Solarna Stara – co-creation and trust-building for green energy and sustainable local development, Serbia

Scored by name(s): Rastislav Vrbensky, Masaryk University (rastislav@vrbensky.eu), Marija Babovic, University of Belgrade (marija.babovic@secons.net)
Date: 05/11/2024
Cite as: Vrbensky, R. & Babovic, M. (2024). Solarna Stara – co-creation and trust-building for green energy and sustainable local development, Serbia (GOGREEN Case Report Series No. 9), Roskilde: Roskilde University. ISBN: 978-87-7349-269-7

Is the project a case of…:

☐ State-initiated co-creation

☐ Entrepreneur-driven co-creation

☒ Grassroots-based co-creation*

**For an elaboration of the typology, please consult the GOGREEN theoretical framework p. 25.*

Integrated case analysis

Before proceeding to the scoring of the GFs, please provide a *3–5 page case analysis* in which you describe the background, history, and national, regional, and local contexts of the case, the problems and goals addressed by the local collaboration, the participating actors and their relationships, the unfolding of the co-creation process, the most important governance factors (this may include factors other than those in focus in this project), and the generated outputs and outcomes. The conclusion may specify a few lessons learned from the case study.

1) Background, history, and national, regional, and local contexts of the case

The 'Solarna Stara' initiative is a co-creation project that has been implemented through cooperation between three stakeholders. The first stakeholder is the citizen's cooperative Elektropionir, which is the lead entity for the project. The second stakeholder is the city of Pirot, and the third stakeholder is the citizens of two villages in Stara Planina - Temska and Dojkinci. The initiative took place during 2022 and 2023.

The municipality of Pirot is located in Eastern Serbia, bordering Bulgaria. It has an average level of development for Serbia and is home to several large industries that attracted a rural population to the administrative center of Pirot. The municipality is one of four located on the Stara Planina, also known as the Balkan Mountain, which forms a natural border between Serbia and Bulgaria. The mountain has some of the most breathtaking landscapes in both countries and is rich in water, which belongs to the Black Sea watershed.

Despite the area's beautiful and resourceful nature, over the last few decades, the villages of Stara Planina have experienced unfavorable developmental trends, including agricultural decline, increasing poverty, depopulation, neglected infrastructure, and devastation. Two project locations, villages Temska and Dojkinci, have seen a significant depopulation trend. Temska's population has dropped from 900 in 2002

to around 400 inhabitants, while Dojkinci presently has only 96 residents. However, during the summer, the number of people increases to 400 as workers who migrated elsewhere spend their holidays there, coupled with an increasing number of tourists.

Several trajectories lead to this co-creation:

a) **State-private investors trajectory**. In 2012, Serbia experienced a significant turning point in renewable energy. The then-new government decided to promote renewable energy, but they focused on mini/small hydropower plants. The state offered subsidies, and one of the key targets was Stara Planina, a mountain rich in water. However, these subsidies were not meant for citizens but for investors. As a result, several investors intended to build over 80 mini hydropower plants around Stara Planina. This path led to the rise of a strong ecological movement that opposed not only this but also other investment plans with potentially devastating ecological consequences. For instance, there was recently a blockade of investments in a Lithium mine in Western Serbia.

b) **Citizens of Stara planina trajectory**. The Stara Planina region in Serbia has a rich natural heritage, which is highly valued by the local citizens. They strongly oppose the installation of mini hydropower plants, which could harm the environment and their livelihoods. The citizens' opposition is backed by a powerful activist movement, which collaborated with academia to develop a better understanding of the consequences of such installations. Scientific camps were organized to raise awareness, and citizens blocked attempts to bring equipment for the installation of mini hydro plants. However, their relations with local government were complicated, as the mayor initially supported the movement but did not take any concrete action. Nevertheless, the movement succeeded in achieving its goal, as the local parliament of the Pirot municipality banned mini hydro plants for the next 15 years. Part of the movement has also transformed into a political party advocating for green transition, which has entered the national parliament and is gaining influence.

c) **Local government trajectory**. It's interesting to note that the city of Pirot has had the same mayor for almost two decades, despite various political changes that have occurred during that time. This local government has placed a high priority on energy issues and has been willing to introduce renewable energy solutions. In fact, Pirot was one of the first cities in Serbia to establish the position of a city energy manager and was already pursuing a green transition agenda before the national level. Additionally, Pirot was the first town in Serbia to ban coal and oil heating in public buildings and has since shifted to using biomass and solar energy. This focus on renewable energy has made the local government open to co-creation initiatives in this area.

d) **Elektropionir trajectory**. The energy cooperative, Electro Pioneer, was established in 2019 by a group of individuals who have been actively involved in renewable energy for years. Their aim is to promote a sustainable mode of energy production based on cooperative principles. The cooperative comprises 15 members from various backgrounds, including architects, engineers, activists, and university professors. They are committed to establishing networks of decentralized solar power plants and solar parks, which are collectively owned by citizens. The cooperative provides training on solar energy, practical support to members and interested citizens, and supports local communities in their transition towards sustainable energy and green production and consumption. The cooperative members of Stara Planina were concerned about the ecological and social consequences of mini hydro plant investments and supported citizens in their resistance

against it. As an alternative solution, they initiated the 'Solarna Stara' project, which is a grassroots-based co-creation project. The project aims to build trust between key stakeholders and promote green energy and sustainable local development.

2) The aims of the project and the sustainability problems that it seeks to address

The project 'Solarna Stara' is focused on promoting solar energy as an alternative to mini hydro plants and raising awareness among local citizens and governmental stakeholders on the benefits and opportunities provided by this source of energy. The project aims to place two solar plants on the rooftops of public buildings in the villages of Temska and Dojkinci in Stara planina.

By installing solar panels, the project aims to provide regular income to the citizens of the two villages, which can be invested in local development projects. The project also aims to build partnerships and promote cooperation between citizens and local government.

The project operates on a cooperative model between citizens of Mesna zajednica, which is the smallest unit of local community, usually consisting of one or two villages. The citizens bring decisions on local investments and request funds from municipality administration. The solar plants were placed on the rooftops of two public buildings in the two villages, which legally belong to the municipality of Pirot.

While the municipality of Pirot gave permission to install solar panels, it was decided not to use panels in prosumer form since the two buildings are not big consumers of electricity. Instead, the energy produced will be sold, and the income will be invested in the local development initiatives proposed by citizens from the two villages.

