RENEWABLE ENERGY SOURCES, RURAL DEVELOPMENT, TOURISM

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Abstract. Presently both the theoretical and practical aspects of sustainable development are interpreted in identical terms of growth. The main focus of our research is a rural area of the Carpathian Basin turning to tourism and renewable energy in order to cope with economic, demographic, cultural, and community-related challenges via residential, communal, and tourism-oriented solutions in a sustainable manner. Relying on our sample of the Székely tenth settlement pattern we will discuss such basic features as situational geography, and historical background along with explaining the respective and relevant concepts, while highlighting the motivational push and pull factors rooted in the developmental genesis of this historical and autonomous settlement arrangement still existing and in effect even nowadays. We are convinced that a novel and higher level, or more sophisticated approach can increase the marketability of such features. Furthermore, we will point to a tourism-related trend implying a more stable, organic, and system-oriented sustainable spatial and social arrangement. We will conclude that in the next stage of sustainable tourism development producers of tourism-related programs in the Székely (Sekler) region should diversify and increase their reliance on modern and renewable energy sources. Since renewable energy sources represent a valuable social capital for all stakeholders, their use in integrated rural development efforts is highly recommended.

Keywords: village tenth, Székely region, tourism products, rural development, renewable energy, sustainability.

Introduction

The concept of sustainable development can be approached both theoretically and critically in an identical fashion. While development is associated with growth, unlimited growth on a planet with limited resource availability cannot be imagined [1]. Therefore, the main problem is that the concept of development is increasingly being viewed in quality and not quantity-related terms.

Our research effort is concentrated on a rural region located in the Carpathian Basin of Central Europe. By utilizing tourism-related and renewable energy resources for residential, communal, and tourism purposes the area can manage the respective economic, demographic, cultural, and community-related problems in a sustainable manner. Our treatise thus focuses on responsible tourism design and management of the Intracarpathian village tenth arrangement of the Székely (Sekler) area rooted in the unique spatial and historical background of Romania. We will also point out that in the given area the reliance on renewable energy sources is not unprecedented as the Székely (Sekler) population elaborated and developed a real system reflecting the harmony of humans and nature based on the power of nature and the observation of natural laws. It was only due to a misconception of development implying the acquisition of greater and more resources in the 20th century and the promotion of unlimited growth at the dawn of the 21st century that made this perspective obsolete.

Materials and methods

In order to analyze and evaluate the deeply embedded yet heretofore not fully explored processes and phenomena in as a comprehensive manner as possible we followed the multifaceted triangular approach entailing several primary and secondary methods[2]. Secondary research aimed at studying and processing historical, ethnographic, and linguistic data related to the Székely region. The inquiry also utilized guided interviews with locals while sharing their everyday life. Accordingly we focused on the existing and presumed tenth arrangement and maintaining a historically diachronic perspective we investigated the given nomenclature, the estate relations, the means of management and cultivation along with the respective issues of area utilization. The resulting data were used in the interpretation of the given geographic space and the historical, genetical, and functional analysis along with the evaluation of the respective settlement structures. The survey and processing of the professional research results and the accompanying map-based explorations were complemented with on-site field observations and case studies in order to achieve a more objective view of the given area. In addition to the examination of the tenth arrangement as researchers committed to functionality we performed

questionnaire based inquiries focusing on the sustainability of the development of society, economy, and tourism.

Results and discussion

The results of the analyses and evaluations can be allocated into four categories:

1. The survey of the foundations of the tenth arrangement (geographical location, meaning, historical background).
2. The interaction between the social organization as a whole and the renewable force of nature.
3. Community arrangement forms related to water as a renewable energy source in light of a case study.
4. Demands and options of sustainable tourism development in the village tenth culture.

The foundations of the village tenth arrangement (geographical location, meaning, historical background)

The village tenth arrangement originates from the spatial structure of the Székely region located in Romania, in the Carpathian Basin, where the local population elaborated and developed its spatial and area distribution, internal administration, and social system based on the decimal system (Fig. 1.). The village decimal, or the tenth in the Székely dialect refers to a section of a village not only in a geographical sense, but in the form of internal objects, processes, and phenomena. Thus, the decimal or tenth as a settlement-related term is the smallest social or public administration unit in the Székely region. At the same time it can be viewed as a basic unit for community, economy, and even for tourism arrangement or development [3; 4].

