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## Sustainable development strategy of Șugag mountain region

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**Abstract:** The concept of sustainable development has been formed over time in extensive international scientific debates, having as subject environment protection. Human-natural resources, space, are limited, fragile and must be exploited rationally and consistently protected. Sustainable development is the only way to ensure the satisfaction of present generation needs without compromising them for future generations. The paper presents key strategies and local action plans for sustainable development of Șugag mountain region, Alba County.

**Keywords:** sustainable development, strategy, local action plan (LAP).

### 1. GEOGRAPHICAL LOCAL OF ȘUGAG COMMON

Șugag commune is situated in the southeastern part of Alba County in the foothills of Șureanu Mountains. Distance from Alba Iulia City, Alba County seat, to Șugag is 45 km and to Sebeș (the nearest urban area) is 30 km. Șugag common consists of 7 villages: Șugag, commune seat, Arți, Bîrsana, Dobra, Jidoștina, Mărtinie and Tău-Bistra. Landforms found on the site of the commune are hilly and mountainous. Șugag is sitting on the Sebeș Valley and surrounding villages are scattered over the hills of Șureanu Carpathian Mountains. Șugag common territory is crossed by numerous valleys (valley Dobra valley Martinie, Bistra Valley) from which they received the name of some villages [3]. Șugag common is bordered to the north by common Săsciori, in south Vâlcea and Hunedoara, Sibiu County in east and in the west with Cugir City and Săsciori common. Șugag commune is a IV rank settlement and the surrounding villages are settlements of rank V [4]. Commune area is 25311 hectares, 3239 living residents, resulting in an average density of 12.8 inhabitants / km<sup>2</sup>.

The land fund of Șugag commune is as follows: agricultural land - 5632 ha (22.25% of community total surface), of which only 143 ha arable land, non-agricultural land - 19679 ha (77.75% of village total area) in which forests occupy the largest area (17 874 ha) (Figure 2). The natural environment in which Șugag common is located, determined residents basic activities: exploitation of forests and water, livestock, agritourism [3]

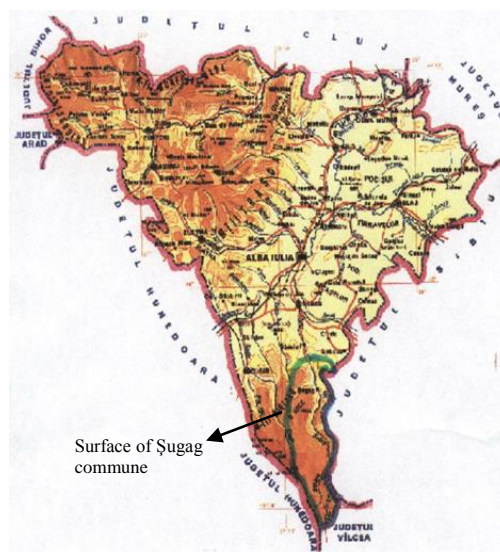


Figure 1. Location of Șugag commune in Alba County [3]

Land fund of Șugag Commune  
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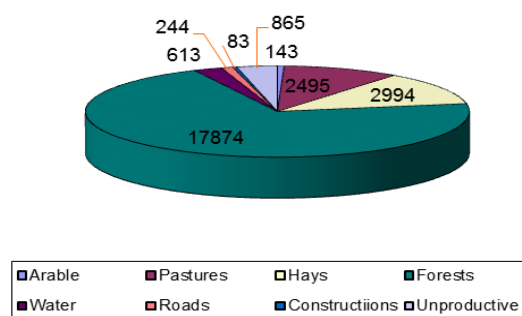


Figure 2. The situation of Șugag land fund [3]

The defining element of this strategy is a full connection of Șugag common to a new philosophy of development, widely shared in the world - that of sustainable development. This Strategy sets specific objectives for moving, within a reasonable realistic time, to a development model generating high added value, driven by knowledge and innovation interest, oriented to continuous improvement of people's lives

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and relationships between them, in harmony with the natural environment [5].

