building networks, construction and renovation of spaces intended for sports and cultural activities.
- The value of sustainable investments on the studied area, regarding the period when the research was done, exceeded the sum of 1.8 million Euro.
- Through the implemented projects, the quality of life of the inhabitants has significantly improved, meaning that further investments are recommended to ensure and increase the living conditions at the level of Aghireșu commune.
- Regarding residents' perception of the sustainable development, we designed and distributed to the representative sample a questionnaire with 19 questions.
- The number of residents who answered the questions in the questionnaire was a significant one, although we encountered several cases in which we had refusals, it was possible to complete 130 questionnaires.

- Among the respondents, with the centralization of the data, we noticed that 61.5% of them have agriculture as their main concern, 16.2% work in the field of education and 4.6% work in the field of health or related.
- The questionnaire was applied to an approximately equal number of men 57% and women 43%, and most of the respondents were registered in the 41-55 age group, with a percentage of 40%.
- Among the respondents, a percentage of 42% believes that agriculture is the main direction of development for Aghireșu commune, industry 36% being the second branch in order of preferences of the locals, and trade and other economic activities with a percentage of 2-4% occupy third place.
- The analysis of the variables taken into account confirmed that the results can be used in future projects for the socio-economic development of the commune.
- Considering the results obtained after the centralization of the data, it is recommended that in the long term, the economic development of the area should be by creating new jobs and optimal conditions for the evolution of the local population.
- It is also recommended to attract locally new economic investors, but the development should be done by preserving the traditional rural characteristics.

13. Originality and innovative contribution of the thesis

The originality of the research presented in this PhD thesis, consists of studying and highlighting the potential of rural development, in sustainable conditions, of the Aghireșu commune in Cluj County.

In the present research, were addressed fields such as economics, statistics, agriculture, pedology, sociology, public administration, land improvements, rural development, etc. Application of a questionnaire with such fields of activity, among the population of the commune determined to obtain some points of view on the directions of development and helped to collect specific data.

Following the research, with the interpretation of the obtained data, it was possible to observe the degree of interest of the local people, involved in the positive evolution of the development of the community and the maintenance of the authentic rural specificity. The detailed results can be found in the content of the thesis.

For future studies that can be derived from the results obtained during this research it must be taken into account that agriculture and industry at the local level remain the main directions of development. The community can also rely on these areas in the coming period, to increase living standards and capitalize on local resources and products.

Selective bibliography

1. ARDELEAN, M., 2015, Principii ale cercetării agronomice și medical veterinare, *Ed. AcademicPres, Cluj-Napoca.*
2. GABRIELA BODEA, 2014, Dezvoltarea durabilă 37°, *Ed. Presa Universitară Clujeană, Universitatea Babeș-Bolyai, p.19-22.*
3. CALIN L.A., DUMITRU P., CAIUS D., SAVU A., NEGRILA A., 2016, Geographic information system for sustainable development in rural areas. *International Multidisciplinary Scientific GeoConference-SGEM, Albena, Bulgaria, pp. 247-254.*
4. DÎRJA M., T. SĂLAGEAN, 2015, Îmbunătățiri funciare, *Ed. AcademicPres, Cluj-Napoca.*
5. DOGARU N., 2013, Studii și cercetări pentru amenajarea durabilă a bazinului hidrografic al Crișurilor, județul Bihor. *Teză de doctorat, USAMV București.*
6. MAN, T., MATEOC SĂRB NICOLETA, 2007, Dezvoltare rurală și regional durabilă a satului Românesc, *Ed. Politehnică, Timișoara.*
7. MĂRĂCINEANU F, SEMCU A., CONSTANTIN ELENA, BOZIANU CATALINA, CAZANESCU S., 2007, Studies regarding the estimation of the economic potential of the rural areas. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Horticulture, [S.l.], v. 64, n. 1-2, p. 495-499.*
8. MĂRĂCINEANU, F., 2010, Reconstructie ecologică a terenurilor degradate. *USAMV, FIFIM București.*
9. MĂRĂCINEANU, F., A.SEMCU, CONSTANTIN ELENA, 2006, Dezvoltare durabilă în spațiul rural al județului Prahova, *Ed. Ceres, București.*
10. MASON J., 2013, Sustainable agriculture second edition, *Ed. Landlinks Press, Australia*
11. MIHAILESCU V., 1969, Geografia Fizică a României, *Ed. Științifică, București.*
12. POHOAȚĂ, I., 2005, Strategii și politici europene de dezvoltare durabilă, *Universitatea "Al.I.Cuza", Iași, Centrul de Studii Europene.*
13. MĂDĂLINA-IOANA RUS, 2015, Bazinul Almașului studiu de geomorfologie aplicată, *Ed. Risoprint, Cluj-Napoca.*
14. ROȘIAN G., 2011 Geomorfologia mediului. *Presa Universitară Clujeană, Cluj-Napoca.*
15. EUGENIA ȘERBAN, 2008, Fenomene climatice de risc generate de precipitații, în Câmpia de vest, situată la nord de Mureș, *Teză de doctorat, Universitatea din Oradea.*
16. MARIA STANCU, 2012, Programul Național de Dezvoltare a României – obiective specifice. *Dizertație, USAMV, FIFIM București.*
17. SURD V., 2002, Introducere în geografia spațiului rural, *Ed. Presa universitară Clujeană, Cluj-Napoca.*
18. VEDINAȘ, T., 2015, Proiecte rurale românești, de la reîmpărțirea pământului la experimentul "Ferma", *Ed. Waldpress, Timișoara.*
19. ***<http://www.earthsummit2002.org/es.2002.pdf>,201
20. ***Plan Strategic de Dezvoltare Social-Economica Comuna Aghireșu Județul Cluj.