

MAGDON ENERGY COMMUNITY, NIŠ

CASE STUDY SHORT SUMMARY REPORT

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MAGDON ENERGY COMMUNITY, NIŠ

Case Study at a Glance

This case study examines Serbia's first energy community, formed by residents of the Magdon complex in Niš. Magdon, an elite complex comprising five residential buildings within a private and secured courtyard, incurs higher-than-average common monthly electricity costs due to additional services. To reduce these costs, residents of three buildings, led by the community manager, initiated the installation of a photovoltaic power plant on the rooftops, and chargers for electric cars on the ground floor. Collaborating with the partnership organization CORE, and with financial support from the Government of Japan, the community successfully implemented this project. The residents demonstrated a high level of social resilience, largely due to the efforts of the initiator and company representatives. They highlighted the long-term benefits available after the two-year payback period, considering the approximate 25-year lifespan of PV panels. Beyond financial benefits, the project's most significant direct impact is an annual reduction of 71.4 tons of GHG emissions. The Magdon initiative serves as a model for other residential communities seeking to utilize renewable energy sources.

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Case Study Profile

Topic

- ☐ Community Gardening & Urban Agriculture
- ☐ Community Hubs & Cultural Activities
- ☐ Urban Design & Planning Processes
- ☐ Public Space Development & Management
- ☒ Local Economic Development
- ☒ Urban Regeneration & Rehabilitation

Scale

- ☐ Metropolitan / city region
- ☐ City scale
- ☒ Neighbourhood scale
- ☒ Block scale
- ☒ Building scale

Resilience Challenge

- ☒ Environmental and ecological resilience
- ☐ social & cultural resilience
- ☒ Infrastructure and technological resilience
- ☒ Economic & livelihood resilience

Duration

- ☐ Immediate (less than 1 month)
- ☒ Project-Based (1–12 months)
- ☒ Programme-Based (1–3 years)
- ☐ Strategic (3–5 years)
- ☒ Structural / Transformative (more than 5 years)

Stakeholders

- ☒ Community members
- ☐ Local government
- ☐ Non-governmental organizations (NGOs)
- ☒ Private sector
- ☐ Academic and research institutions

Type of Civic Engagement Supporting Neighborhood Resilience

- ☒ Resident-led and grassroots initiatives
- ☒ Collaborative planning projects or processes
- ☐ Advocacy and capacity building
- ☐ Volunteer and community service projects
- ☐ Short-term, more flexible project-based engagement
- ☒ Long-term, more institutionalized engagement (development of stable structures, etc.)
- ☐ Protest and resistance mobilization
- ☐ Art-and culture-based civic Engagement

Level of Civic Participation

- ☐ Information
- ☒ Involvement or participation
- ☒ Collaboration or co-creation
- ☒ Empowerment
- ☐ Resistance and protest-based empowerment

Empirical Basis and Methodological Approach

The Magdon case study examines the formation of Serbia's first formally recognized energy community by residents of a multi-residential complex in Niš to lower higher-than-average communal electricity costs. Led by their community manager, the residents optimized underutilized building rooftops to install a photovoltaic power plant and integrated ground-level electric vehicle chargers, successfully establishing themselves as a legally recognized prosumer through an innovative contract model with the national utility grid.

The research framework applied to the Magdon residential complex case study integrates qualitative, documentary and field-based approaches. Given that the Magdon initiative represents a pioneering, institutional pilot for neighborhood-scale energy generation, the research design relied on the cross-verification of stakeholder narratives, official administrative records, and on-site physical auditing. The multi-method approach provided the empirical rigor needed to examine how an organized co-housing collective builds long-term adaptive capacity, specifically, how a hybrid network where bottom-up leadership collaborates with technical private sector consultants, international green funds and national grid operators can successfully function.

The documentary data stream was established through a systematic review of formal project logs, financial statements, regulatory briefs, and publications. An analysis of daily newspaper archives, community web portals and official stakeholder networks was conducted to facilitate a precise chronological reconstruction of the project's development timeline. Besides providing the relevant technical and financial parameters of the initiative, the documentary review also clarified how institutional and grassroots actors framed the socio-energy transition in the public sphere.