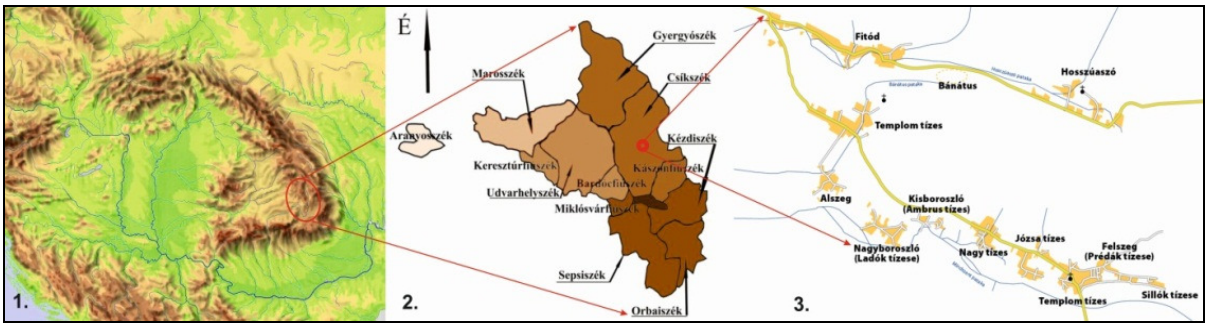


Fig. 1. **Geographical situatedness of village tenths:** 1 – Carpathian basin; 2 – Historic Székely region; 3 – Village tenths at Csíkmindszent and Csíkszentlélek

The evolution of the village tenth arrangement followed two main organizational criteria: natural attributes and historical reality. Accordingly, the village arrangement originates from the conquest of the Carpathian Basin and the related defence and natural resource concerns. The conquest taking place at the end of the 9th century [5] led to the recognition that the defense of the given area must be in harmony with the respective natural attributes, as such features can justify or refute the need for an artificial defense system. Furthermore, the Székely people were known to be reliable, courageous, and highly skilled warriors. Consequently, the Székelys were settled at the perimeters, or the most vulnerable segments of the conquered land. Thus, the Székelys became the guards of the new Hungarian territory [3; 5; 6].

It is presumed that the Székely people settled, or were allocated into the smallest military unit the decimal, or ten, and later searching for the higher dimenson of their existence including economy, religion and culture they determined their own developmental trends. However, researchers also argue that the decimal structure was brought to life not by military requirements, but the better organizational or arrangement options of the coming centuries. It is beyond doubt that for centuries the decimal arrangement had determined the lifestyle and quality of life of the Székely settlements. The organic ten or segment system exerted an integrational force promoting *community* development. The small autonomous unit became a means for the expression of rights, obligations, economic and cultural life along with rural development efforts.

The Székely people had to adapt to nature, when they planned their future and recognized that the source of wisdom is the continuously renewed nature and the respective related knowledge [3; 5; 7; 8].

The interaction between the social, economic and cultural arrangement of the village tenths and the renewable force of nature

The community force and successful organization patterns brought to life by military technology and that of the qualities of nature were transferred to the field of faith, culture and economy by the inhabitants of the village tenth. Internal organizational patterns adaptable to nature were elaborated and sustained for centuries as moral and ethical rules and guidelines had been passed from generation to generation. The settler communitiesaimed at long-term moral and ethical survival and strove to achieve a point where such delicate balance can be established. In communities adapting to the requirements and features of nature the perspective of sustainability along with the basic functions of the given community including socialization, mutual support, economic success and social control can be discovered.

We attempt to prove the essence of such statements by analysing examples of community organization along with the allocation of natural and wider society-related factors promoting community formation. Table 1 displays the six community organization forms identified during the research process. Since due to the limited length and spatial parametres of the study we cannot provide a detailed explanation, we only introduce the very concepts by the help of the respective table and case studies. Nevertheless, we have to point out that the use of renewable energy, primarily wood and water either due to natural or social (economic, cultural) requirements is not unprecedented.

Table 1

The organizational arrangement of the village tenths and the respective natural and social motivating factors

No.	Factors promoting internal community cohesion	Community formations or organizations
1	Community cohesion promoted by the renewable energy of water power	well-based communities
		spring-based communities
		communities organized around livestock watering options
		water distribution and supply communities
		bridge communities
		hemp soaking communities
2	Community cohesion promoted by wood as a definitive fuel source	architecture as a community concern
		lands held in common
		bordermound communities
3	Community cohesion promoted by animal husbandry	communities formed around nomadic sheep herding (estena)
		voluntary cooperative-work
4	Community cohesion promoted by the continuous renewal of faith	rosary associations
		church choir communities
		tenth communities organized around the Crucifix or Cross
		bell or chapel communities
5	Community cohesion promoted by a stricter interpretation of culture	communities formed by customs related to the milestones of human life
		communities formed by dance groups
6	Mannifestations of community creativity in surface morphology and morphogenetic cultural landscape components related to the economic structure	communities formed around bounds or hedges

Community formation related to water as a renewable energy source in light of the case studies

The Székely people were known to have settled near the indispensable water as they built their houses in the proximity ofbrooks and their sustenance and economic activity was based on the renewable power of water. The following case study will substantiate this statement.