3) The participants and their interaction and communication in and between meetings

Based on the case analysis provided, it appears that the communication between the co-creation partners in the Solarna Stara project is primarily informal and without formalized rules. The rules and dynamics of the project are instead defined by the needs of the process. As the representatives of Elektropionir cooperative as leader of the initiative described, they did not want to come into the villages as some external NGO who brings a project, but wanted to build more horizontal relations which were already rooted in the past actions during the defence of rivers movement. The communication unfolded spontaneously, with some technical or other concrete issues being solved only by phone call, without formal scheduled meetings. This informal and flexible form of communication is typical of Elektropionir as a cooperative and citizens organizing within their villages. Only a few formal meetings were held with the presence of representatives from the local government, citizens, and Elektropionir.

4) How often do they meet, and do they communicate between meetings?

The frequency and dynamics of communication was rather informal and would vary depending on the needs of the process. For instance, during the initial stages of defining a contractual modality, it was necessary to have more frequent communication to ensure that everyone is on the same page. However, once the modality has been defined, there was no need for such frequent communication.

5) The role and forms of knowledge sharing, coordination and joint problem-solving

Knowledge sharing and joint problem solving play a huge role in this co-creation initiative.

Sharing knowledge is critical for achieving success in any initiative, and the Solarna Stara project in Serbia is a testament to this. The project's success was largely due to the exchange of information and experiences, which helped raise awareness and mobilize local citizens. While there was some historically generated knowledge on the harmful consequences of river exploitation, more knowledge was needed to build trust and co-creation among the participating actors. The legacy of the big hydro power plant built nearby during the socialist times provided fertile ground for high sensitivity to the issue, and the loss of water and decline of biodiversity experienced then made the citizens opposed to the mini hydro plants. The sharing of knowledge and experiences proved to be vital in raising awareness and mobilizing local citizens, and was a crucial factor in achieving the project's goals. Therefore, it is important to recognize the significance of knowledge sharing and its potential to create a positive impact on local development initiatives. The academic community played an important part in the process of raising their awareness and promoting action. In both villages there are regular scientific camps and research organized by professors from different faculties at the University of Belgrade and the University of Nis (Faculty of Biology, Faculty of Forestry). The network of professors has provided new analyses and findings on the consequences of instalment of mini hydropower plants to the various aspects of environment, to flora, animals and human habitats. According to the activists, the investors who wanted to build mini hydro plants were closely linked to the ruling party and they knew how to find loopholes in the law. One of key loopholes was that if mini hydropower plant is less than 2 kilowatts, they do not require an approved environmental impact assessment. To build up arguments that will oppose the investors plans, activists and representatives of academia started to create a network. They met with people who were in supervisory authority positions who were crucial when it came to issuing various permissions for investments. They provided scientific counter-arguments proving that Stara planina water supplies entire basin and Pirot city with drinking water. If the karst is disturbed and rivers are put into pipes, the springs may disappear. One of the arguments presented by investors and the government was that construction of mini hydro plants will increase local employment. But activists learned that this is not true as the processes are automated so they also countered this type of arguments. Knowledge sharing was organized through an internet page and a facebook page 'Defend the rivers of Stara planina', which quickly gained over 100,000 followers. Many educated people posted articles and learned from each other on this platform. Activists also had a Viber group for fast communication and mobilization. At one point they asked the Academy of science to investigate the environmental problems associated with establishing mini hydro plants. The Academy did its own investigation and came up with the conclusion that mini hydro plants will have harmful effect on the environment of Stara planina. It also provided exact data, such as an estimation of the quantity of fish stock above and below the mini hydropower plants, damage to biodiversity, and on other issues. One could conclude that the movement was built up through sharing knowledge. The activists organized assemblies, visited villages, educated people, and expanded support. '*Public opinion was on our side. We won. Due to great pressure, they had to reject all proposals at one parliament session. Of the 89 planned powerplants on Stara Planina, only two have been installed. For us, the biggest reward is that Elektropionir came, which also stemmed from activism. They believe in the future of green energies that do not harm nature.'* (citizen of Dojkinci).

Joint problem-solving. The project idea of Elektropionir received great acceptance among both citizens and local government. However, the idea of establishing solar panels was so innovative that, given the existing legal forms of cooperation between local government and civil society initiatives, it could not be easily implemented. The solution was found only after intensive discussion, exchange of ideas and bridging the legal gaps. That lasted over two months. The problems were multifold: Mesna Zajednica, although recognized by the Law on self-government as the smallest unit of self-governance in the local community, has no legal status in terms of administrative autonomy, budget, bank account, etc. It is formally part of the municipality, but a separate entity where citizens make their decisions in a MZ Council. Also, as the investor is Elektropionir (the citizens cooperative), income from the sold electricity should ideally go to their account, but this is unfortunately not recognized by the law. So, partners had to find new solution that would fit within the current legal framework but regulate relations in this partnership differently. A solution was found in the following way: the Contract was signed by three parties (Elektropionir, municipality of Pirot and two Mesna zajednica presidents). Formally, Municipality of Pirot rents the rooftops of two buildings where solar panels are placed to the Elektropionir. Solar panels are formally owned by Elektropionir as an investor, who sells the energy and the whole income they earn is then paid to the municipality as and compensation for the rooftops renting. The money then goes to the municipality budget. Citizens of Temska and Dojkinci MZs then decide about investments in their villages contributing to local development projects corresponding to the size of the income. This proposed development projects is then submitted to the Pirot municipality and if they are jointly approved by municipality and Elektropionir (proposals must contribute to the local development), the municipality brings decision to finance it from the budget next year. The contract is adopted by the local parliament and transfer of resources is obligatory, which guarantees the sustainability of whole enterprise.

6) The relation between consensus and conflict and the handling of the latter

Although the whole pre-history of the co-creation initiative is marked by strong conflicts with many controversies between citizens/activists and investors, between citizens/activists and local government, within the citizens/activist groups, the Solarna Stara project was very harmonious, smooth and 'healing' as one of the activists would say. It easily managed to reach consensus and close previous conflicts. The role of Elektropionir was central to that process. They were an 'acceptable' partner for both local communities due to their engagement in the solar energy, and to the citizens/activists, due to their activist orientation and previous support. Also, the project idea is at the core of interest of all parties and does not provoke any discontent. Moreover, it should be kept in mind that the amount of money that will be earned from the selling of energy is not big, so monetary issues did not raise the appetites of potential political stakeholders within the municipality who would see it as opportunity to feed on clientelist relations that are very entrenched in the Serbian political power.[1]

'Elektropionir's proposal to correct a wrong had something healing for the community in it. We all felt the need that in a place that was wounded and could be further damaged, this kind of project seemed to be something that was regenerative as an idea' (Crowdfunding PR manager, ecological activist).