The documentary analysis was paired with targeted qualitative fieldwork to capture social dynamics of community solidarity and joint decision-making. Semi-structured interviews were conducted across three distinct tiers of project participants to capture a comprehensive, multi-sided perspective of the pilot's lifecycle. The grassroots initiator – the community manager representing the Magdon residential community – detailed the timeline of localized dialogue, vision setup and internal trust-building. The partnership organization – a senior member of the Center for Sustainable Energy Development (CORE) – provided insights into the technical feasibility studies, the procurement of permits, and grid-connection management. The local beneficiary – a resident within the complex – grounded the study by documenting residents' perception, initial skepticism, consensus-driven collective actions, and direct economic experiences with the rooftop infrastructure.

The narrative records were further enriched by analyzing a major administrative innovation – the formulation and implementation of a novel contract model with the state electric utility, which legally authorized a multi-family housing association to operate as a unified prosumer (producer-buyer).

Finally, all data streams were verified through direct observation of Magdon's physical environment. This physical evaluation focused on the micro-spatial positioning of the clean energy infrastructure, analyzing how the solar panel arrays optimized underutilized flat rooftops across three distinct structures without encroaching on the daily routines or the shared central courtyards of the inhabitants. Grounding these spatial observations alongside measurable environmental returns established a solid analytical structure for evaluating the viability and scalability of community-led socio-energy transitions.

Compendious summary

Introduction

The distinguished residential complex in Niš, known as Magdon, characterized by its upscale amenities and comprehensive infrastructure, has faced higher-than-average common monthly electricity costs. These substantial expenditures are attributed to the energy consumption required for the operation of its communal services and facilities, including continuous functioning of elevators, extensive internal and external lighting systems, powerful submersible pumps, a hydrophore, a centralized thermal sub-station, and a sophisticated security system.

In response to the economic burden, a forward-thinking initiative was spearheaded by the residents of three specific buildings within the Magdon complex (identified as numbers 49, 51, and 53). Under the proactive leadership of their dedicated community manager, the residents collectively embarked on a pioneering project: the installation of a photovoltaic power plant positioned on the rooftops of their buildings, complemented by the introduction of electric vehicle chargers on the ground floor. This ambitious endeavor was not undertaken in isolation; its successful implementation was the result of a robust collaboration with the partner organization CORE (Center for Sustainable Energy Development LLD). The project also benefited from significant financial backing provided by the Government of Japan, channeled through the comprehensive initiative, the “Just Green Transition and Decarbonization in Serbia” project. Furthermore, the realization of innovative energy solution in Magdon garnered vital support from key national governmental bodies, including the Serbian Ministry of Mining and Energy, the Ministry of Environmental Protection, and the Serbian public electric utility company “Elektro distribucija Srbije”, underscoring a multi-stakeholder commitment to sustainable development.

The Magdon case study holds profound relevance for the academic discourse on social resilience. Its significance stems from the fact that this pioneering initiative directly led to the unprecedented formation of Serbia’s very first formally recognized energy community. The achievement is particularly noteworthy given that such community-based energy structures were, at the time, not explicitly acknowledged or integrated within existing prosumer regulations in the Serbian legislative framework. Consequently, this transformative project enabled the residential community of Magdon to legally establish itself as a ‘prosumer’ – an entity that both produces and consumes its own energy, thereby setting a crucial precedent for future energy decentralization efforts within the country.

Neighborhood challenge

The Magdon residential complex is situated within the Medijana City Municipality, located in the city of Niš, at 45-53 Patrisa Lumumbe Street. This extensive complex is a significant urban residential development, comprising five distinct eight-story buildings, collectively housing a substantial 240 apartment units. Complementing its vertical structures, the complex boasts a private, meticulously secured courtyard. This central communal area is not merely an open space but a thoughtfully designed and highly functional environment for its inhabitants. It features a serene park, complete with an

aesthetically pleasing fish fountain, a dedicated playground catering to younger residents, and a full complement of essential urban furniture, enhancing its utility and appeal as a vibrant community hub.

