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A brief itinerary of manufacture and use of charcoal in Serbia

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A brief itinerary: problems in the research

- **Different periods – different states**

- Balkan in prehistory - difference Balkan tribes
- Antique – Roman Empire
- Medieval period
  - Different tribes (Huns, Slavs) and Byzantine Empire; Bulgarian Empire, Hungary Kingdom etc.
  - Medieval Serbia
- Ottoman period : Ottoman Empire
- Modern Serbia
- Kingdom and its variations (State of Slovenes, Croats and Serbs)
- Yugoslavia and its variations
- Republic od Serbia and contemporary situation
- **No previously historical and archeological research, ethnological data about production rare, no research before contemporary times (end of 20th and early 21st century), stakeholders do not have organization**

Medieval Serbia

- **Two stages of production:**
  - **Local>** blacksmiths simultaneously acted as charcoal burners, and during this time, they could not yet be classified as part of the handicraft industry or treated as a separate profession. There is almost no data available on this practice, except for the terminology itself, which is clearly of Slavic origin (жгль, оугль); today "ugalj" and дрвени/угаљ).
  - **Wide>** or protoindustrial period. The beginnings of a more organized charcoal production emerged with the rise of mining; a process set in motion by the arrival of the so-called Sasi (Saxon miners). High consumption of the wood, deforestation, different methods, parallel German (rauna, ravuna od Rauchfang, štup od Staub, štetina od Stattl) and Slavic terminology (žežnica, ugljari, gar, kurilovo). Data from sources: legislation (price, quality). Craftsmen settlements> Toponomy> Ugljare

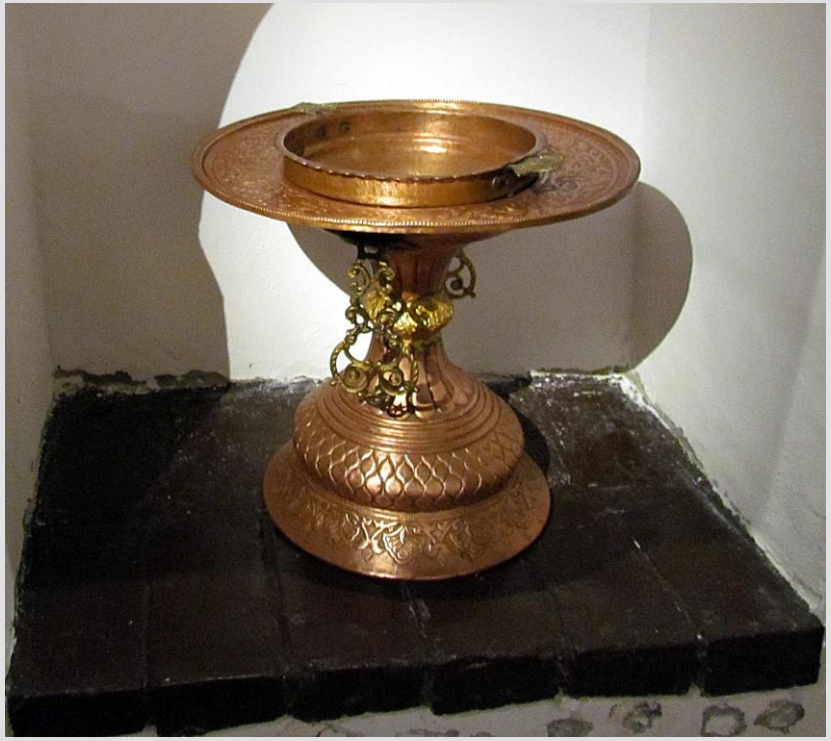
Ottoman period

- Ottoman period – another layer of terminology, still in use in 19th and 20th century – loanword ćumur (tur. kömür). Ćumurana, ćumurdzija
- Ottoman sources> data about production and use (roasting of metals in the first stage (frying)…), type of wood (between others also hazel for gunpowder)), mining and charcoal production, mining imperial estate (has), prices > lots of settlements were obligated only to product the charcoal for the mining and metallurgy industries. The sizes of has vs type of the metals (Majdanpek, due to its relatively low charcoal consumption in the smelting of copper ore, was usually supplied by only a few villages. In contrast, the nearby mine Kučajna, which produced lead, silver, and gold, had a workers has of 48 villages, while the iron mine Bah, where cannonballs were cast, had a workers' has of as many as 92 villages.), prices, data about charcoal use per mine etc. Technology> charcoal mills.

