

RURENER

Network of small RURal communities for ENERgetic-neutrality



TAŞCA

RURENER Case study summary

Septembrie 2009

1. Geographical position

Taşca is a joint community located in the north-eastern part of Romania, on the river Bicz. At 29 km distance from the city of Piatra Neamț (the administrative residence of Neamț County), Tașca has a population of 2715 inhabitants. Together with its small villages Hamzoaia, Secu, Neagra and Ticoș Florea, Tașca is a beautiful, typical village for Bicz Valley.

2. Natural environment

Topographic data. Tașca has an area of 9.563 ha, 63% of which being covered with forests.

Climate. Tașca is located into the mountainous climatic zone of Oriental Carpathians. The annual average temperature is 8°C, the average temperature of July is around 19°C and that of January is -4°C. The annual average of precipitations rate is 750-800 mm.

Hydrography. The main water course is the river Bicz. The local feeders of Bicz are Secu, Florea, Neagra and Chișirig.

Flora and fauna. On the territory of Tașca, the vegetation consists of bushes of blueberries and red billberries, a species of rare needleleaf tree with falling leaves, some protected species such as *Nigritella rubra*, *Gentiana lutea* and the queen of alpine flowers, *Leontopodium alpinum*. The rich forests in Tașca host bears, foxes, wild boars, squirrels and also some rare species such as the black goat (*Rupicapra rupicapra*) and the lynx (*Lynx lynx*). Bicz and the other permanent water courses offer the trout and rainbow trout. Among birds we can find the wood grouse and the golden eagle.

Geomorphological data. The touristic resources in Tașca and surroundings are represented by:

- Ceahlău Mountain. Ceahlău is National park, with restrictive access. The landscapes are amazing in clear days. One can see many rocks with bizarre aspects, deep forests and a large alpine plateau.
- Bicz Gorges. Descending in Bicz valley, cross spectacular Bicz Gorges to Lacu Rosu resort. Bicz Gorges is the most spectacular gorges from Orientali Carpathians. With huge rocks over 350m high, this is a rock climbing paradise.
- The Cement Factory Moldocim.

3. Use of land

The surface of Tașca is used as follows: agriculture (115 ha), hayfields (1418 ha), pasture (1083 ha), forests (6609 ha) and other uses (338 ha).

Tourism.

Sf. Nicolae Church. Going 5 km on the national road from Tașca to Lacu Roșu we find, at Neagra, the church „Sf. Nicolae”. This church was built on the place where an old, small church made of wood, has been brought, around 1800, from Ceahlău mountain.

Heros' Monument in centrul Tașca (1994).

The Monument of Ștefan cel Mare Voievod in Neagra (2004).

The Monument in Poiana Crucii.

Sf. Spiridon Church in Tașca.

Due to the rich resources from Tașca and surroundings, the following tourism forms have developed:

- Mountainous tourism. There are several lines that can be accessed by those who love mountains: Tașca - Vârful Secuiesc – Furciturii river - Izvorul Muntelui river - Izvorul

Muntelui chalet; Neagra village – crossing of rivers Neagra Mica and Neagra Mare - Vf. Negrii - Poiana Varatec - Poiana Maicilor - Ocolasul Mic – Dochia chalet.

- Traveling/transit tourism. Tașca is placed on the national road DN 12C.
- Hunting and fishing tourism.
- Cultural and pilgrimage tourism.
- Weekend tourism.
- Leisure tourism.
- Business tourism, due to the Cement Factory in Bicaz.

Natural reservations. Ceahlău National Park shelters a large variety of flora and fauna; some of the species are endemic or rarely seen elsewhere in Romania. The entry point to the national park is Izvorul Muntelui village, 12 km north-east of Bicaz.

Industry. The main occupation of the inhabitants in Tașca is agriculture, a small part of them working at the cement factory in Bicaz.

4. Renewable Energy Use

In 1998, an agreement between municipality of Tașca, Neamț County authorities and DEPA was signed, establishing the basis for implementation of a pilot project in Tașca, based upon a considerable grant from DEPA. Grue & Hornstrup Consulting Engineers obtained, in August 1998, the assignment as consultants responsible for design, tendering and implementation of the project on the behalf of DEPA. Tendering based upon international tendering procedures (World Bank tender dossiers) was performed at the beginning of year 1999 and the entire project was implemented during the summer 1999. Before the heating season 1999-2000 the entire project was commissioned which included 1) new boiler plant, 2) district heating network, 3) consumer connection units, 4) replacement of pipes under buildings etc.