[1] See more in Cvejic, S. (ed.) (2016) *Informal power networks, policial patronage and clientelism in Serbia and Kosovo,* SeConS, Belgrade, accessed on 10 September 2023 at https://secons.net/en/publikacija/informal-power-networks-political-patronage-and-clientelism-in-serbia-and-kosovo/

7) The role and form of leadership: lead actor, steering group and/or collective leadership

Elektropionir played the role of project leader, but as many interviewees would emphasize, the steering and coordination was more horizontal than vertical. As previously described, the steering processes were quite informal, ad hoc, and executed on as 'need to' basis, but at the same time it was very effective.

8) The temporal unfolding of the co-creation process: major shifts and ups and downs

Presently the project is in its final stage. The solar plants are in place on the rooftops, the contractual relations are defined, and what is left to see is how the income inflows into two local communities for their development projects. Observing the implementation process it seems that the two main challenges were a crowdfunding campaign and the process of defining the contractual model. The crowdfunding campaign appeared more challenging than expected. The Elektropionir had some initial funds that remained from the previous project implemented with support from the Open Society Fund in Serbia, aiming at raising awareness on solar energy and green transition. The purpose of the crowdfunding campaign was to raise additional funds needed to build the solar plants. The crowd funding manager and crowd funding PR as well as representatives of Elektropionir expected that many citizens would donate small amounts but these expectations were not met. Citizens of Serbia are not yet willing to donate to environmental initiatives in large number. They are more willing to crowdfund money for medical treatments of children or financial support to poor children or families. The campaign was very complex, exhausting and at the end, the funds were raised mainly through networks of ecological activists and a few big donations from citizens who live abroad and originate from Stara planina.

After solving the issue of funds, the operational arrangement of the partnership appeared as the second challenge. As described above, the solution was found jointly by Elektropionir and the municipality of Pirot with consent from citizens of two villages and their representatives in councils of Mesna zajednica.

9) The most important governance factors (may include factors other than those in focus in this project)

Following could be identified as the most important governance factors:

a) Perceived importance of biosphere conditions – perception and knowledge about the issue of renewable energy and its relation to the biosphere in the region of Stara planina was crucial for the project. Introduction of solar plants was the alternative to ecologically harmful solutions that were previously planned but prevented.
b) Relative openness of public governance paradigms – openness of local government, their high prioritization of renewable energy and readiness to 'heal the wounds' from previous conflicts, as well as decades of experience in co-creation initiatives with private sector and civil society (though mainly in other sectors) positively contributed to the success of the project.
c) Formalized institutional channels for citizens participation and community mobilization are very important factors, but the research showed that due to the lack of established institutional practices, the co-creation initiative had to often look for innovative and often more informal solutions.
d) Mechanisms for social accountability (both top-down accountability and bottom-up) – the compliance to the legal framework but also the arrangement that is transparent and accountable to citizens who are final beneficiaries of the project results are of big significance, particularly in the context of rebuilding the trust in government in the community.

e) Construction of narrative about successful multi-actor collaboration – this is one of the preconditions of the project success, particularly having in mind the context of rebuilding trust, cooperation and solidarity.
f) Building or harnessing institutional platforms and arenas – this was important factor in the pre-history of the project, platforms that are used for developing and sharing knowledge, for establishing activist networks were important preconditions for the current project success, although they are out of the project frame.
g) The capacity to leverage support from authorities to enable local collaboration was crucial factor as there would simply not be the project without municipality of Pirot willingness to participate in this co-creation.
h) Inclusion and empowerment of relevant and affected actors - citizens from devastated areas, impoverished population and activists representing these communities - is the final goal of the initiative. To provide them with tools that can be used and further expand to generate local development and increase the power of the groups of citizens from these areas.
i) Clarification of interdependence vis-à-vis common problems and a joint vision was important factor as each of the stakeholders had the role complementary to others: Elektropionir as initiator, investor, mediator, trustful 'authority', local government as the actor who controls resources, citizens/activists as those who co-generate ideas and bring the benefits to their community through collaboration.
j) Trust-building and conflict mediation was crucial factors in communities with conflictual past and severely disturbed relations between citizens and local authorities.
k) Use of experimental tools for innovation – as every step was new, without innovative solutions it would not be possible to successfully implement the project as described in terms of contractual relations and fundraising.
l) Critical self-reflection was present among all partners in the project – among the Elektropionir team this was particularly visible in regard to fundraising issues. Among citizens this was mainly related to the past conflicts and opportunities to establish cooperation after such conflicts and loss of trust by finding new grounds for common interests.
m) Facilitative leadership was another important factor as it enabled effective, innovative and feasible solutions.

10) The generated outputs and outcomes

The concrete outputs generated by the initiative are:

a) Awareness campaigns tools
b) Installed solar plants
c) Innovative and effective contractual arrangements

The outcomes of the project are:

a) New incomes that can be used for local development of two local communities,
b) New forms of cooperation within local communities when deciding on local investments,
c) Enhanced trust and cooperation between citizens and local government,
d) Increased awareness on benefits of solar energy and clear intentions of citizens to further expand solar energy sources, mainly as prosumers but also through installation of additional plants,

e) Surge of an ecological movement in the region and beyond,
f) Emergence of new political actors that enter the political arena in Serbia bringing green agenda to the top of political discourse.