## 2. PRINCIPLES OF RURAL DEVELOPMENT

Sustainable development is a process that allows the economic development of the present generation without compromising the natural resources necessary for the harmonious development of future generations without degrading the environment. Principles of sustainable development are based on the following:

- Exploitation of natural resources without causing depletion;
- Reducing pollution below the limits imposed by the regulations in force;
- Biodiversity conservation;
- The orientation of technological development towards protecting the environment while distributing income in a fair and reasonable manner;

The components of sustainable development required to develop it and without which the process could not begin are:

- Culture, of which results behavioral functions of society that must change ;
- Technology that sets new clean technologies;
- Action plan that specifies goals and how to achieve sustainable development [2].

Sustainable development is largely based on community vision formed in the spirit of sustainable development principles. This vision is a picture of what they want to create or to happen in the near or distant future in that community. Such a vision must be shared by all members of the community, in order to be identified with the community itself.

Collaboration between representatives of various interest groups and citizens allow the vision to include the concerns and interests of all, if they comply with the principles of sustainable development. Figure 3 presents the hierarchy and relations of implicated parties.

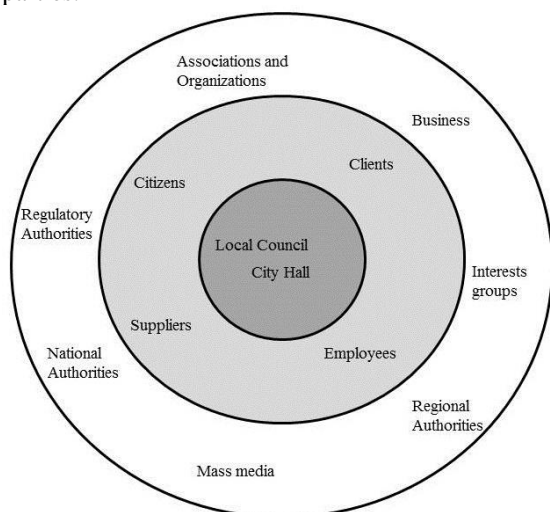


Figure 3. Interests groups [3]

The purpose of the Local Action Plan (LAP) is to present necessary measures for the planning phase and implementation of the Sustainable

Development Strategy, so that the development process can be assessed continuously through sustainable development indicators (which can be viewed as dimensions of sustainability) selected as being relevant to this community.

The management for achieving sustainable development consists of three phases:

1. LAP's development plan - planning activities;
2. LAP's execution plan - implementation of activities;
3. LAP's monitoring Plan - evaluation of activities;

In order to have a coherent development, necessary support must be provided by:

- Local Government - through the institution of the City Hall and City Council , which must preplan institutional development and grant complex logistical support necessary to LAP;
- Local Community - citizens and organizations leading players in local development through active commitment and participation;
- The business companies and financing institutions as financial and logistic support (information and modern technologies);

## 3. LOCAL ACTION PLAN FOR SUSTAINABLE DEVELOPMENT OF ŞUGAG COMMON

The main objectives for sustainable development of Şugag commune are:

- Development of basic infrastructure and ensuring open access of population and industries to this infrastructure (sewer system, drinking water, electricity, communication channels);
- Environmental protection;
- Strengthening social cohesion and community solidarity, poverty reduction.

The Local Strategy for Sustainable Development of Sugag commune targets a medium term period (10 years) and long term (20 years). In this period the local action plan is adapted according to changes in economic, social, cultural and environmental areas.

The LAP for Sugag contains programs in various areas that need to be developed in the future to achieve sustainable development of the commune :

Water protection :

- execution of sewage system throughout the commune;
- rehabilitation and extension of water supply to commune;
- eliminating spill dangers of contaminated waste water into surface waters;
- inform the population about the risks caused by the discharge of waste water in unsuitable places or watercourses. Particular attention

will be paid to avoid contamination of Sebes River, which is the source of drinking water for approx. 200 000 inhabitants of Alba County;

- cleaning the riverbeds of erosion products,
- removing vegetation and debris from the riverbed;
- resizing bridges to allow water circulation even at high flow rates;
- course corrections where possible;
- embankment of heavy affected flood areas, rise and correct existing dam crests and reuse them for circulation;
- soil erosion works on slopes.

