

## SUSTAINABLE DEVELOPMENT INITIATIVES AND PRACTICES FOR SMART VILLAGES

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**Abstract:** *The main objective of this work is to analyse the situation of the Ciugud commune from a social, demographic, economic and cultural perspective and to assess the indicators specific to smart villages. The analysis has been conducted by collecting data from secondary sources (secondary data) and marking every smart criterion so as to determine whether the community is developing in a smart direction or not and whether it has solutions for the issues the rural areas are facing such as depopulation, population aging, lack of basic services, unemployment and the absence of an entrepreneurship environment. It has been noted that this commune is developing in a smart direction and can be labelled as a Smart Commune.*

**Key words:** *smart villages, rural development, sustainability, digitalization*

### INTRODUCTION

The extensive research "Smart and competitive rural areas" initiated by the European Network for Rural Development also includes a current topic on Smart Villages.[10]

The implementation of this concept aims to revitalize rural areas from the point of view of education, social services, medical, energy, transport and trade.[7].

The rural development policy offers a wide set of financial instruments to support the development of smart villages in rural areas.

Other studies show that the smart village infrastructure is developed in accordance with the Sustainable Development Goals and offers the residents an opportunity to face the future of energy security and the problems of local and circular economies [2,4,7,9].

The intelligent dimension of development could be complemented, according to the studies presented in literature review by other specific aspects: sustainability, accessibility of sustainable energy, sustainable growth, water resource management, education, empowerment for women, well-being and decent work. [7,8]

Building resilient infrastructures, encouraging innovation, reducing inequalities, creating more inclusive and sustainable human settlements, are initiatives that promote or use the concept of "Smart Villages" [6,7, 9,15]

### MATERIALS AND METHODS

The research material is represented by the Ciugud commune with its 6 villages (Ciugud, Drîmbar, Teleac, Hăpria, Berghin and Ghirbom), in the Alba County. [13] The grounds for my decision to analyse this commune are the good practice examples provided by the commune. The material used in achieving this work has been the information gathered from specialised bibliographic sources, that of the 2014-2020 Rural Development Strategy elaborated by the National Rural Development Programme, the National Rural Development Network and the European Agricultural Fund for Rural Development. [17] The data collection method used has been the quantitative research and the gathered data is secondary data. [16]

## RESEARCH RESULTS

The purpose of developing smart villages is to solve the rural community problems so as to revive them and make them economically attractive in order to be repopulated.

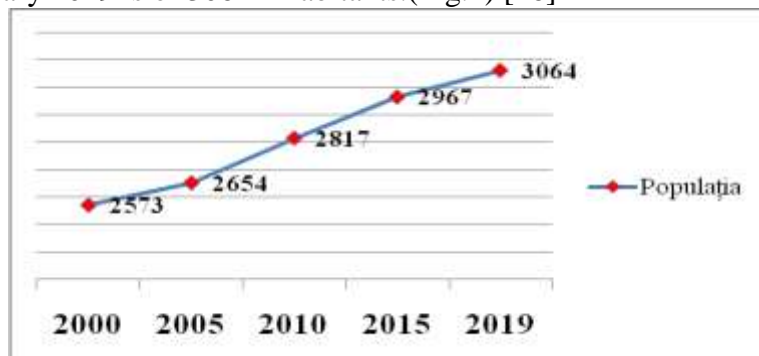
In the 2014-2020 period a series of activities have been scheduled in order to reach the proposed goal, that is the development of the rural environment by the Smart Villages concept. [9,10,11,14,15]

The development of Smart Villages is pursuing the following goals:

- Developing the local, human, environmental and economic potential by: entrepreneurship development, creating and maintaining jobs; educational infrastructure; supporting the short chain between producers and consumers; actions to include renewable energy; reducing the economic differences between the urban and rural environments
- Reviving and improving the basic services: including digital services to make local administration more efficient; providing transport services
- Improving the living conditions: developing and/or improving the medical and home care services; creating multi-service/multi-functional centres for the local communities

Developing digital competence and supporting distance education (e-learning).