11) Lessons learned about the conditions for co-creating green solutions

a) Local green transition initiatives implemented through co-creation can thrive even in the face of suboptimal normative frameworks and limited support from central governance, provided the local community possesses sufficient autonomy and demonstrates strong interest and political commitment towards green transition processes, despite prevailing tendencies of governance centralization.
b) However, forging ahead of central-level processes to drive green transition initiatives can create gaps in the system, necessitating innovative solutions aligned with legal frameworks yet responsive to local needs. This inevitably escalates the costs—be it in terms of time, human resources, or material expenses—associated with co-creation green initiatives. Perceptions and experiences of these challenges have impeded the further replication of successful initiatives, despite high citizen motivation.
c) The sharing of knowledge and experiences emerges as a cornerstone in raising awareness and mobilizing local citizens, proving instrumental in achieving project objectives. Recognizing the significance of knowledge-sharing underscores its potential to catalyze positive impacts on local development endeavors.
d) In contexts where ecological awareness and mobilization remain relatively low, traditional fundraising models like crowdfunding campaigns may falter. Instead, leveraging activist networks and diaspora communities originating from targeted villages yields more effective fundraising outcomes, as societal inclinations lean towards supporting individuals with health difficulties over community green investments.
e) Constructing a narrative around successful multi-actor collaboration stands as a precondition for project success, particularly within the context of rebuilding trust, cooperation, and solidarity. This narrative not only enhances project credibility but also fosters a sense of collective ownership and commitment towards sustainable development goals.

Scoring and analysis of governance factors

1. Perceived importance of biosphere conditions

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Perception and knowledge about the issue of renewable energy and its relation to the biosphere conditions in the region of Stara planina was crucial for the project. High level of awareness biosphere conditions was found among project team (solar energy cooperative), local activists who were project partners, as well as among representatives of local government, particularly energy manage who was focal point in coordination of the project between city of Pirot, citizens from two villages where project was implemented and solar cooperative. Introduction of solar plants was the alternative to ecologically harmful solutions that were previously planned but prevented.

According to **Nationally Determined Contribution (NDC) of the Republic of Serbia for the 2021–2030 period,** the Republic of Serbia has been Party to the United Nations Framework Convention on Climate Change (UNFCCC) since 2001 and to the Paris Agreement since 2017. In 2015, the Government of the Republic of Serbia submitted its Intended National Determined Contributions (INDCs), defining a 9.8% greenhouse gas emissions reduction by 2030 compared to base year emissions (1990). The first NDC also refers to losses and damages associated with extreme weather events and indicates the need to adapt to climate change. The Republic of Serbia communicated its updated Nationally Determined Contribution (NDC), in accordance with the Articles 3 and 4 of the Paris Agreement and paragraphs 22 and 24 of Decision 1 CP/21 as follows:

a) *Increasing* its ambition to the GHG emission reduction by 13.2% compared to 2010 level (i.e. 33,3% compared to 1990) by 2030, and
b) *Taking into account* that in the period 2015-2020 period, Serbia suffered damages estimated at EUR 1.8 billion, additional to EUR 5 billion in the period 2000-2015, caused by climate change and extreme weather events.

The Republic of Serbia has signed the Stabilisation and Association Agreement with the European Union in 2012. This Agreement entered into force in September 2013. Thus, the country has committed to aligning its legislation on climate change to the EU acquis that will significantly contribute to the greenhouse gas emission reduction. Serbia is a landlocked country. Energy is one of the largest sectors of the Serbian economy, and the most of the electricity is produced in thermoelectric power plants (around 70%) using domestic low-calorific lignite, while the rest comes mainly from hydropower. Electricity consumption is very high, mostly due to the use of electricity for heating and a very low level of energy efficiency.

The mean annual temperature increased in the period 2008-2017 relative to the 1961-1990 reference period by 1.5°C, while in the western and eastern parts of the country, the increase exceeded 2°C. Such trend will continue up to 2- 4.3°C until the end of the century. The annual precipitation increased by 10%, and in the southern part of the country up to 20% relative to the reference period· The change in the mean annual precipitation will not be as pronounced as in the case of temperature change, but will be characterized by interannual precipitation redistribution, while during the summer season, the deficit of rainfall will be strongest.

The vulnerability of water resources, agriculture, forestry, including biodiversity and health has already been confirmed, while experience in the last few decades shows negative effects of climate change to energy, infrastructure, transport and Serbian economy in a whole.

Further detailed information on the Nationally Determined Contribution (NDC) can be found at www.klimatskepromene.rs.

2. Legislation, programs, and formal goals

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☒ Documents
☒ 0.66	☒ High confidence	☐ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The Government of Serbia has adopted the **Strategy of the Low Carbon Development of the Republic of Serbia for the 2023-2030** period with projections until 2050 more than three years after the public debate. The document reveals that the action plan for its implementation in the 2024-2030 period should be adopted within one year. The strategy sets as a general goal for reduction of greenhouse gas emissions excluding land use, land-use change and forestry (LULUCF) by 13% by 2030 and 55% to 69% by 2050 from the level registered in 2010. The targeted decrease is 20%, and 59% to 72%, respectively, from 2005, or 33% and 65% to 76% from 1990. The goals are envisaged to be met mostly by cutting emissions in the production of electricity and heat, increasing energy efficiency and using renewable energy sources in the industrial sector.

This policy area will be further regulated by the **Integrated National Energy and Climate Plan for Serbia**, which should be completed by September and adopted in the autumn 2023. Public discussions on the Plan were held in Belgrade, Novi Sad and Niš. As proposed, the most important goals are to increase the share of renewable energy, including solar energy, in the production of electricity to 45%, significantly increase energy efficiency by limiting the maximum primary and final energy consumption in 2030, and lower greenhouse gas emissions by 40.3% from the 1990 level, all in line with the goals from the Nationally Determined Contributions (NDC). The plan defines a total of 156 measures of 68 are reform measures. The key areas which include a more ambitious implementation of energy efficiency measures, gradual change in the structure of energy sources toward low-carbon technologies by building new power plants using solar and wind, with a total capacity of about 3.4 GW, and 350 MW in new gas-fired power plants, increasing the use of heat pumps by several times and incentivizing the use of electric vehicles. The necessary investments until 2030 are estimated at EUR 27.4 billion. According to the **document**, the target for the share of renewables in gross final energy consumption is set at 33.6%, and for the gross final electricity consumption at 45%.

The above-mentioned policies framework provided a context for project interventions, although arguably it had no direct influence on the project design and its efficiency. It has however influenced overall

awareness about renewable energy and motivated/ created overall condition for activities of Elektropionir and municipality of Pirot in this area. The investment framework had no influence on the project as none of the stakeholders benefit from state aid.