The inhabitants of the tenth relied on brooks for washing clothes and providing water for animals.The primary source of water for drinking or cooking was fresh water or that of provided by wells. Since not all the tenth sites included wells, the main tenth well supplied water for all in the given population segment. Such a tenth well led to the formation of a *well community* entailing 10-20 families.

At the turn of the 20-21st century responding to an increasingly greater need for running water the tenths located at the swampy area of the Fiság formed *water provision communities* [3; 9]. Those tenths that recognized the advantages of traditional community organization or arrangement along with that of the renewable aspect of water relied on their own resources in exploiting the options provided by nature. These water providing communities aim to adapt to the requirements of nature and strive for a rational use of renewable natural resources.

Water provision communities were formed at such areas where a person organized the given associations, recruited the appropriate experts, fulfilled the respective administrative responsibilities, obtained the necessary materials and supplies, and motivated the neighbors to contribute to the shared effort. Those joining the community marked their commitment with their signature. The respective work resulted in the installation of open or covered reservoires dug in the earth near the springs. A pipe system takes the water to the houses of the given community.

Best practices of water supply communities include that of the Bor brook community of the Jenőfalva tenth and the water community provision community of the Hiászó brook whose water pipe system demonstrating rational management practices was installed in the spring of 2005. Other examples entail the water supply community from the Sás-kert area of the Háromtízes (Three-tenth) groupand that of the Monyasd brook established in 2002. Based upon the information obtained at the premises the schematic outline of said communities prepared by two student members of our research group is presented in *Figure 2.*

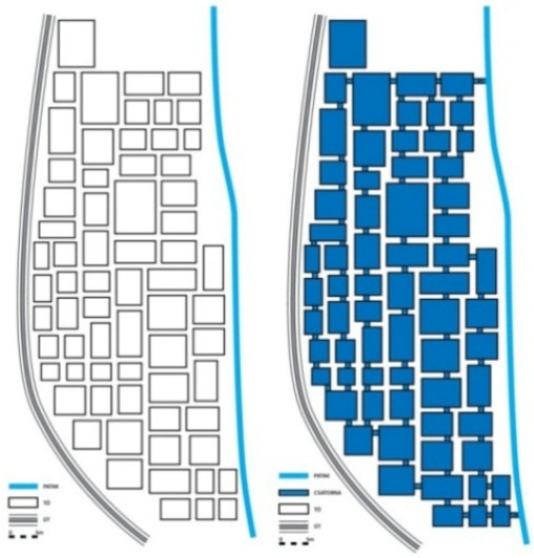
Legend: = roads, 189 number, ○ spring,–- pipe, ■ external water tap

Fig. 2. **Schematic rendering of water provision communities of the Bor (left), Hiászó (center), and Monyasd (right) springs at Csíkszentgyörgy area**

Hemp soaking as another economic activity related to water as a renewable energy source is part of the traditional cottage industry determining the local cultural characteristics.The whole Székely region, but especially Csíkszék, is ideal for growing hemp or flax. Hemp had played a definitive role in the life of the Székelys as it was a basic material for home textiles and undergarments. While our research could not establish the exact time ofthe beginning of hemp production, it is believed to have ended in the 1960s and 1970s.

It is widely held locally that hemp growing areas and soaking ponds and pits were concentrated at the mouths of the brooks controlled by the respective tenths (Fig. 3). According to the etnographer János BÁRTH the water pits with 6 x 6 m area and 60-70 cm depth were dugalong the Fiság in an interlocking fashion. The pits were supplied with waterby the nearby brook via canals (Fig. 3) [9].

Such time-worn geomorphological components of the cultural landscape can be studied even today, as János BÁRTH was able to identify and map 67 components of the landscape, which were used by families (Fig. 3). The decimal arrangement of the hemp soaking or steeping pits reflected the community arrangement principles of the tenth. The soaking of hemp, the simultaneous provision of water to the pits and their shared operation required a high level of organisation and cooperation from members of the tenth community [9].