After Ottoman Serbia – 19th century

- The use of charcoal or coal was almost daily, although there are no systematic and comprehensive data on it. Therefore, we will cite a few excerpts from sources:

"Coal or charcoal is used in a great quantity, as the citizens of the town of Pirot not only heat themselves in the winter with burning charcoal in mangals, but they also cook food in the kitchen with it..."; "From Niš eastward, people are very economical with fuel, rarely using stoves, but both in winter and summer they satisfy their needs with charcoal (coal). And in Vranje, 'mangals' are an inseparable part of daily life.

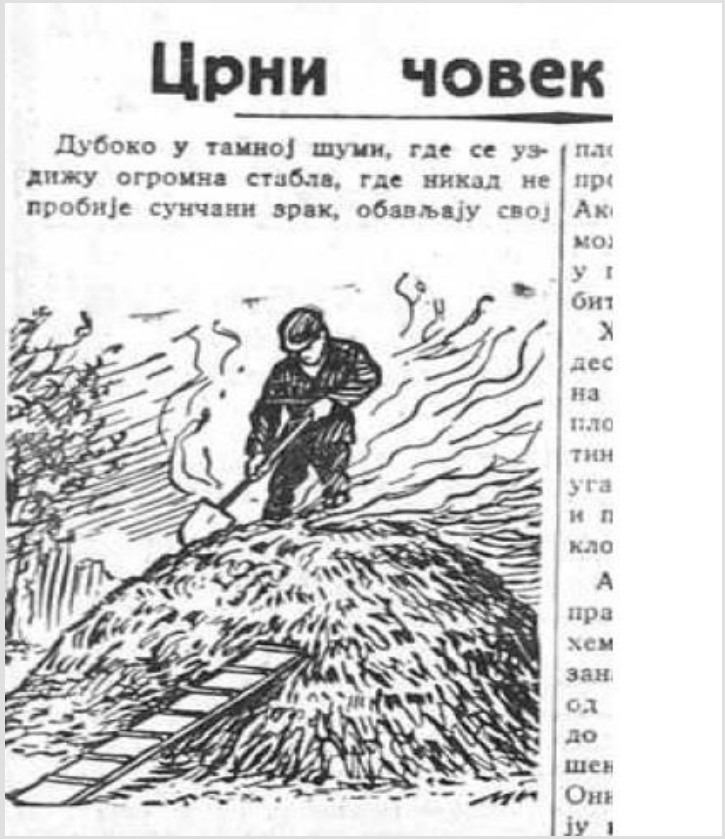


Mangal, Museum of Vuk and Dositej. Photo by Gmihail, Serbian Wikipedia, CC BY-SA 3.0 RS, https://commons.wikimedia.org/wiki/File:Mangal,_Museum_of_Vuk_and_Dositej.jpg

Until the First World War,

there were no factories for the production of charcoal – instead, factories in the wood industry and mining produced charcoal as a byproduct, such as the Đorđe Vajfert Mine, which produced the so-called "*Kostolac charcoal*." Charcoal was produced in a traditional way; the "black man in the forest" practiced his craft according to the laws he had learned from his parents.

- **Black men** from journal Pravda, 1933



Црни човек

Дубоко у тамној шуми, где се уз-
дижу огромна стабла, где никад не
пробије сунчани зрак, обављају свој

Between the two World Wars, Serbia became part of the Kingdom of Serbs, Croats, and Slovenes/Yugoslavia, and charcoal was used to a similar extent as before the war, although with a tendency to decline. It was used in small industries, crafts, and for household purposes.