3. Relative openness of public governance paradigms

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☒ Medium confidence	☒ Documents
☒ 0.66	☐ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Governance paradigm in Serbia has been generally moving toward more centralized closed paradigm, including for collaboration with civil society. This is the trend observed during the last decade since current political option (Serbian Progressive Party) is in power. While cooperation between government and private sector often takes form of clientelist relations[2] and investments related to energy sector are often linked to the foreign investors, the collaboration with civil society in general as well as in the energy and ecology sector is not only absent, but currently very conflictual. Green transition is one of the contested political spaces where the vision of ruling parties on one hand and civil society, ecological movement and few new green oriented political parties in opposition are completely the opposite. While the government promotes profit driven model of development exploitative of natural resources, the civil society and ecological movement promote the paradigm of sustainable development, the development understood as centered towards human needs within the paradigm of respect and preservation of natural resources and environment.

Unlike this general framework, typical for national/central level of governance in Serbia, there are few local communities which still resist to this dominant paradigm, managing to preserve or reestablish cooperative relations to civil society and engaging in co-creation initiatives. The Pirot municipality and Solarna Stara project are the example of that. Although not without challenges and ups and downs, the municipality of Pirot had the capacity to recognize the value of the initiative proposed by Elektropionir and to implement it, finding innovative solutions together with project partner counterbalancing existing normative framework, which does not provide clear and favorable ground for such collaboration. The proposed contractual model explained in the introductory part is the result of such openness and responsiveness, which in turn was one of the success factors of the initiative.

[2] in Cvejic, S. (ed.) (2016) *Informal power networks, policial patronage and clientelism in Serbia and Kosovo*

4. Formalized institutional channels for citizen participation and community mobilization

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☐ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Although the legal framework in Serbia generally envisages the formal channels for citizen's participation (for example, citizens can in theory attempt to influence local budgeting processes and local policies through consulation, dialogues or similar), the last decade demonstrates the declining trend of active citizens participation in shaping policies and budgets. Moreover, the government has developed increasingly oppressive approach to civil society, marginalizing and suppressing autonomous civil society organizations and supporting and financing newly established GONGs (government controlled NGOs).[3]
In such a context and taking into account the specific local context in the municipality of Pirot where there was willingness of local government to engage in co-creation initiative with citizens' cooperative, the existing formalized channels of cooperation were not sufficient. Basically, there are regular procedures through which citizens can use local budgets for their projects. In the case of Temska and Dojkinci, there were already local investments financed from the municipal budget based on an agreement with Mesna zajednica and the municipality.

5. Mechanism for ensuring top-down government and bottom-up social accountability

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Democracy in Serbia is marked by a relatively low level of accountability. Accountability mechanisms are often formalistic, defined on paper but not essentially implemented. This is particularly true in the area of energy and other investments relevant to environmental protection. The role of civil society as well as the few independent media in making the government accountable for policies and concrete investments is therefore crucial. Despite the active approach of civil society (publishing public budget reports, examining legality of some government initiatives, disclosing abuse of public resources, etc.) there was little influence on legal changes or political accountability of government. The citizen's activism that prevented

[3] Loncar, Jelena (2020) Civil society in Serbia, in Spasojevic, Dusan (ed.) *Undermining Democracy in Serbia,* CRTA, Belgrade, available in Serbian at https://crta.rs/podrivanje-demokratije-procesi-i-institucije-u-srbiji-od-2010-do-2020-godine-2/

installation of mini hydro plants on Stara planina was considered as one of the most successful examples of forcing government to be accountable and reconsider decisions through citizens' pressure.[4]

Despite such an unfavorable context in terms of low accountability, the Solarna Stara project managed to invent the accountability mechanism that will at the same time ensure the accountability of local government as well as social accountability of final beneficiaries of the project. As defined in the Contract, the local government is obliged to invest all money received through selling energy produced by solar plants exclusively in development projects in two villages and local communities. The citizens of two villages will have the full insight in the amount of energy produced, price of the energy and income generated by selling the energy through Elektropionir (which is responsible for finding the buyer and ensure the best price). On the other hand, the local-level social accountability will be ensured by mechanisms such as citizens submitting proposals for developmental projects that will be approved by municipality and Elektropionir, thus ensuring that money will serve for community development and not some other purposes.

6. Strategic agenda-setting by means of translation

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☐ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

On paper, the Republic of Serbia is committed to sustainable development. Thus, the Provision 9 of Article 97 of the Constitution of the Republic of Serbia prescribes that the Republic of Serbia regulates and ensures:„sustainable development; the system of protection and enhancement of the environment; protection and enhancement of flora and fauna; production, trade and transport of armaments, poisonous, flammable, explosive, radioactive and other hazardous substances". According to the Constitution the Republic of Serbia is also obliged to ensure balanced development as stated in its Article 94: „The Republic of Serbia shall ensure balanced and sustainable regional development, in accordance with the law." National Strategy of Sustainable Development for the period 2009 - 2017 , along with the accompanying Action Plan for its implementation adopted in 2009, clearly set out that sustainable development is a ,,general direction and commitment of the Republic of Serbia and is an aspiration to create better living conditions by adjusting the social and economic factors with the environmental factors". But how this rather declarative strategic agenda setting is translated inot action and espacilly action on the ground is not clear. On the other hand, despite not making an explicit reference to Agenda 2030 and SDGs, this initiative is a good example of both filling the declaration with concrete outcomes as well as taking action with clear guidance.

[4] Vukovic, Danilo (2020) The Rule of Law, in Spasojevic, Dusan (ed.) *Undermining Democracy in Serbia,* CRTA, Belgrade, available in Serbian at https://crta.rs/podrivanje-demokratije-procesi-i-institucije-u-srbiji-od-2010-do-2020-godine-2/

7. Construction of narratives about successful multi-actor collaboration

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The local narratives related to multi-actor collaboration are usually not simple and without contradictions. During times preceding the project, the dominant narrative was to build collaboration or solidarity between citizens, but against government at all levels. However, even collaboration within the civil society groups was not consistent. At the beginning of the emergence of ecological activist movement in Stara planina villages, there was clear idea that citizens must unite and collaborate. The Alliance of 39 Mesna zajednica of villages on Stara planina was created. This was perceived as necessary, particularly as some villages were severely depopulated (one village has only 2 inhabitants left), so they realized they must act together and move their action to 'defend;' villages under the biggest pressure from investors. So the narrative of collaboration was very strong, but limited to the citizens from targeted local communities. With time, the narrative of collaboration between local citizens and citizens and activist outside of the region, between citizens and academia emerged and increased the overall critical mass and visibility and negotiating power of the group. However, the gap in the growing movement emerged and majority of citizens joined newly formed informal activist network 'Let's defend Old mountain rivers', while part of the citizens remained in the original Association of mesne zajednice Stare planine. Regardless the differences, joint engagement was continued due to the common interests and importance to keep the collaboration.