#### Protection of the atmosphere:

- Initiate a study evaluating the impact of road traffic on the air and the setting of environmental quality monitoring indicators;
- Develop and implement specific programs to educate the public and decision-makers from institutions that own and use motor vehicles in connection with air pollution problems of road traffic and the responsibilities they each have both legally and as community.

#### Natural resources and conservation of biodiversity:

- delimitation and marking of specific scientific areas and buffer zones within each protected area;
- installing warning signs on access/banned scientific areas of natural reservations;
- establish, by decision of the local community council, the conditions of access to scientific areas within natural reservations;
- establish a fee for access to scientific areas of natural reservations;
- establish a system of fines on illegal entry of persons in scientific areas of natural reservations;
- develop and implement specific programs to raise public awareness about the need to protect scientific areas and to attract its support in the implementation of specific actions for protection and conservation;
- establishing and training of authorized personnel in the supervision and management of protected areas;
- establishing personnel authorized to carry out scientific work in scientific areas of protected zones;
- implement specific programs to collect data and information on the status and dynamics of species and ecosystems in protected areas;
- achieving a partnership between local authorities, scientific medium, NGOs, citizens and other entities, with clear delineation of responsibilities for management and supervision of scientific areas within the protected zones as well as collection and processing of scientific data,

fundraising projects protection and conservation;

- establish for each protected area/reserve a legal person to ensure proper and efficient administration; identifying and securing sources of revenue needed to manage protected areas/natural reservations;
- establish and implement a drastic system of fines for breaches of specific legislation;
- develop and implement specific programs for training of personnel involved in managing protected areas/natural reservations;
- identify and use all possibilities of achieving partnerships between local authorities and various institutions/organizations in the community to ensure human and financial resources in order to effectively manage protected areas/natural reservations.

#### Inventory and conservation of trees and scientific/tourist interest species:

- adoption of a local regulatory system to facilitate the inventory;
- identify opportunities for receiving economic incentives (tax breaks, free or lower costs to various utilities for persons or organizations involved in the inventory and conservation of protected species);
- application of the protection regime and visual conservation (through public notices) as well as physical (by delimiting and restriction of access);
- implementation of monitoring and protection program of endangered species with the purpose of conservation.

#### Protection and development of forest ecosystems:

- planting of trees within each forest ecosystem with species extinct or diminished individuals;
- adoption of a system with specific local regulations on the rational exploitation of forests, which is focused on the recovery and protection of species in each ecosystem and their number of individuals within each species; the regulations will have, where appropriate, provisions prohibiting a specified period of cutting endangered species;
- identify opportunities to exploit lower quality tree species;
- establishing a tax differentiated by species to discourage exploitation of threatened species;
- apply a severe system of fines for non-compliance with the specific regulations on forest exploitation;
- delineation and marking reservation perimeters and buffer zones;
- installation of warning signs at the perimeter boundary;
- improving the legal framework to protect natural reservations;

- firm enforcement of current legislation on forest exploitation;
- initiation, by the local council of the communities bordering the reservations, of planting activities in deforested areas to which NGOs, citizens and other entities should involve.

Practicing ecological tourism in protected areas, forests and recreation areas:

- execution of tourist facilities provided with all necessary amenities for environment protection in areas that are currently not under a protected area/natural reservation;
- installation, at the boundary of protected areas/natural reservations/forest areas, of warning signs on the terms of tourism regulations;
- adoption of decisions, by local government, to prohibit uncontrolled tourism in protected areas, natural reservations and forest areas to facilitate tourism in ecological conditions;
- creation, at the level of each individual protected area, natural reservation and forest area, of a system for organizing specific tourism in their perimeters ;
- applying a tax system for tourism in protected areas, natural reservations and forest areas;
- applying a strict system of fines for non-compliance with specific legislation;
- identify and use all possibilities of achieving partnership between local authorities and various institutions/organizations in the community for rapid replacement of existing forms of tourism to ecotourism;
- authorization of travel agencies and tour guides.

Reduction of noise and vibration in residential areas:

- Providing industrial transport with less polluting vehicles;
- compliance with rules and standards for noise and vibration;
- develop a brochure and informative materials related to noise, vibration and damage to the health of population;
- develop a study to assess the degradation of buildings due to vibration;
- identify high traffic sections that exceed the maximum limit;
- implement a monitoring network for noise pollution, and building degradation analysis as a consequence of vibrations.

