



## The milankovici village on the Krivaja River: Life in a way of sustainability

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### Abstract

Kriva Rijeka is the name for a group of villages in the municipality of Olovo located in the Krivaja river valley along its course from the canyon Krsevi, geographical coordinates: 44°07'54.13"N, 18°33'22.36"E, to the locality Kamenica, geographical coordinates: 44°13'09.65"N, 18°29'33.17"E, below the village of Cunista. The term „Kriva Rijeka“ is in unofficial use today, and it appears in documents for the name of the cadastral municipality.

The Milankovici village (Geographical coordinates: 44°12'13.08"N, 18°32'16.96"E, altitude: 744 m) is located on a wide slope with (predominantly) southern exposure, under the mountains Kruskovica and Mladosevac (Fig. 3.270). The village is 4.2 km from Solun on Krivaja River, and 9.3 km from Olovoo (by air). The area of the village, on its western side, is bounded by Palez hill, on the eastern side by Zaratje, Drenova glava and Dragolas, on the northern side by Krukovica and Mladosevac mountains, and on the southern side by the Krivaja River. The village is accessed by an asphalt road from the Olovo-Zavidovici regional road. Milankovici is connected by a macadam road to the Bukov Do village (and further, by an asphalt road, to Solun). Also, Milankovici is connected by a macadam road to the locality of Muka voda on the Drinjaca River, and from here to Kladanj by an asphalt road.

**Keywords:** Krivaja River, Kriva Rijeka, Milankovici village, sustainability, water, fields, orchards, forest

### 1. Introduction

The Milankovici village (Geographical coordinates: 44°12'13.08"N, 18°32'16.96"E, altitude: 744 m) is located on a wide slope with (predominantly) southern exposure, under the mountains Kruskovica and Mladosevac (Figures 1,2,3,4,5). The village is 4.2 km from Solun on Krivaja river, and 9.3 km from Olovo (by air). The area of the village, on its western side, is bounded by Palez hill, on the eastern side by Zaratje, Drenova glava and Dragolas, on the northern side by Kruskovica and Mladosevac mountains, and on the southern side by the Krivaja river. The village is accessed by an asphalt road from the Olovo-Zavidovici regional road. Milankovici is connected by a macadam road to the Bukov Do village (and further, by an asphalt road, to Solun). Also, Milankovici is connected by a macadam road to the locality of Muska voda on the Drinjaca river, and from here to Kladanj by an asphalt road.

Milankovici is the most spacious and by number of inhabitants the largest village in Kriva Rijeka. According to the 2013 census, 311 people lived in Milankovici, which is significantly less than the number of inhabitants (716), according to the 1991 census <sup>[1]</sup>. Milankovici is an agglomeration of three villages: Subasici (in the west), Hodzici in the middle and Radovici, in the east of this agglomeration. In Subasici, there are households of several large families: Dzakmic (formerly Dzakmo), Kopic, Kljajic (formerly Kljajo). In Hodzici there are households of the Omerovic family <sup>[1]</sup>, and in Radovici the families Kopic, Sadikovic and Durakovic (formerly Durak).

<sup>1</sup> Semso Omerovic gained his entire working experience working as the secretary of the primary school "Hasan Kikić" in Solun on Krivaja river. His father was a well-known watch repairer ('sahadžija') in Kriva Rijeka.



**Source:** Left: [https://upload.wikimedia.org/wikipedia/commons/8/88/Bosnia\\_and\\_Herzegovina\\_in\\_Europe.svg](https://upload.wikimedia.org/wikipedia/commons/8/88/Bosnia_and_Herzegovina_in_Europe.svg), Accessed 12.23.2022. Right: Google Earth, Accessed 12.23.2022.

**Fig 1:** The Milankovici village. Location



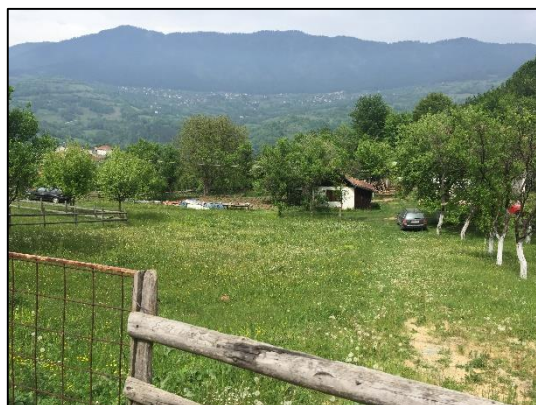
**Source:** Author (5.21.2020.)