The project Solarna Stara shifted these narratives. It promoted the new forms of collaboration, between citizens and local government, between local government and citizen's cooperative (Elektropionir) as actors who bring new ideas and initiatives, as well as among divided citizens. The intention to promote such narrative is visible already from the project design. The two villages were chosen representing the most active resistance to mini hydro plants, but deliberately from two different factions (Temska is aligned with Association of mesne zajednice, while Dojkinci joined movement 'Let's defend Stara planina rivers'). The narrative of collaboration was dominant over the narrative of division and lack of trust at least at the surface. The research however revealed persisting resentments and conflictual narratives, but at the same time high awareness that 'battle axes should be buried' for the sake of positive benefits that will be gained through the collaboration. The important role in that shift was played by Elektropionir who was mediating actor, very much trusted by the citizens and activists, yet very professional to collaborate with municipality administration and able to demonstrate the new paths to collaboration.

8. Building or harnessing institutional platforms and arenas

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☒ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Platforms and arenas played a very important role in the events preceding to Solarna Stara project. As it was described in the introduction, the web pages, Facebook page with more than 100,000 followers created a digital forum, main place where knowledge was built, exchanged, initiatives proposed and agreed, and actions coordinated.

The project Solarna Stara did not develop anything unique, but the already established platforms were used to support the project particularly during crowd funding campaign.

Note: Did not make a huge difference then 66.

9. Provision of access to blended financing

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☒ Documents
☐ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

In the next decade it is necessary to invest around EUR 15 billion in Serbia's energy sector, and the priorities are defined in the Plan for the Development of Energy Infrastructure and Energy Efficiency Measures for the period up to 2028, with projections up to 2030, which the Government adopted in June 2023.

As for new production capacities, the priorities, among others, are to build PSHPP Bistrica, overhaul and revitalize HPP Đerdap 2, build the Kostolac wind park, build solar power plants totaling 1 GW, while the financial and technical feasibility of the PSHPP Đerdap 3 project will also be considered. On the transmission network, in addition to the construction of the Trans-Balkans Corridor, we are also planning the projects of the Pannonian Corridor as well as the Central Balkan Corridor, which will connect Serbia to Bulgaria and Bosnia and Herzegovina. More than EUR 450 million will be invested in the distribution system by 2030 with a goal to strengthen the distribution network and cut losses to around 8% per year, which we consider acceptable. In the energy efficiency segment, the planned measures and activities should secure savings of approximately 3 TWh to 4 TWh per year. The savings until 2030 compared to 2020 from energy efficiency measures should amount to about 1.5% in households, industrial production and other sectors. Carrying out a new investment cycle in the energy sector implies the participation of the public and private sectors. That is why it is important to reform our state-owned enterprises so that they operate

more efficiently, but also to attract investments from the private sector by creating a favorable regulatory framework.

New changes were also introduced concerning buyers-producers by setting limits for maximum capacities for households and small commercial buyers, in line with European practices. As for households, only the end buyers that install solar panels of up to 10.8 kW will become buyers-producers, while the ceiling is 150 kW for the other categories of end buyers. This way the buyer-producer concept toward small buyers, which need to benefit the most from the model, while a new concept, "active buyer," was determined for bigger industrial consumers. The Government is preparing the changes to the Law on Energy including provisions on active buyers.

Bedsides bilateral donors such as GIZ, which are supporting the solar energy installations, in 2021 and 2022 the Ministry of Mining and Energy has published call for the program to subsidize households to install solar panels and become prosumers through allocation of subsidies to cities and municipalities. The ministry and local municipalities are securing half of the investment in solar panels in total, while households need to cover the remainder. The part secured by the ministry will be awarded to the municipal units under the public call, and they allocate the same amount from their budget. Each selected municipal unit can receive a maximum of EUR 42,600. A similar scheme has been recently launched to grant households subsidies to replace doors and windows, install insulation, and replace heating systems with cleaner ones.

10. The capacity to leverage support from authorities to enable local collaboration

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☒ 0.66	☒ High confidence	☒ Observations
☐ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

The capacity to leverage support from authorities to enable local collaboration was a crucial factor as there would not be the project without the willingness of the municipality of Pirot to participate in this co-creation. In that regard, the professional knowledge and attitude of Elektropionir members, and the readiness of municipality to engage in collaborative initiatives in the area of solar energy, with issues of transition to green energy sources being their priority agenda for already two decades, were very important. Mutual respect was very observable during the field mission and interviews with both sides. In the same time, during entire project design and implementation there was no involvement and support from the central level.

11. Inclusion and empowerment of relevant and affected actors

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Without intention to neglect the importance of solar plants for the developmental capacities of the local communities and their empowerment to further successes in local development, one of the key aspects of the project was active engagement of citizens from devastated areas, impoverished populations and activists representing these communities. This could be understood as the final goal of the initiative and one of the most important results. Citizens are empowered and stimulated to take a more active approach to planning the development of their local communities, and to raise aspirations to replicate and expand similar activities.

Although citizens were highly empowered through previous actions of resistance to mini hydro plants, after the ban of mini hydro plants they were lacking know-how and tools to continue to be engaged in local sustainable development in new ways. The project provided them with the knowledge and tools (in terms of solar power technology, but also in terms of decision making and collaboration mechanisms) that can be used to further expand and replicate similar initiatives contributing to local development in two selected locations and elsewhere in Serbia. Citizens of two villages now consider expanding introduction of solar plants but also installing solar panels as prosumers on their private houses. They expect to see results from first year of full implementation of solar plants and if this proves beneficial, they will further engaged to set up new solar plants.

12. Clarification of interdependence vis-à-vis common problem and joint vision

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Clarification of interdependence vis-à-vis common problem and joint vision was important factor as each of stakeholder had the role complementary to others: Elektropionir as initiator, investor, mediator, trustful 'authority', local government as the actor who controls resources, citizens/activists as those who bring the benefits to their community through collaboration. Participants recognized individual value of each partner and indicated importance on their mutual interdependency as each of them brought specific form of asset into the co-creation: Elektropionir knowledge, financial resources and technical expertise, city

legally formalized model of co-creation, while citizens brought perspective of local needs and operational implementation.