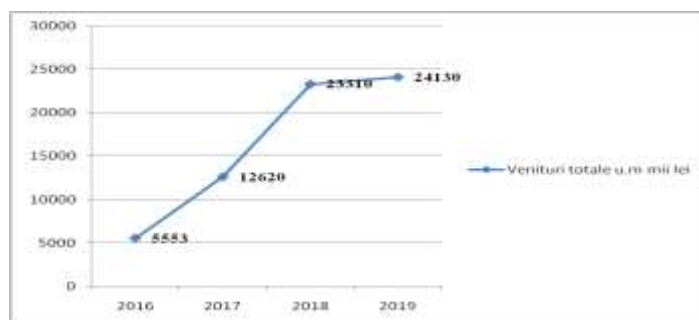
According to the National Institute of Statistics (Romania), the commune's population after 1<sup>st</sup> of January 2019 is of 3064 inhabitants.(Fig.1) [16]



**Figure 1. Evolution of the resident population in Ciugud commune**

*Source: Own processing according to the INSSE data*

In time, entrepreneurship has developed a lot in Ciugud commune. More than 10 million Euros have been invested in the industrial park. Half of the annual budget of Ciugud is collected just from taxes and fees coming from the industrial investors. One million Euros enter every year the commune's treasury from companies that are conducting business here, money providing the funds for investments, but also co-funding EU projects. Since 2005 up to the present time, 27 investors have bought or leased land in the industrial area of Ciugud commune (Fig.2). The total number of employees working here is over 700, out of which almost half come from the six villages of the commune. Potentially pollutant investments are rejected, although within a year there are applications from at least 15 investors but the environment protection criterion is decisive when the village hall leases land for investment. [13]



**Figure 2 Evolution of total revenues within the local budget of Ciugud commune in the period 2016-2019**

Source: Own processing according to the official data

Following the analysis of smart village specific indicators, in the Ciugud commune a series of supporting instruments were identified, which have lead to the achievement of the smart village model.(Table 1)

**Table 1**

**Project List**

Nr. crt.	Project title	Project value (euro)	Funding program (European funds/local budget / etc)
1.	The extended kindergarten	1.225.799	PNDR and the local budget
2.	Smart school	45.000	Andrei's Country Program (OMV PETROM)
3.	Wind power station and photovoltaic park in the village of Șeușa	1.000.000	Government of Norway
4.	Arrangement Integrated system of Electricity Production	60.000	Ciugud village Hall
5.	Interactive graphic quality management system	136.585	Operational Program Development of Administrative Capacity
6.	Renovation of the administrative headquarters of Ciugud Commune	396.742	Ciugud village Hall
7.	Modernization of road infrastructure in Ciugud and Sîntimbru communes	3.600.972	PNDR
8.	Rehabilitation of the human dispensary building in Ciugud	443.418	National Program for Local Development
9.	Endowment of the Cultural House in Drîmbar with furniture	25.554	PNDR
10.	Arrangement of a local tourist information and promotion center, in the village of Hăpria	73.332	PNDR
11.	Purchase mobile scene for shows	30 000	FEADR- LEADER
12.	Bridge construction and access roads in Ciugud commune ”	1.817.819	National Program for Local Development
13.	Development of agricultural infrastructure in Ciugud and Berghin communes by modernizing the agricultural exploitation roads	1.244.712	PNDR
14.	Modernization of agricultural roads in Ciugud commune	225.359	PNDR and the local budget
15.	Modernization of agricultural roads in Hăpria, Ciugud commune ”	129.965	PNDR and the local budget
16.	Household sewerage network and sewage treatment plants in Ciugud, Drîmbar, Teleac, Hăpria Straja, Berghin and Ghirbom and water supply network of Straja, Berghin Ghirbom, streets rehabilitation in Ciugud commune, arrangement of day center for elderly people Language and promotion of local cultural and traditional heritage.	7.152.185	European Agricultural Fund for Rural Development (EAFRD, measure 322 of the NRDP)
17.	Theodora Golf Club Resort	15.000.000	Private investment

Source: Own processing according to the Hall Ciugud information

**CONCLUSIONS**

Smart village means a community developing by using local resources and technology in a smart manner, preserving its rural identity all the same. [3,5,2,4] The power of taking in European funds is high and the interest in the application of funds allowing the commune to develop in a smart direction is ever increasing.

The commune is leader in accessing European funds with over 70 projects approved and over 27 million Euros cashed. The economic differences between the urban environment and the rural environment in Ciugud have been reduced by implementing many innovative solutions designed to improve the quality of life, reduce the administrative costs or protect the environment. It has been noted that this commune is developing in a smart direction and can be labelled as a Smart Commune.

A project to install two charging stations for electric cars in the commune is on its way of being implemented. Also, Ciugud is the first commune owning self-pay stations for local taxes and fees.

As regards the actions on including renewable energy, the local administration has implemented a smart street lighting system during the last years and is providing a part of the required electricity by means of a micro wind generator and photovoltaic panels.

In Ciugud, the educational infrastructure is very well organised, a full-day kindergarten and a smart school being built. The “Smart School” project is intended to be a national concept meant to prove that technology can be the solution by which education can develop in a rural environment and children can be attracted to the learning process by the use of innovative and unprecedented solutions, developing digital competences and supporting distance education (e-learning).

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