Waste Management:

- improving solid waste pre-collection by the population, with the help of the local government, by providing suitable collection containers;

- establish a viable system of separate collection for recoverable waste at source (businesses or individuals);
- separate collection of waste from gardens in order to compost;
- establish, by decisions of the local authorities, a system of fines for storing recyclable waste by businesses, waste that have local recycling systems;
- preparation of educational brochures on how to recycle waste, printed and distributed to commune inhabitants;
- develop and implement specific programs on public awareness on waste management and special impact of various operations (collection, transport, storage) on human health and the environment.

Environmental Education:

- information and development of environmental volunteering as a factor of involvement in solving environmental problems in the community;
- implementing of alarm systems in case of technological accidents which causes aggression to environmental factors;

Increase the number of projects with financing from UE:

- establish an annual seminar to publicize and inform the community about funding opportunities, eligibility, opinions, community goals.

Crisis management implementation in accidents with major environmental impact:

- establish an annual strategy covering prevention, and monitoring of activities with potentially major impact on the environment;
- accomplish a Coordination Team for interventions at local level in case of accidents and determine its powers and duties.

Greening agriculture and rural sustainable development:

- promoting the proposals aimed at greening local agriculture and projects within EU programs for sustainable development by local authorities;
- continuous supervision of environmental factors quality in rural areas [3].

#### 4. PUBLIC UTILITIES IN ŞUGAG COMMON

The works executed till the implementation of the local action plan for sustainable development, offered a low degree of comfort to Şugag inhabitants (Table no. 1).

Currently the centralized water supply, existing in Şugag common, consists of: water cathment in Şugag Valley located in the village of

Dobra; a water treatment plant; a distribution network with a length of 12 km which serves the consumers of Dobra Şugag and Martinie.

The treatment plant meets the current water needs of consumers in the three towns served by the centralized water supply system.

Table no. 1. Public utilities in Şugag [3]

Village Name	Number of dwellings	Water supply systems		Waste water systems			Electric energy supply
		interior	exterior	Public network	Septic tanks	Indoor bathroom	
Şugag	495	357	30		338	319	473
Arţi	154	4	120		4	0	92
Bârsana	88	4	62		4	1	69
Dobra	210	125	7		125	118	204
Jidoşina	36	0	9		0	0	7
Mărtinie	208	94	28		93	88	190
Tău-Bistra	219	146	6		146	136	204
<b>Total commune</b>	<b>1410</b>	<b>730</b>	<b>262</b>	<b>0</b>	<b>710</b>	<b>662</b>	<b>1239</b>

In 2004, the distribution network has been providing to consumers, in the three villages mentioned above, 80 thousand cubic meters of drinking water, of which 63 thousand cubic meters were used for domestic purposes .

The public sewer system has been completed which comprises a network of sewers for wastewater discharged from Şugag, Dobra and Mărtinie villages and a treatment plant located in the village of Mărtinie. Septic tanks were closed and no longer used today, and indoor bathrooms are found in 99% of homes. Jidoşina village is in an isolated area but recently completed the implementation of an electric energy network and power connection to housing. In view of the selective waste, the commune was equipped with special bins.

The completion of Transalpina road with a length of about 148 km, linking the towns of Şugag-Alba County and Rînca in Gorj County, led the development of tourism in this area. The Road crosses Şurianu Mountains and offers beautiful landscapes at elevations of 2100 m.

Beside the two reservoirs (Tău-Bistra, and Oaşa) on route of this road a ski area is being developed at Obirsia Lotrulului.

## 5. CONCLUSIONS

Şugag village now has a local action plan which, when put into practice will ensure its sustainable development. The cost of the work specified in the local action plan is high and ensuring it's funding depends on the ability of local authorities to identify other sources and attracting funds.

A significant source of income for the local population and thus implicitly for achieving the LAP, currently underexploited, is the agritourism. The area has a picturesque landscape that can attract many tourists by increased promoting and advertising. Currently, developed public utilities provides better comfort to inhabitants of Şugag commune and also solve environmental problems from uncontrolled wastewater spills from households. Selective collection of waste also contributes to a more cleaner and protected environment.

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