**Fig 2:** View of Milankovici from Bijeli vrh



**Source:** Author (5.21.2020.)

**Fig 3:** View of Milankovici from Mladosevac



**Source:** Author (5.21.2020.)

**Fig 4:** View of Milankovici from the Kovacici village



**Source:** Author (5.21.2020.)

**Fig 5:** Reinforced concrete bridge over the Krivaja River at the point where the road to Milankovici separates from the Olovo-Zavidovići regional road

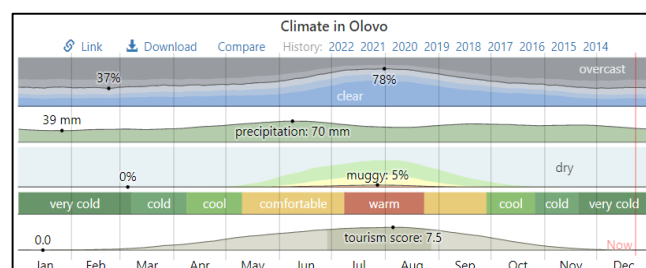
## 2. Environment

By „environment“ we mean any possibility in space in which man can realize his existence <sup>[2]</sup>.

### 2.1 Natural environment

By natural environment we mean all those features provided by nature, on which man (mostly) has not achieved his influence: geographical location, geomorphology, watercourses and water reservoirs, flora and fauna, available soil, climate <sup>[2]</sup>.

In Olovo (and in Milankovici, too) the summers are pleasant, the winters are icy and snowy, and it is partly cloudy throughout the year. During the year, the temperature usually varies from -6 °C to 25 °C and is rarely below -13 °C or above 31 °C (Figure 6).



**Source:** Climate and Average Weather Year Round in Olovo Bosnia & Herzegovina

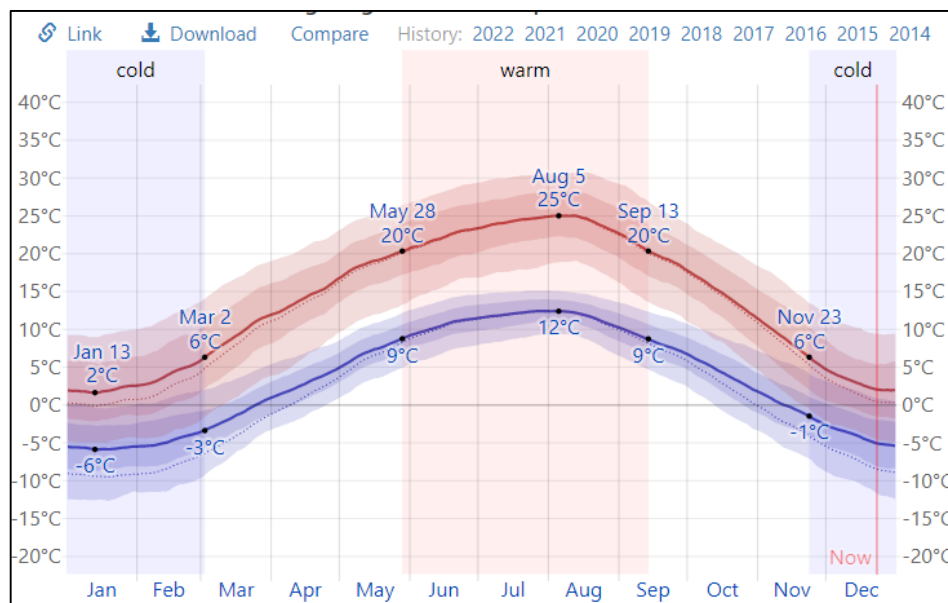
**Fig 6:** Olovo weather by month

<https://weatherspark.com/y/83192/Average-Weather-in-Olovo-Bosnia-&-Herzegovina-Year-Round>, Accessed: 12.23.2022.



The warm season lasts for 3.5 months, from May 28 to September 13, with an average daily high temperature above 20 °C. The hottest month of the year in Olovo is July, with an average high of 24 °C and low of 12 °C.

The cold season lasts for 3.4 months, from November 23 to March 2, with an average daily high temperature below 6 °C. The coldest month of the year in Olovo is January, with an average low of -6 °C and high of 2 °C (Figure 7).