Production took place in all provinces: "In Serbia, primarily in remote and abandoned beech forests; in Bosnia, in a wood dry distillation factory (producing 3,000 wagons annually) as well as in other larger enterprises engaged in forest exploitation-around 800 wagons. In Croatia, dry distillation factories produce about 500 wagons of charcoal annually….“Export of charcoal was a significant factor, ranging from approximately 67.5 thousand tons in 1928 to 24.6 thousand tons in 1935.

- Fran D. Podbreznik and Slavko Schmidek, Problem veštačke nafte : naše nacionalno eksplozivno gorivo: Alkoholi. Drvo. Drveni ugalj. Smole. Ugalj-veštački antracit. Ligniti i treseti (Beograd: Privredno-tehnička biblioteka, 1927), 64.

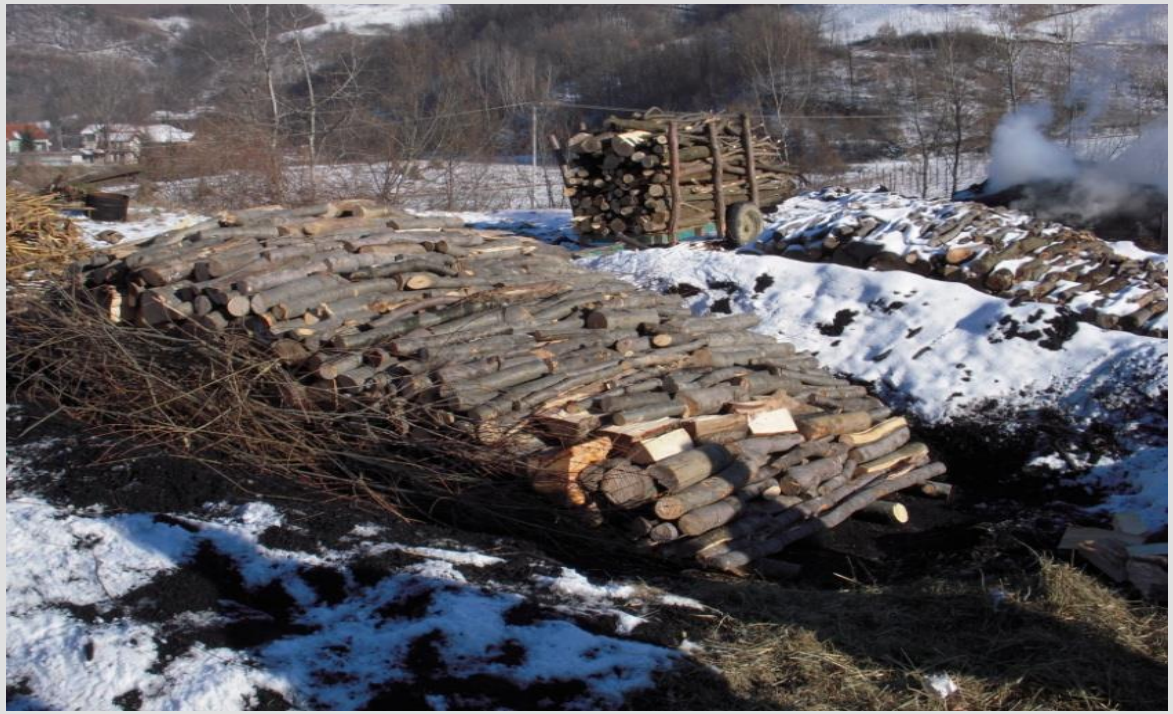
Contemporary Serbia

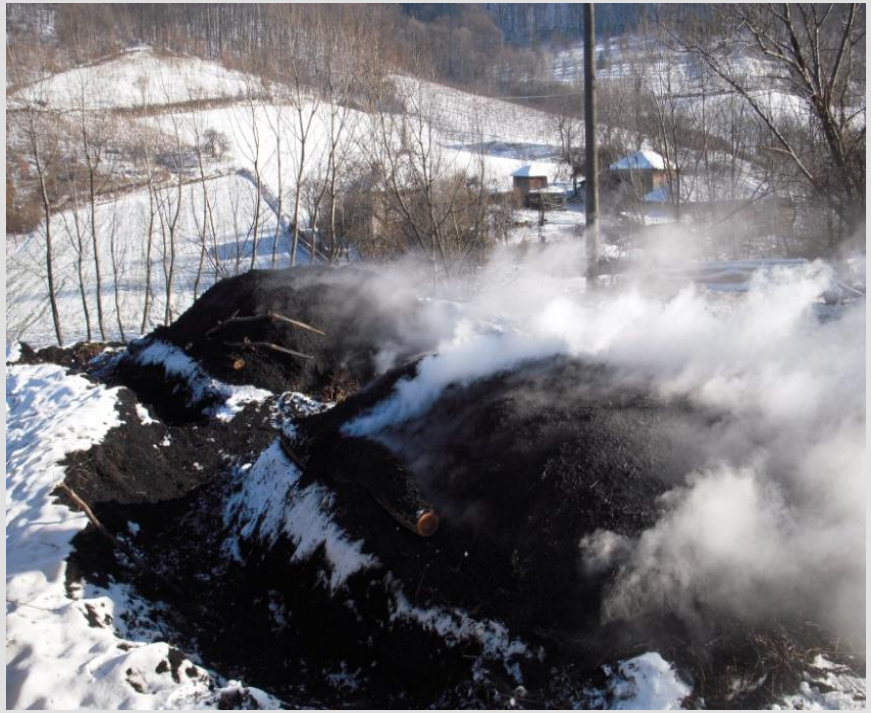
- The production of charcoal is carried out in a traditional way that has been passed down from generation to generation for over a century.

	Earth cover charcoal kilns	Brick charcoal kilns	Portable steel charcoal kilns	Retorts
Time of one cycle in days	7-8	10-14	4-6	8 hours
Average wood consumption in stacked cubic meters per cycle	4	15	6	3
Charcoal production in kg per cycle	380	1800	600	354
Average wood consumption jn stacked m^3 per 1kg of charcoal	0.0105	0.0083	0.01	0.0085