It was within this well-established residential setting that a proactive decision was made. Approximately 400 residents, specifically those residing in three of the complex's five buildings (numbers 49, 51, and 53), collectively representing 134 apartments, opted to participate in a pioneering initiative. Their motivation was clear: to significantly reduce the collective electricity costs associated with the ongoing maintenance and operation of the complex. This common economic objective served as a powerful unifying force for the participating households.

A key strategic identification in addressing these costs involved leveraging an existing, underutilized asset. The sloped rooftop area of the buildings, previously unused, was recognized as an optimal opportunity for the installation of a photovoltaic power plant. Direct harnessing of solar energy was envisioned as a primary means to substantially lower the aforementioned common electricity expenses. Beyond the immediate financial benefits, the comprehensive initiative also strategically incorporated the installation of three modern electric vehicle chargers at ground level, signaling a forward-looking commitment to sustainable urban mobility within the residential community.

Response to the challenge

The initiator – the community manager – engaged residents of buildings 49, 51, and 53 in discussions about reducing their common electricity costs by installing a rooftop photovoltaic power plant and electric vehicle chargers. Beyond the economic benefits, the Magdon initiative has a positive environmental impact. By utilizing renewable energy sources, GHG (greenhouse gases) emissions are reduced, achieving an environmental benefit that was a primary goal for the community manager, Vesna Rajski. The initiator had prior experience in civic engagement, having improved the living conditions in their neighborhood. This included the arrangement of the playground within the residential complex a couple of years prior, and walking paths several years earlier.

One of the goals of the Magdon initiative was economic: to reduce common electricity costs within the residential complex. Additionally, electric vehicle chargers were installed. As the initiative became part of the “Just Green Transition and Decarbonization in Serbia” project, a significant environmental objective was also pursued: the reduction of GHG emissions.

The initiative's concept took shape in 2022, emerging from discussions between a representative of the Center for Sustainable Energy Development and Vesna, the residential community manager. This connection was rooted in a prior acquaintance, and the company representative was already well-aware of Vesna's successful track record in previous initiatives. The representative mentioned the company's work on solar energy and photovoltaic power plant projects. In the following days, the community manager consulted with neighbors regarding their opinions and willingness to participate in the initiative as co-financiers. Most residents understood the benefits and expressed their support. Several residents' meetings were held between September and December 2022, culminating in a decision of consent at the end of December 2022. During that period, representatives of the company were also available for door-

to-door conversation with residents. Shortly thereafter, a cooperation agreement was signed between the Magdon residential community and the Center for Sustainable Energy Development (CORE).

The partner organization CORE coordinated with UNDP Serbia, the Serbian Ministry of Mining and Energy, the Ministry of Environmental Protection, and the public company “Elektro distribucija Srbije”. Residents, having entrusted the company, were not involved in the management process. The photovoltaic panels were installed by March 18, 2023. Due to regulatory obstacles, the solar power plant was connected to the grid on February 2, 2024.

The total value of the innovation was \$93,818. Co-financing from the Government of Japan, within the “Just Green Transition and Decarbonization in Serbia” project, amounted to \$40,000 (42.64%). The community residents’ self-financing, \$53,818 (57.36%), was facilitated by the partnership organization CORE. Residents committed to a two-year return on investment, contributing \$17 monthly per apartment. Upon repayment, their common electricity costs will be minimized. Concurrently, from the initiation of green energy production, an annual reduction of 71.4 tons of GHG emissions will be achieved.

Mechanisms of civic engagement

The Magdon case demonstrates a specific framework of civic engagement, primarily driven by the community manager and strongly supported by resident participation. Key mechanisms include:

- **Initiation and Goal Setting.** Residents, led by the community manager, were involved from the project’s inception. They identified and defined the issue and collaboratively set goals with the Center for Sustainable Energy Development (CORE).
- **Direct Resident Meetings.** The community manager and CORE representatives organized and coordinated residents’ meetings. These meetings served as an effective method for discussion, education (on the benefits of photovoltaic plants), and decision-making.
- **Door-to-Door Engagement.** CORE representatives engaged residents through door-to-door conversations, consulting them on their opinions and willingness to participate.
- **Collective Decision-Making.** Residents made a collective “decision of consent” after a series of meetings, showcasing unified action.
- **Self-Financing/Co-financing.** Residents demonstrated active commitment by self-financing 57.36% of the total project value, reflecting significant financial participation and ownership.
- **Community Formation.** The initiative led to the joint formation of a residential community by residents of three buildings, enabling them to collectively pursue the project.
- **Trust in Partners.** Residents showed engagement by trusting the partner organization CORE to manage the project implementation, even without direct involvement in daily management.
- **Collaboration with External Organizations.** The primary collaboration between the residential community and CORE facilitated broader cooperation. This included national and international stakeholders like UNDP Serbia which implemented the “Just Green Transition and Decarbonization in Serbia” project that incorporated the Magdon initiative. CORE also cooperated with the Serbian

Ministry of Mining and Energy, the Ministry of Environmental Protection, and the public company “Elektro distribucija Srbije”, all of whom played supporting roles.

- **Inclusivity.** The project’s high inclusiveness ensured that all residents of participating buildings (49, 51, and 53) were involved in the decision-making process.
- **Future Planning/Expansion.** Following success, residents are actively planning further initiatives. These include installing additional electric vehicle chargers for commercial use, which demonstrates sustained engagement and forward-thinking community action, and creates another potential source of income for the community.

These mechanisms collectively highlight an approach where residents were actively involved in problem identification, solution development, resource contribution, and decision-making, leading to significant social and environmental outcomes.

Case study findings and lessons learned

From the project’s very beginning, the residents of the Magdon complex exhibited a remarkable degree of unity and cohesion in their pursuit of shared objectives. This collective resolve was instrumental in the exceptionally rapid installation of a photovoltaic power plant, a testament to their coordinated efforts, which was completed within a mere six months of their initial organizational meeting. Such swift progress underscores the power of a unified community working towards a common vision.

A cornerstone of the project’s success was the highly effective method of community engagement through structured residents’ meetings. These gatherings, meticulously organized and coordinated by the dedicated community manager alongside representatives from the CORE organization, served as vital platforms. During these meetings, residents received comprehensive education regarding the diverse array of benefits associated with photovoltaic power plants, ranging from economic savings to environmental advantages. This educational component was crucial in fostering informed decision-making and solidifying widespread support for the initiative.

Perhaps one of the most significant and innovative outcomes of this pilot project, with far-reaching implications for future energy community initiatives, is the development and implementation of a pioneering contract model. This groundbreaking model formally recognizes a collective group of residents, specifically a residential community, as a ‘prosumer’ – an entity that both produces and consumes electricity. This landmark contract was officially signed between the Magdon residential community and the public electric utility company “Elektro distribucija Srbije”, setting a precedent for similar collaborative energy endeavors.

Crucially, the entire implementation phase of the Magdon project unfolded without encountering any significant obstacles that impeded social resilience efforts. This smooth progression was largely attributable to the meticulous pre-securing of financing, which eliminated potential financial bottlenecks. Furthermore, the initiative was not constrained by either political or economic limitations, allowing participatory activities to proceed unimpeded and demonstrating the project’s robust foundation and effective planning.

Conclusion

According to Vesna Rajski, the visionary initiator of the Magdon project and dedicated community manager, the enduring success of social resilience initiatives hinges upon three fundamental pillars: vision, trust, and sustained support. These elements, she posits, are crucial for mobilizing communities and navigating the complexities inherent in such transformative endeavors.

One significant hurdle encountered during the implementation of the Magdon project was the absence of a predefined contract model specifically designed for agreements between emerging energy communities and the public electric utility company “Elektro distribucija Srbije”. This regulatory gap presented a considerable challenge, as it lacked the necessary legal framework to formalize the prosumer status of the residential collective. However, this obstacle was not insurmountable. The pioneering nature of the Magdon pilot project served as a catalyst, effectively overcoming this issue by establishing a precedent. The successful negotiation and signing of a contract within this project has now laid the groundwork, eliminating this specific regulatory impediment for future residential energy community initiatives across Serbia.