**Source:** Climate and Average Weather Year Round in Olovo Bosnia & Herzegovina

**Fig 7:** The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures. <https://weatherspark.com/y/83192/Average-Weather-in-Olovo-Bosnia-&-Herzegovina-Year-Round>, Accessed: 12.23.2022.

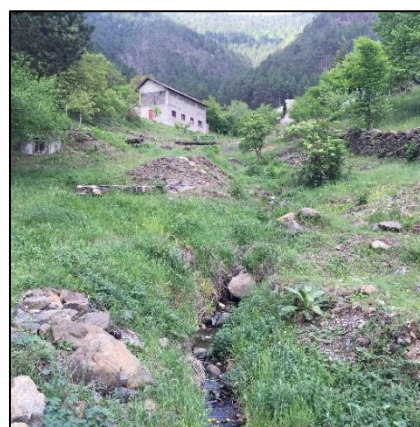
A wet day is one with at least 1.00 millimeters of liquid or liquid-equivalent precipitation. The chance of wet days in Olovo varies throughout the year. The wetter season lasts 2.9 months, from April 20 to July 16, with a greater than 29% chance of a given day being a wet day. The month with the most wet days in Olovo is June, with an average of 10.4 days with at least 1.00 millimeters of precipitation. The drier season lasts 9.1 months, from July 16 to April 20. The month with the fewest wet days in Olovo is January, with an average of 6.9 days with at least 1.00 millimeters of precipitation. Among wet days, we distinguish between those that experience rain alone, snow alone, or a mixture of the two. Based on this categorization, the most common form of precipitation in Olovo changes throughout the year.

Rain alone is the most common for 11 months, from January 26 to January 31 and from February 10 to December 26. The month with the most days of rain alone in Olovo is June, with an average of 10.4 days. Snow alone is the most common for 1.3 months, from January 31 to February 10 and from December 26 to January 26. The month with the most days of snow alone in Olovo is January, with an average of 2.6 days.

The most important resources in the Milankovici village are: the generous 'Pralo' stream (Figure 8), numerous sources of drinking water (Figure 9), gardens and orchards right next to the houses (Figure 10), spacious fields and meadows (Figure 11), pastures (Figure 12) and private and state forest (Figure 13). Milankovici (and Bukov Do) have extensive fields and meadows in the locality of Bebrova (on Mount Konjuh), in the territory of Kladanj municipality.

The Pralo stream originates from a generous source in the hamlet of Hodzici. As the terrain down to the Krivaja river is quite steep, it was particularly suitable for the construction of mills for grinding grain. In the past, ten water mills were

installed on the Pralo stream. There are also numerous sources of drinking water in the village which, among other factors, enabled the wide dispersion of the physical structure of the village.



**Source:** Author (5.21.2020.)

**Fig 8:** Pralo stream



Central village fountain and cattle trough in Milankovici (Subaici hamlet)





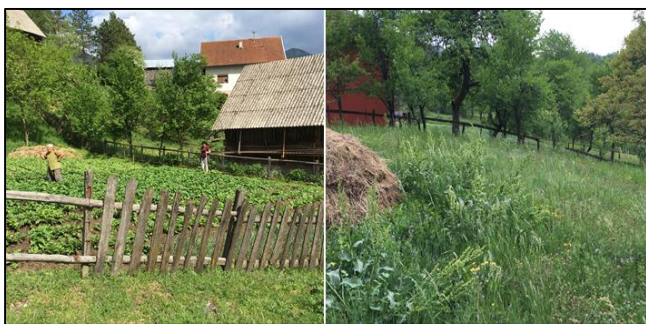
A fountain with a watering hole for cattle by the road at the foot of Mladosevac



Source: Author (5.21.2020.)

Central village fountain and cattle trough in Milankovici (Hodzici hamlet)

**Fig 9:** Public fountains in the Milankovici village



Source: Author (5.21.2020.)

**Fig 10:** Gardens and orchards right next to the houses



Fields and meadows in the Radovici hamlet (in the background you can see Velika Glava, with a mountain peak on its top, and the Zvijezda mountain)



Source: Author (5.21.2020.)