Legend: – running water, pits, pits filled with water

Fig. 3. **Hemp soaking pits and reconstructed operational mechanism of Háromtizes area of Csíkszentgyörgy**

Demands and options for the development of tourism in the tenth culture

Not only the landscape forming capability, historical significance and nomenclature sets the village tenths of the Székely area apart from other settlements, as the amassed experience and heritage related to the arrangement of society, economy, motivation and culture along with the variety of tangible and intellectual legacy make the region an unique, locality-specific touristic attraction [10]. Consequently, the area reflecting renewed knowledge and diversification should be included among the respective tourism product offering of the Székely region. The given touristic attractions should emphasize such basic features of the tenth as military technology, water-based culture, culture in a broader sense including religion, architecture, and traditions related to the milestones of life and the economic activity.

Rural tourism in the Székely region is a relatively recent phenomenon. The need for such leisure time activity emerged in the second half of the 20th century after the regime changes as the rural population realized that the relatively untouched natural surroundings coupled with their own resources can provide replenishment along with supplementary income and new workplaces. One of the most significant objectives of the questionnaire used during our research was to explore the tourism-related experiences and the respective attitudes of the local population. The sum of associated thoughts and ideas reflect the minute details and components of village tourism. The evaluation of the results matching the order in which the given ideas were mentioned (Table 2) takes into consideration the respective socio-cultural, economic, and environment-related impact [11-17].

The most marked answers were given in relation to the socio-cultural impact (networking, presentation of touristic attractions, reputation, celebration, acquisition of information, cohesion) In addition to the beneficial socio-cultural impact, 4.5 % are aware of the sensitivity or vulnerability of

the environment, especially to the ecological footprint of the tourist, reflecting the endangering of nature or that of the environment. Yet, the answers demonstrate susceptibility to the multiplicator impact of tourism as well.

Table 2

The components of cognitive images related to village tourism

Impact	Order	First thoughts related to rural tourism (1-5)	Frequency of mentioning, %
Socio-cultural impact	1	Networking. establishing connections	31.0
	2	Introducing local attractions	18.3
	3	Program arrangement	17.2
	4	Reputation	12.8
	5	Activity. eventfulness	9.7
	6	Celebrating everyday events	5.9
	7	Acquisition of information	3.8
	8	Cohesion	3.1
	9	Gastronomical attractions	2.8
Environmental impact	1	Environmental pollution	4.5
Economic impact	1	Rural development	35.5
	2	Income	32.0
	3	Employment opportunities	15.2
	4	Investment	14.4

Tourism is interpreted as a complex indicator system as 35.5 % think of rural development, 32 % emphasize income, 15.2 % call attention to employment possibilities and 14.4 % note the potential business opportunity. Thus, in such community tourism can become an established and accepted method for rural development, a means of securing supplementary income and successful practice. The challenges the given village faces can provide incentive to identify new resources and boost the local economy by retaining basic services, creating options for selling locally produced foods, and eliminating unemployment. The significance of renewable energy sources in tourism lies in reconciliation with the basic principles of responsible and sustainable development along with energy saving efforts. The feature and landmark-specific renewable energy sources including solar panels, wind turbines located in wind tunnels, hydroelectric power plants built on rivers with fast currents, and geothermal power plants can function as touristic attractions as well.

Conclusions

The research effort provided the following results overall:

1. The tenth arrangement facilitated an organizational sytem promoting rural development, economic success, and improved human relations.
2. Renewable energy options provide a significant source of capital for society as a whole at the Székely region. Accordingly, the role of alternative energy sources in rural development efforts appears justified.
3. The legitimacy and development of tourism utilizing the achievements of the tenth culture is based on internal features, (natural and social factors as a whole) along with demand trends. Thus, a question can be raised, namely can the tenth itself determine the extent of rural or village tourism in the Székely area? The potential answer would rely on the results and consequences of the organic development warranting the prevalence of the tenth embryo in the arrangement of tourism. All the more so that the researcher can only disclose the respective data, while the expert co-operates, establishes the respective institutional frameworks, and identifies the potential developmental trends. As a result of a bottom to top approach in the development of sustainable tourism a different stakeholder system could emerge the efficiency of which is based on the cohesive force and complexity apparent in the basic organizational principle of the tenth.
4. In addition to the community preservation impulse the perspective of the property holder expressed in a shared “we” awareness emerges. This conclusion appears justified even if the issue

of the tenth is approached along the interaction of natural attributes and such social functions as border defence, economic management, and community organization.

5. Consequently, the reduction of tension between preservation and renewal should be one of the primary objectives of the tourism development strategy of the Székely region.
6. Although the Székely region in Transylvania, Romania is a unique area, an international comparison will be necessary in the near future in our research activities.
7. However, we are sure that the importance of the renewable energy sources will be more and more important in the economy and tourism industry in the Székely region.

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