13. Trust-building and conflict mediation

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Trust-building and conflict mediation was a crucial factor in communities with a conflictual past and severely disturbed relations between citizens and local authorities. The role of Elektropionir was central to that process. They were 'acceptable' party for both, local community due to their engagement in the solar energy, and to the citizens/activists, due to their activist orientation and previous support. The project idea is at the core of interest of all parties and does not provoke any discontent. Also, it should be kept in mind that the amount of money that will be earned from the selling energy is not big, so it does not raise the appetites of potential political stakeholders within the municipality who would see it as opportunity to feed on clientelist relations that are very entrenched in the Serbian political power.[5] Therefore it could be concluded that despite the fact that there were some low-level conflicts between the partners, they succeeded to manage these conflicts in a productive manner. This indicates positive trajectory and enhancement of the trust between the stakeholders.

'Elektropionir's proposal to correct a wrong had something healing for the community. We all felt the need that in a place that was wounded and could be further damaged, this kind of project seemed to be something that was regenerative as an idea' (Crowdfunding PR manager, ecological activist).

14. Use of experimental tools for innovation

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☒ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☐ 1		

[5] See more in Cvejic, S. (ed.) (2016) *Informal power networks, policial patronage and clientelism in Serbia and Kosovo,* SeConS, Belgrade, accessed on 10 September 2023 at https://secons.net/en/publikacija/informal-power-networks-political-patronage-and-clientelism-in-serbia-and-kosovo/

Please elaborate on the reasoning behind your scoring for this governance factor:

entire project can be considered an experiment given the level of development of target area, with innovative aspects applied in technology promotion, stakeholders' engagement, the role of external players, contractual relations and fundraising/ funding. However, there are no limited evidence of experimentation beyond the gradual development of the contractual model, which only received limited direct inputs from the other participants. Thus, while there was indeed an iterative process of improvement of the contractual model, it did not actively leverage any systematic approaches incorporating the inputs from all participants.

15. Ongoing critical self-reflection and learning (i.e., process and/or developmental evaluation):

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Critical self-reflection was present among all partners in the project – among Elektropionir team this was particularly visible regarding fundraising issues. Their expectations that crowd funding campaign will reach broad groups of citizens proved as wrong. They realized that they cannot rely on broader audience, as green agenda in Serbia is still not issue that easily mobilizes citizens. They understood that they have to rely on narrower circles of various parts of ecological movement, colleagues, peers engaged in green initiatives in Serbia and to shift their fundraising focus to them.

Self-reflection among citizens was mainly related to the past conflicts and some kind of reconciliation through the project. During the history of conflict around mini hydro plants mistrust was high between activists and local government, but also between different factions of activists. During the project implementation they had the opportunity to see differently their interests and roles and to reestablish relations that will enable co-creation instead of divisions.

Less self-reflection was found on the side of representatives of local government, which took (though more implicitly) position of stakeholder that was observing these conflicts externally. However, their willingness to cooperate with citizens was very important to build trust.

16. Exercise of facilitative leadership:

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Interviews
☐ 0.33	☐ Medium confidence	☐ Documents
☐ 0.66	☒ High confidence	☒ Observations
☒ 1		

Please elaborate on the reasoning behind your scoring for this governance factor:

Facilitative leadership of Elektropionir as knowledgeable and simulations responsive and empowering actor was additional important factor as it enabled effective, innovative and feasible solutions. Having in mind that model of ownership and financing was the first of this kind in Serbia, the creative solutions were found due to the Elektropionir continuous discussion with all stakeholders and using external expertise, but also due to the openness of local government to accept new modalities to finance local initiatives.

Outcome variable: Successfully co-created green transitions

The outcome variable 'co-created green transitions' will be scored in two parts. First, 'co-creation' will be scored based on an assessment of whether the participants in the initiative, project or process engaged in collaborative problem-solving that fostered creative ideas and innovative solutions (data will consist of survey data combined with interviews and documents). Next, 'green transitions' will be scored based on an assessment of whether the initiative, project or process has fulfilled or is expected to fulfill its green goals, ambitions and aspirations (data will consist of survey data combined with interviews and internal and/or external evaluation reports, including scientific publications).

The scoring of this variable is done in two parts:

1. *Is the developed solution based on collaborative problem-solving spurring creativity and innovative solutions?*
2. *Does the developed solution engender a green transition?*

This scoring should be conducted based on both the survey and complementary green outcome evaluations. Please consult Sections 4.4 and 6.10 in the Research Protocol for more details.

1. Is the developed solution co-created?

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☐ Survey
☐ 0.33	☐ Medium confidence	☒ Interviews
☐ 0.66	☒ High confidence	☒ Documents
☒ 1		☒ Observations

Please elaborate on the reasoning behind your scoring for this part of the governance factor, including the data sources used for the scoring.

The solution is fully co-created, it represents the outcome of joint efforts of the project leader – citizens energy cooperative Elektropionir, municipality of Pirot and citizens from two local communities within the municipality placed on Stara planina that were project partners and final beneficiaries of the initiative. As described in previous chapters, examples of co-creation can be found in the selection of a target area, project design, involvement of stakeholders, implementation (technology, contractual arrangements), but also selection of development interventions the generated income will be used for.

If possible, please insert your survey responses in the table below (in % for each response), including the mean/average % for each survey item.

Note: Only 4 questionnaires were completed so numbers are not %. Having in mind the nature of the project, it was not realistic to expect more than 5 responses because only key persons deeply involved in the project could answer all these questions. Questions are replaced by the questions from the lates questionnaire version that was sent to us.