Meadows in the Radovici hamlet (with a view of the Hodzici and Subasici hamlets)

**Fig 11:** Fields and meadows





Pasture in Zaratje with a view of Bijeli vrh

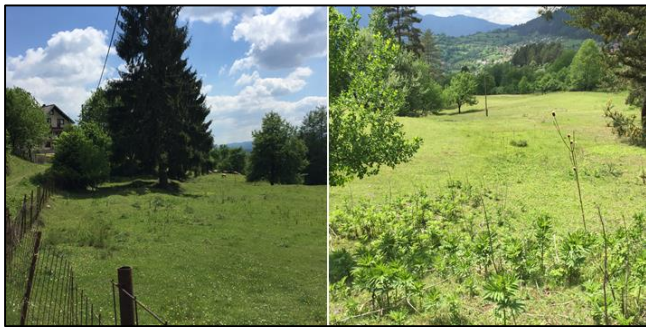


Fig 12: Pastures



Source: Author (5.21.2020.)

Četinarska šuma u Zaratju između sela Bukov Do i Milankovići (lijevo) šuma na padinama Mladoševca iznad sela Milankovići (desno)

Fig 13: Šuma

## 2.2 Social environment

The social environment represents everything that man has created and that separates him from the world of other living beings <sup>[2]</sup>. It includes both physical structures (various material, more or less ordered products of their activity) and the immaterial world that we know through intellect (science, philosophy, religion, law, morality) through an ordered system of abstract symbols (letter, signs) <sup>[9, 10, 11, 12, 13, 14, 15]</sup>.

In 2000, a translation of the 1604 Census of the Bosnian Sandzak (translated by Adem Handzic) was published by the Bosniak Institute Zürich-Sarajevo (Adil-beg Zulfikarpasic Foundation), mentioning the Medupalez (Milankovici) <sup>[16]</sup>.

It is interesting that the plot of land in the rural fabric of the Milankovici village before the wars that followed the collapse of the SFRY (1992-1995) was larger than in the city of Sarajevo. That was the era of 'socialist self-management in Tito's Jugolavia' when all the able-bodied population of the Milankovici village worked in 'state companies' in Olovo (Stupcanica, Centrotrans, for example) and additionally earned money on their private estates in the village. After the wars (1992-1995), SFRY disintegrated into several new states, and the former political-economic system of 'social self-government' was replaced by a kind of 'liberal capitalism'. The able-bodied population lost many of their previous jobs and there was an 'exodus' of them from the cities, Sarajevo, Tuzla and Zenica, mostly, as well as to the countries of Western Europe. Close to 80 houses were abandoned ('locked'), and their owners built new houses or bought apartments in their new places of residence.

## 3. Man

The term 'man' is a huge question whose essence he himself tries to decipher within his own limits, within the limits of the Earth and the limits of the Universe <sup>[2]</sup>. Together with the rest of the living world, it participates in the process of circulating matter and energy in nature, sharing with it the same destiny, giving birth and dying against its will. Being endowed with reason, will and feelings, he is, the only one in the living world, able to discover the given laws of the structure of nature.

According to the "Comprehensive List of the Bosna Sandžak from 1604", the Milankovici village is not mentioned by its current name. Analyzing the contents of the aforementioned ledger, comparing some names in the ledger with locality names in the area of the present-day Milankovici village, and comparing the income of villages in Olovo nahija, the Author assumes that the present-day Milankovici village corresponds to the village of Medupalez <sup>[2]</sup>. From a review of its inhabitants, their income and tax obligations <sup>[3]</sup>, it can be seen

<sup>2</sup> On the western edge of the area of today's Milankovici village is a dominant hill with a white mountain forest called Palez.

<sup>3</sup> 123. The Medupalez village belongs to Olovo:

Mehmed, Vukca - on the heritage of Nesuha; Shahman, Murad; Turhan, Ramadana; Mahmud, Turhana; Gazi, Ismaila - on his father's inheritance; Husejn, Turguda - on heritage; Hurrem, Pir-Alije; Bali, Hasana - on the heritage of another; Abdi, Mehmed; Pir-Ali, Berraka; Pervane, Jahje - on heritage; Pir-Ali, Dursun of Alagoz - on his father's inheritance; Muruvvet, Dursuna; Musa, Karagoza; Memi, Ahmeda - on the heritage of Miloje; Lutfi, Karagoza; Veli, Bayezida; Iskender; Veli, Tur-Alije; Bali, Tur-Alije; Kurd, Shihabuddin - on his father's heritage; Iskender, Ilijasa - on his father's inheritance; Memishah, Timura; Muruvvet, Iskendera; Bali, Hasana - on his father's inheritance; Memi, Turhana - on heritage; Turgud, Mezida - on the heritage of Radovan; Kurd-Ali, Aydina; Ališah, Memije - on heritage; the second Bali, Hasana - on the heritage of Hussein; Ajdin, Alije; Kurd, Ajdina; Šahman, Mehmeda - on heritage; The heritage of Džafer Božidarov, in the possession of Nesuh, in the possession of Bayezid Ivanov; The heritage