In Tasca, the houses are spread all over the village whereas most public buildings (town hall, school, kindergarten etc.) and blocks of flats are concentrated in the centre of the community. The new biomass based district heating system is designed to supply hot water to buildings located in the centre of Tasca.

The central heating system based on sawdust ensures thermal energy for 132 subscribers, namely: 125 families, 1 economic agent and 1 public institution.

Table 1. Technical data

Subject	Unit	Data
Heat output capacity of the biomass boiler system	MW	2.5
Inhabitants supplied with heat from the biomass boiler system	%	50 % of the inhabitants in Tasca.
Fuel		Mostly sawdust, woodchips and bark
Water content of biomass fuel	%	Up to 50
Efficiency of flue gas cleaning system (multi cyclone and bag filter unit) at 10% dry oxygen.	mg/Nm ³	CO emissions < 250 NOx emissions < 500 Dust emissions < 40
Sawdust production in Neamt County	tons/year	Approx. 40 – 50 000
Sawdust consumed by the biomass boiler system in Tasca (excluding kiln).	tons/year	Approx. 2500 (5 – 7% of sawdust production in Neamt County)

The demonstration project in Tasca could be implemented thanks to a considerable grant from DEPA under the Danish Ministry for the Environment and financial support from the Neamt County (funds paid by Municipality of Tasca came from the Neamt County).

The financing scheme for the demonstration project in Tasca is presented below:

- Municipality of Tasca 10 %
- DEPA (grant) 90 %

In addition to the above mentioned grant for purchasing technical equipment, DEPA also financed the expenses related to consultant services.



The demonstration project in Tasca has resulted in environmental benefits and proved that a local environmentally friendly energy source (wood waste) could be used as fuel in district-heating systems in Romania.

By substituting a CO₂ neutral fuel (wood waste) for a fossil fuel (oil), the new biomass boiler contributes to reducing greenhouse gas emissions. The estimation of saved CO₂ emissions as a result of implementing the demonstration project in Tasca is based on the following assumptions.

Subject	Unit	Data
Quantity of wood waste combusted (sawdust)	tons/year	2500
Heat calorific value of wet sawdust (50% water content)	GJ/ton	8.27
Typical emission factor - oil	kg CO ₂ /GJ fuel used (based on lower calorific values)	77.30
CO ₂ emission reduction generated by the demonstration project in Tasca	tons/year	Approx. 1600

The sawdust project developed in the village of Tasca demonstrates that a modern combustion technology can provide a viable solution to two problems: an environmental problem caused by uncontrolled sawdust dumping and an energy-related problem concerning heat supply to the local population.

Future development plans of Taşca community foresee an extension of the use of wood waste, in order to ensure thermal energy for the community by building a new biomass plant in the community. As we can see in Table 1, there is enough wood waste available for this purpose. Also, an evaluation of the aeolian and solar energy sources in the neighborhood is desired.

For Taşca, being partner in RURENER network and joining RURENER project is an opportunity for new information and for finding new financial sources, and a support to persuade local authorities to involve in this project.



5. SWOT – Analysis of Tasca Municipality

INTERNAL			
POSITIVE	<p>STRENGTHS</p> <ol style="list-style-type: none"> 1. RES potential: biomass (sawdust) 2. Natural heritage: woods, 63% of the surface 3. Experience in RES: sawdust fired boiler plant (2,5MW), sawdust storage 4. Strong commitment at the local Town Hall level and at the County Council level 5. Existing district heating system available 6. Local level stimulation 7. ARCE (Romanian Agency for Energy Conservation) 	<p>WEAKNESSES</p> <ol style="list-style-type: none"> 1. Energy efficiency in buildings is not an obligation yet 2. Low interest of private investors for RES 3. Lack of integrated plan for entire community. 4. Large distances between houses 5. Habits of the villagers to use traditional heating system 	NEGATIVE
	<p>OPPORTUNITIES</p> <ol style="list-style-type: none"> 1. Privatisation of Moldocim cement factory 2. Large quantities of sawdust and wood waste resources available close to Tasca 3. Organisation of wood waste collection from the wood processing companies 	<p>THREATS</p> <ol style="list-style-type: none"> 1. Lack of financing sources 2. Difficulty of the administration for the implementation of the project 3. Reduction of wood waste if mills are closing due to financial crisis 	
EXTERNAL			