	Strong. dis.	Dis.	Slight. dis.	Neither agr/dis	Slight. agree	Agree	Strong. agree	Mean
1. . The collaboration combined different experiences, and/or ideas and/or forms of knowledge to develop new perspectives						2	2	
2. Through the collaborative problem-solving process, different experiences and/or ideas and/or forms of knowledge have been mobilized to search for unconventional solutions						1	3	
3. The collaboratively developed solution breaks with established practices							4	
4. The co-created solution breaks with established practices							4	
5. The collaboratively developed solution disrupts conventional wisdom						2	2	
6. The collaboratively developed solution offers new ideas to address the green transition problem						1	3	
7. . I'm supportive of the collaboratively developed solution							4	
8. I'm content with the overall collaborative process of the project						3	1	
9. I feel the collaborative process was a prerequisite for the success of the project						1	3	
10. I'm satisfied by the results of the collaborative effort in terms of expected impact on the welfare of the community						2	2	
11. The collaborative interaction in the project has led to an innovative solution					1	1	2	

12. The collaborative interaction between the actors in the project stimulated creative problem-solving						2	2	
13. The collaboratively developed solution meets the proposed goals of the project							4	
14. The collaboratively developed solution will be durable and robust in the long run		1			1	2		
15. The collaboratively developed solution is expected to significantly improve sustainability for the whole community				1		3		

2. Does the developed solution engender a green transition[6]?

QCA score:	Scoring confidence:	Data sources:
☐ 0	☐ Low confidence	☒ Survey
☐ 0.33	☒ Medium confidence	☒ Interviews
☒ 0.66	☐ High confidence	☐ Documents
☐ 1		☒ Observations

Please elaborate on the reasoning behind your scoring for this part of the governance factor, including the data sources used for the scoring:

The project has largely achieved its objectives regarding the green transition, evidenced by the successful installation and functionality of solar panels. Additionally, it has catalyzed broader adoption of green solutions, serving as a replicable model for future initiatives. Beneficiaries have shown heightened interest in integrating solar panels into their private residences or as income-generating facilities for local community development. Elektropionir's co-creation model, piloted through the project, holds promise for application in other communities, furthering the green transition agenda. However, the project received a score of 0.66 due to the incomplete income reinvestment as initially planned. Consequently, the full impact remains to be seen, requiring additional time to assess the effectiveness and impact of the income generation cycle on local development.

[6] By ”green transitions”, we mean objectives and aspirations that correspond to at least one of the Green SDGs (SDG 6, 7, 11, 12, 13, 14, 15). The project does not have to refer explicitly to the green SDGs, but the project’s green objectives

If possible, please insert your survey responses in the table below (in % for each response).

1. The project:	Yes	No	Don't know
…did not produce any green transition solution		4	
…is expected to produce/has produced a green transition solution aiming to avoid a worsening in the status quo	2	2	
…is expected to produce/has produced a green transition solution aiming to maintain the status quo		4	
…is expected to produce/has produced a green transition solution aiming to improve the status quo	4		

Please list all the informants you have interviewed for the case study (list project role + interview date):

Member of Elektropionir cooperative, project coordinator, first interview 23 February and second interview 15 June 2023.

PR manager of crowd funding campaign implemented by Elektropionir cooperative, 6 April 2023

Crowdfunding campaign manager, 10 April 2023

Energy manager of the City of Pirot (local government project partner), first interview 21 April, second interview 13 June 2023

Former president of MZ village Dojkinci, activist and representatives of citizens, first interview 20 April, second interview 13 June 2023

Group interview with citizens and activists from village Dojkinci, 14 June 2023

Activist and citizens of village Temska, representatives of citizens, first interview 19 April, second interview 13 June 2023

RES Foundation, expert for energy and green transition, 12 June 2023

Expert for climate change and green transition, 12 June 2023

Please list all the observations you have made (type of meeting/workshop/etc. + observation date):

Project site – village of Temska, building where solar panels are installed, 13 June
Project site – village of Dojkinci, local citizens meeting and building where solar panels are installed

Please list all the documents you have analyzed (document name + source + year):

Documents	
	Law on Energy of the RS, 'Official Gazette of the RS', no. 40/2021, https://www.mre.gov.rs/dokumenta/sektor-za-elektroenergetiku/zakoni/zakon-o-energetici-sluzbeni-glasnik-rs-broj-40-2021
	Bylaws on the Law on Energy, https://www.mre.gov.rs/dokumenta/sektor-za-elektroenergetiku/podzakonska-akta
	Law on use of the renewable energy sources, 'Official Gazette of the RS', no. 40/2021 https://www.mre.gov.rs/sites/default/files/2021/05/zakon_o_korishcenu_obnovlivikh_izvora_energije_0.pdf
	Bylaws on the Law on use of the renewable energy sources , https://www.mre.gov.rs/dokumenta/sektor-za-zelenu-energiju/podzakonska-akta
	National Renewable Energy Action Plan of the RS (Engl.) https://www.mre.gov.rs/sites/default/files/2021/03/national_renewable_energy_action_plan_of_the_republic_of_serbia_28_june_2013.pdf
	Progress Report on Implementation of the National Renewable Energy Action Plan of the RS 2018-2019 (Engl.) https://www.mre.gov.rs/sites/default/files/2021/03/republic_of_serbia_res_progress_report_2018_2019.pdf
	National Renewable Energy Action Plan (NREAP) Implementation Report 2020 (Engl.) https://www.mre.gov.rs/sites/default/files/2022/11/nreap_implementation_report_for_2020.pdf
	Ministry of Mining and Energy of the RS Leaflet on Solar Energy for households https://www.mre.gov.rs/sites/default/files/2021/12/broshura_za_domacinstva_web.pdf
	Ministry of Mining and Energy of the RS Leaflet on Solar Energy for housing communities (stambene zajednice) https://www.mre.gov.rs/sites/default/files/2021/12/broshura_za_stambene_zajednice_web.pdf
	Law on Energy Efficiency and Rational Use of Energy https://www.mre.gov.rs/sites/default/files/2021/05/zakon_o_energetskoj_efikasnosti_i_racionalnoj_upotrebi_energije_1.pdf
	Integrated National Energy and Climate Plan of the RS for period 2021-2030 with vision until 2050 https://www.mre.gov.rs/dokumenta/strateska-dokumenta/integrisani-nacionalni-energetski-i-klimatski-plan-republike-srbije-za-period-2021-do-2030-sa-vizijom-do-2050-godine
	Elektropionir 'Solarna Stara' project document
	Memorandum of cooperation between Elektropionir cooperative and city of Pirot https://elektropionir.rs/wp-content/uploads/2022/06/Memorandum-o-razumevanju-i-saradanji-PIROT-Elektropionir.pdf

Please note the response rate for the survey/measurement of outcome variable:

We are still trying to get the questionnaires. Only two out of 9 planned are completed.