of Husejn Milivoj, in the possession of Hasan Milosev; The estate of Ibrahim Milojev, in the possession of Ahmed Šihabuddin (and) his son; Mustafa, Ivana, m; Alihan, Mustafa, m; The heritage of Ivanko Štipanov, in the possession of Šihabuddin Nesuhov, now in the possession of his son Kurd; Emirshah, Uvejsa; The heritage of Ivan Ivanišev, in the possession of Mustafa in co-ownership, now in the possession of the inhabitants of the village; Hasan Radonji's heritage, in the possession of Hizir; The inheritance of Berrak Ishak, in the possession of Berrak; Pervan, Ishaka; Hasan, Cvitoja - on her father's inheritance; The estate of Ibrahim, it is the heritage of Milko Radinov; Mehmed, Dobrivoja - on the heritage of Radosava, in the possession of the inhabitants of the village; Mustafa, Pavka - on his father's inheritance; Hodaverdi, Timura, m; Bešir, Ishaka, m; Musa, Karagoza, m; Tur-Ali, Karagoza, m; Muruvvet, Berraka, m; Ališah, Turhana, m; Gazanfer, Turhana, m; Bali, Gazije, m; Ahmed, Ishaka; Alihan, Mustafa, m; Abdurrahman, Turhana; Heritage of Vuk Radino, in the possession of the inhabitants of the village; Hasan, Mehmeda, m; Mustafa, Iskender, m;

that it is the largest village in Olovo district (p. 260). In addition to farming and animal husbandry, the residents of Milankovici were previously engaged in pitching (however, it was a seasonal job) and specific trades that follow the lifestyle and needs of people (making samaras, joiners-carpenters, builders-dungers...). The majority of able-bodied people worked in lead companies (Forestry, Sawmill, Construction, Centrotrans, UPI) and on the railway (until its abolition in 1972).

After the Second World War (1948), a four-grade primary school was built in Milankovici, a regional school of the central school "Hasan Kikić" in Solun on Krivaja river (Figure 15). Female children usually completed their education there, while males continued their education at the central school in Solun. After completing primary education, many of them graduated from secondary and higher schools, and some from colleges <sup>[4]</sup>.



**Source:** (Photos of the Dzakmic family, kindly provided to the author on 5/21/2020)

**Fig 14:** Family photos

Top left: a traditional family in the Milankovici village, immediately after the Second World War: grandmother Fata (nee Kljajic), grandfather Camil, granddaughter Senija and grandson Adem. Top right: ceremonially dressed girls from the Milankovici village (1960-1970) Below: Mother of Adem (Pasan) Dzakmic, Mejra (née Hadrovic), around 1970

Mustafa, Abdullaha; Ali, Timura, m; Mustafa, Hamze, m; Hasan, Tur-Alije, m; Jahja, Evrenosa - on heritage;

Muslims with heritage 46, unmarried 20;

Income:

resmi farm, bennak and mujerred wheat, kejla 45, amount 1452

mixed race, size 65, amount 990

oats, 30 bushels, amount 845

wider, medri 40, amount 210

vegetable eel 280

ushur from fruit 250

ushur made of flax 22

hay bales 250

beehive rush 161

2 mills, fee 214

1 mill, fee 30

2 mills, abandoned 15

half of badihav, youth tax, field tax and deed fee on land 283

Total: 5000

<sup>4</sup> Among them are:

- Asim Kopic (born 1957) who attended primary school in Solun on the Krivaja river with the author of this book. Asim later graduated from the secondary traffic school in Dobož and the Faculty of Traffic in Belgrade. After graduating from college, he lives and works in Tuzla.