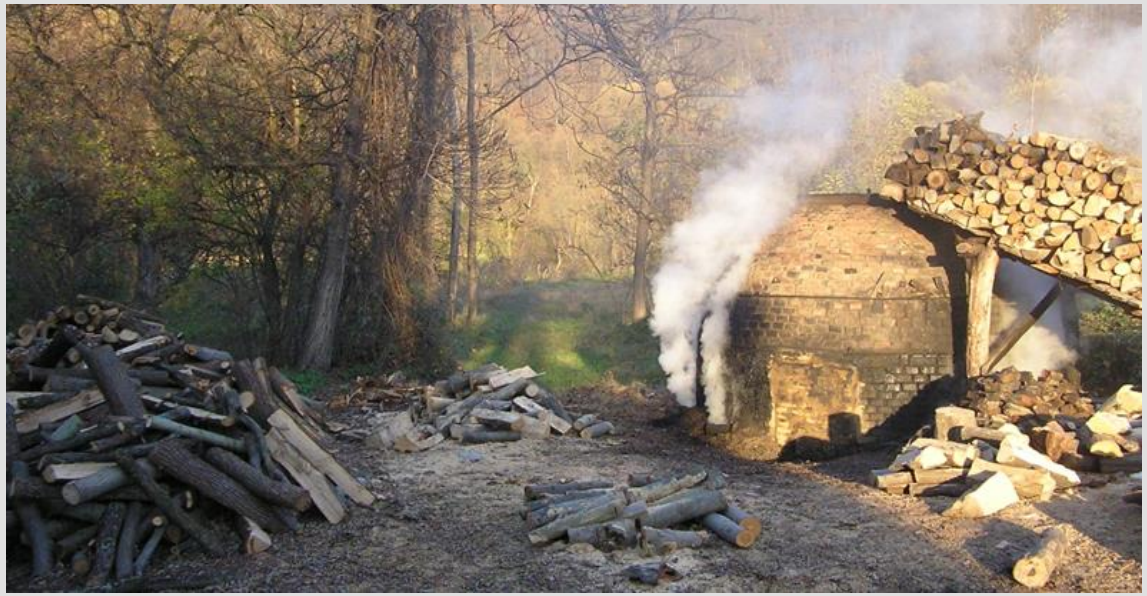
Earth cover charcoal kilns

- Photos by B. Glavonjić

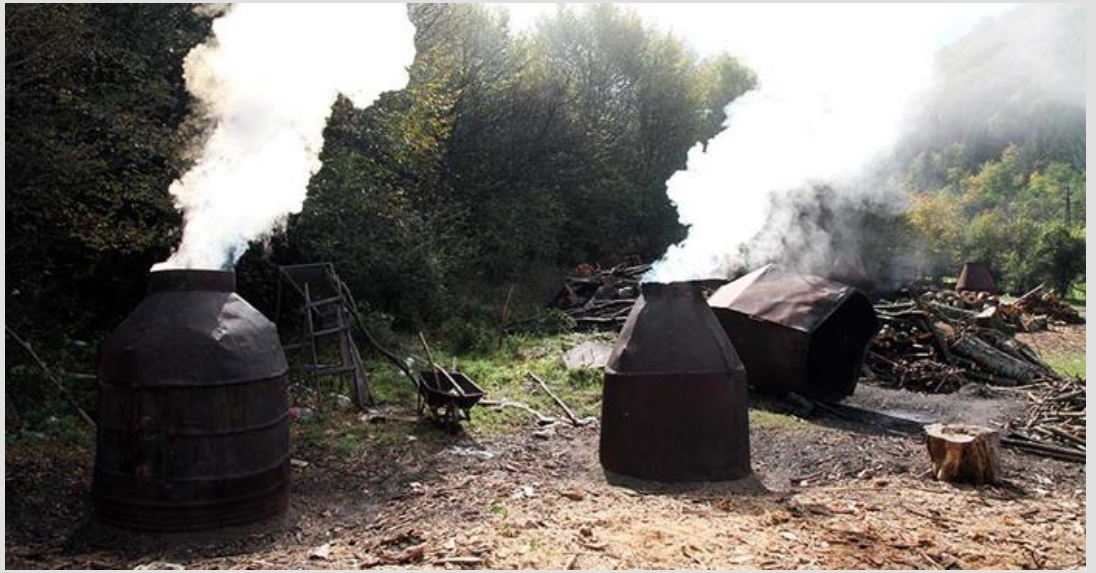




Brick charcoal kilns



Large and small portable steel charcoal kiln



The most commonly used types of wood for charcoal production are oak and beech, as the highest quality options, which are mixed with less calorific woods such as alder, aspen, birch, elder, hornbeam, and fruit trees (plum, apple, pear, and cherry). The highest quality charcoal is produced from oak, beech, and fruit trees. Charcoal made from plum wood was historically most commonly used by blacksmiths.

Stakeholders and problems

- Currently, there is no accurate data available about local charcoal burners who use traditional methods. These individuals typically come from very rural areas and, in most cases, speak only Serbian, which makes gathering information about their practices more challenging.
- There is non charcoal association and no organization on the state level
- Charcoal burning is not include in the traditional crafts
- Some companies can be find on internet but only large and with industrial non traditional production

  - **Don – Iva** (2010- now), Charcoal The charcoal kiln is made of bricks and mud, capacity of 3 tons. The wood is heated without oxygen, and pyrolysis is controlled with 11 to 13 openings (depending on the size of loading). The burning proceeds for 15 days, with adding wood. The process of cooling last for 5 days. The hardwood (beech and oak) is used for production. Cara Dušana 24, Beograd, Srbija, www.don-iva.co.rs
  - **Basna d.o.o** (2010- now) **,** Biochar and Charcoal (Biougalj (биоугаљ), biočar, биочар), Ulica 74/1. Atenica 001 32104, Čačak, Srbija https://www.basna.net/

The only viable path for developing an educational trail and future tourism prospects involves collaboration with state and local organizations, such as ministries and cultural institutions. This should include the promotion of traditional charcoal burning as a cultural heritage, the creation of a strategy for establishing associations, and fostering sustainable tourism development