Looking ahead, recommendations for fostering more robust civic engagement in renewable energy projects strongly emphasize the cultivation of strong, synergistic collaborations. Such partnerships are particularly vital between residential communities and specialized organizations like CORE, which are uniquely positioned to provide comprehensive support encompassing expert consulting, practical implementation guidance, and crucial financial assistance. These contributions are indispensable for realizing complex energy transitions at the local level. The benefits of such endeavors are indeed reciprocal; for instance, following the Magdon project, CORE significantly enhanced its reputation and recognition within the green energy sector, leading to a substantial increase in its client base.

The Magdon initiative stands out as a highly replicable and broadly applicable model for any residential community contemplating similar sustainable energy projects. For such initiatives to flourish, it is paramount that residents grasp the profound long-term environmental and economic benefits that accrue from photovoltaic power plant installations. To illustrate, in multi-residential buildings grappling with average common electricity costs, the typical payback period for such an investment is estimated at approximately 9-11 years, even without the aid of donations or sub-financing. This is remarkably favorable when juxtaposed with the predicted lifespan of photovoltaic panels, which extends to a robust 25 years. To further accelerate this payback period and significantly boost the adoption of renewable energy sources nationwide, the establishment of comprehensive national-level subsidy programs is strongly advocated. Such programs would not only incentivize investment but also democratize access to green energy solutions for a wider segment of the population.

Attachments

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Photos and Illustrations



Figure 1. Magdon photovoltaic power plant. (Photo by Vladimir Rajski)



Figure 2. Magdon photovoltaic power plant. (Photo by Vladimir Rajski)

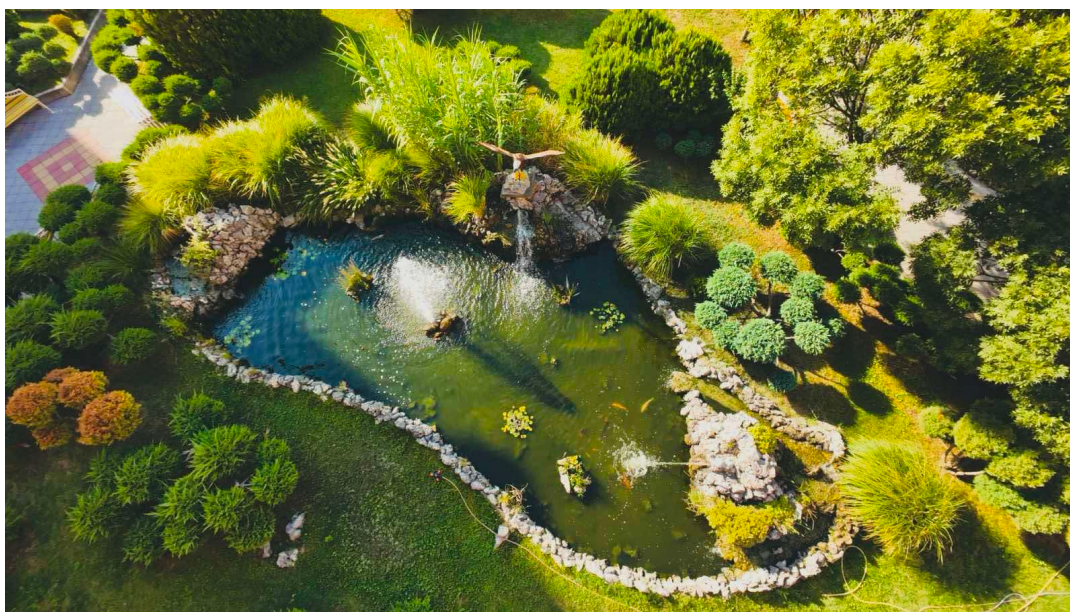


Figure 3. Garden in the Madgon neighborhood. (Photo by Vladimir Rajski)



Figure 4. Community manager Vesna Rajska displaying mobile application that measures green energy production. (Photo by Marija Stamenković)



Figure 5. Community manager Vesna Rajska and CORE representative Milanka Vasić inside the Magdon neighborhood. (Photo by Marija Stamenković)

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