- Dzemal Dzakmic (born in 1958) graduated from high school in Olovo, and then from the Faculty of Political Sciences in Sarajevo, majoring in Journalism. He worked in several Sarajevo newspapers, where he gained a reputation as a noted journalist.
- Mirzet Kopic (born 1958) graduated from the Faculty of Forestry in Sarajevo. He worked in Stupčanica Olovo, and after the war he was the director of the Public Enterprise "Forestry Company" in Olovo.
- Nermin (Emin) Sadikovic graduated from the Faculty of Forestry in Sarajevo, and later, at the same faculty, obtained the academic title of Master of Forestry. Today he works in the company "Forestry" in Olovo.
- Mirsad Dzakmic and Enes Dzakmic (born in 1957) also attended elementary school in Solun with the author of this book. Mirsad first completed a trade and then a teacher's school. Until the 1992-1995 war, he served in the elementary school in Nova Kasaba near Zvornik. Enes graduated from vocational school for central heating systems. He lives and works in Sarajevo.

Many young people from Milankovici, born after the war in 1992-1995, attend (or have already graduated from) various colleges, mostly in Sarajevo, where they find employment and stay there. They come to Milankovici to visit their parents.



#### 4. Boundaries: architecture as a framework of life

The variety of architectural buildings, as well as their disposition, construction, materialization and design in everything follow the patterns of architecture of the respective periods in the whole of Kriva Rijeka. In Milankovici (the only example in Kriva Rijeka), a preserved Bosnian Chardaklia House (Figure 18) has remained to this day, which represents an extremely valuable example of architectural-historical heritage. Immediately after the end of the Second World War, the traditional Bosnian Chardaklia Houses were reconstructed and adapted, in accordance with the new housing culture (Figures 17,19).

The building tradition is one of the most recognizable features of the village. There, during the time of the Kingdom of Yugoslavia (and earlier) there was a working group of famous craftsmen ('dunjeri') who built houses, barns and auxiliary buildings, both in Kriva Rijeka and in the Kamensko settlements, Careva Cuprija, Jelaske (...), downstream Krivaja, as well as in the Ligatici, Mizunovici, Dastansko villages (...) in the Vares municipality.



Source: Author (5.21.2020.)

**Fig 15:** Four-grade elementary school in the Milankovici village (subdistrict school of the central school "Hasan Kikić" in Solun on the Krivaja river)



Source: Author (5.21.2020.)

**Fig 16:** The former central (state) store and seat of the local community of the Milankovici village

A large number of young men from Milankovici graduated from secondary military schools<sup>5</sup> and academies<sup>6</sup> and served as officers and non-commissioned officers (then junior officers) in the JNA throughout the former SFRY.

<sup>5</sup> Kopic (Mujo) Ferid and Kopic (Ibrahim) Vahid



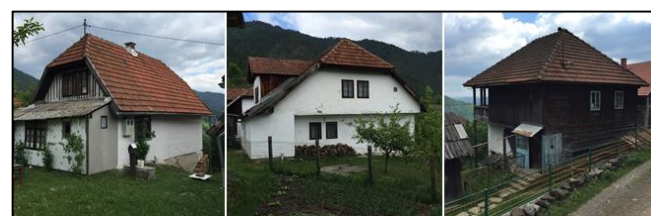
Source: Author (5.21.2020.)

**Fig 17:** A characteristic picture of the Milankovici village: you can see houses built immediately after the Second World War (according to the model of chardaklia houses), reconstructed and adapted houses built in the 1960s, and houses built in the 1980s until today.



Source: Author (5.21.2020.)

**Fig 18:** Houses in the Milankovici village built before World War II



Source: Author (5.21.2020.)

**Fig 19:** Houses in the Milankovici village built immediately after World War II

In the next phase of construction (in the 1960s), houses are

<sup>6</sup> Kopic Hazim. In the 1992-1995 war, he transferred from the JNA to the B&H Army



built that basically preserve the memory of the construction of čardakli: in the vertical plan, they are developed through the basement, ground floor and first floor, where the former central space with an open hearth (house) is located a spacious living room with a wood-burning stove was created, in the place where there was an open hearth in the garden. Some houses also had sofa beds on the first floor. The main building materials in their construction and materialization were wood and stone (only the basement-storage walls). Many houses from this construction period have been reconstructed and adapted to this day (Figure 20), while most of them have been abandoned.



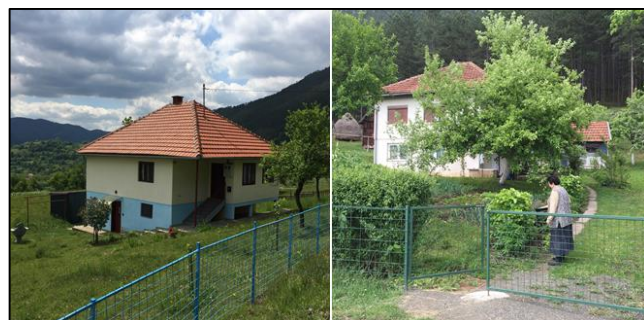
Reconstructed and adapted house built in the 1960s



Source: Author (5.21.2020.)

**Fig 20:** Houses in the Milankovici village built in the 1960s

Since the 1980s, houses in the village of Milankovici have been built according to the project, with their builders being trained craftsmen (carpenters, masons, armourers, ceramists, plumbers, electricians). Houses are built from modern materials (reinforced concrete, bricks, brick and concrete blocks, mortars, roof tiles...), (Figure 21).



Source: Author (5.21.2020.)

**Fig 21:** Houses in the Milankovici village built in the 1980s until today

The stables in the Milankovici village were built according to the same patterns common to the area of Kriva Rijeka. One example of a barn built in a traditional way has been preserved in the village, which shows the beauty of the construction, materialization and design of this architectural program (Figure 22, above).

Of the auxiliary buildings, summer kitchens ('coils'- 'mutvak'), baskets (for storing corn on the cob), 'hosafhanes' (fruit drying), (Figure 23) and barns (grain storage), (Figure 24) were also built in Milankovici.





The original traditional stable in the Milankovici village (above the cemetery)



Source: Author (5.21.2020.)

**Fig 22:** Stables in the Milankovici village



Source: Author (5.21.2020.)

**Fig 23:** Fruit dryer ('hosafhana') in the Hodzici hamlet (in Milankovici)

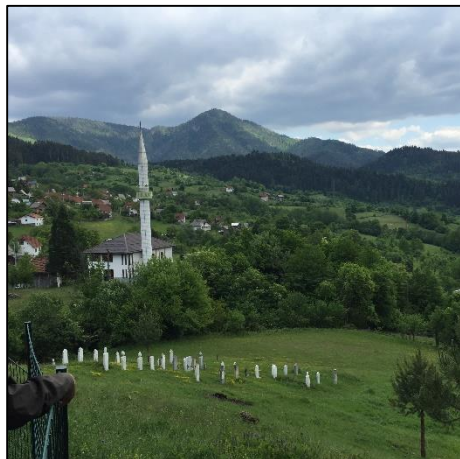


Source: Author (5.21.2020.)

**Fig 24:** Grain storage ('barn', 'hambar') in the courtyard of a household in the Milankovici village



A mosque was built in Milankovici for the first time in 1933. This mosque was reconstructed in 1967, and in 2004. it was demolished and a new, present-day mosque was built in its place (Figures 25,26). In the harem of the mosque, a plaque with the names of the martyrs of the Milankovici village from the 1992-1995 war was sculpturally decorated (2006). It is symbolic that the plaque is placed near a yew tree (which symbolizes the renewal of life), (Figure 26).



Source: Author (5.21.2020.)

**Fig 25:** Mosque in Milankovici. To the right of the top of the minaret, in the background of the picture, is the end of the Ligatic and Mizunovici villages on 'Velika glava'



Source: Author (5.21.2020.)

**Fig 26:** Mosque in Milankovici

Each hamlet of the Milankovici village (Subasici, Hodzici and Radovici) has at least one cemetery (Figure 27).



Source: Author (5.21.2020.)

**Fig 27:** Cemeteries in the Milankovici village

## 5. Conclusion

The natural environment is more or less a given reality that man can preserve, change or devest (change) to the extent that it becomes a 'new natural reality'. These changes, as a rule, on the other side of long-term human needs, are rarely beneficial, both in the short and long term [2].

After major geopolitical and socio-economic changes after the wars (1992-1995) and the collapse of the Socialist Federal Republic of Yugoslavia (SFRY), the Milankovici village (similar to many villages in Bosnia and Herzegovina) began to 'die'.

However, this village has rich natural resources that can support the livelihood of its inhabitants. It seems, looking at some rural areas in Bosnia and Herzegovina, that the transition of the inhabitants of Milankovici village to a 'self-sustainable way of life' is a matter of awareness, that is, understanding new patterns in business, where existing resources will be used in a new way (organic food production and ethno-tourism, for example).

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