WHITEPAPER

EKO-SELO-INBOX

Sustainable Modular Microgrid Settlement

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PROJECT STATUS: FUNDED & LAND ACQUIRED

Pre-Seed funding: €100,000 | Land plots: 5,484 m² + Extensions: 20,000+ m² | Status: Full ownership 1/1, unencumbered

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Šumadija Region, Serbia

Contents

1. Executive Summary

EKO-Village-inBox is an innovative, fully funded residential project that combines sustainable energy autonomy with modern living comfort. The project has already been funded by private investors with €100,000 in the Pre-Seed phase and has fully acquired, unencumbered land.

Key Features

- 12 autonomous residential units (6 small at 29 m², 6 large at 58 m²)
- Complete energy autonomy through microgrid system
- Independent water supply through deep well
- Central community facilities (150 m²)
- Modular container construction for flexibility and scalability

Project Status: IMPLEMENTATION PHASE

This whitepaper documents a real, funded project with concrete technical specifications and a clear implementation strategy. All information is based on actual planning and investment decisions already made.

2. Funding & Land

This section documents the funding and land acquisition that has already taken place. The project is not in the planning phase, but in implementation.

2.1 Pre-Seed Funding

Funding Round	Pre-Seed
Funding Amount	**€100,000**
Investor Typee	Private Investors
Status	**✓ COMPLETED**

2.2 Land Acquisition

The project has two connected plots with a total of 5,484 m² as well as adjacent extension areas.

Main Land Plots

Land Registry No.	**5258 & 5259**
Land Registry of	Vlaška
Municipality	Mladenovac (Belgrade)
Plot 5258	**3,485 m²**
Plot 5259	**1,999 m²**
Total Area	**5,484 m²**
Ownership Status	**Sole ownership 1/1**
Encumbrances	**None - completely unencumbered**
Status	**✓ ACQUIRED**

Extension Areas

In addition to the two main plots, adjacent land with a total area of over 2 hectares (20,000+ m²) was acquired. This strategic land reserve enables:

- Future expansion of the settlement
- Creation of additional green spaces and buffer zones
- Development of complementary infrastructure (e.g. community gardens)

- Long-term value appreciation of the overall project

Total Land Ownership

Main plots: 5,484 m² + Extension areas: 20,000+ m² = Total: 25,000+ m²

2.3 Strategic Location Selection

The land was selected according to the following criteria:

- Optimal size and geometry for the planned layout
- Availability of groundwater for the deep well
- Good sun exposure for photovoltaic systems
- Connection to existing infrastructure (access roads)
- **Excellent public transport connection: bus stop approx. 200 m away**
- Legally compliant building land designation

Transport Connections

Bus Stop	**approx. 200 meters distance**
Travel Time to Belgrade	**approx. 30 minutes to city center**
Car Access	Direct access via paved road

The combination of rural tranquility and urban accessibility makes the location ideal for sustainable living with optimal infrastructure connection.

IMPORTANT: Not a Fantasy Project

The EKO-Village-inBox project is based on real financing and actual land ownership. Funding of €100,000 has been completed. The land plots (Land Registry No. 5258 and 5259 in the Land Registry of Vlaška, Municipality Mladenovac/Belgrade) with a total area of 5,484 m² have been acquired and registered in the land registry as sole ownership 1/1. Additionally, adjacent extension areas of over 2 hectares were acquired. There are no encumbrances, mortgages, or third-party rights. The project is in the concrete implementation phase.

3. Project Overview

EKO-Village-inBox combines modern container architecture with sustainable energy technology to create a fully autonomous residential project.

3.1 Project Key Data

Total Area	5,484 m² + 20.000+ m² extensions
Number of Residential Units	12 (6 small + 6 large)
Total Residential Area	522 m²
Central Facility	150 m² (Technical + Community)
Green Spaces	~2.500 m² (12 zones)

3.2 Modultypen

Small Modules (29 m²)

- Base Area: 2 containers (6 m × 4,8 m)
- Configuration: Side by side
- Number: 6 units (Modules 1, 3, 5, 7, 9, 11)
- Ideal for: Singles, couples, home office

Large Modules (58 m²)

- Base Area: 4 containers (12 m × 4,8 m)
- Configuration: 2×2 arrangement
- Number: 6 units (Modules 2, 4, 6, 8, 10, 12)
- Ideal for: Small families, extended living spaces

4. Technical Specifications

4.1 containers Specifications

Basis: Standard 20-foot shipping container (ISO container)

- External Dimensions: ca. 6,0 m × 2,4 m × 2,6 m (L×B×H)
- Usable Area per containers: ~14.5 m²
- Material: Corten steel, weatherproof
- Modifications: Insulation, windows, doors, electrical
- Lifespan: 25+ years

4.2 Layout Arrangement

The 12 residential units are arranged elliptically around the central building. This configuration optimizes:

- Uniform distances to the center
- Optimal sun exposure for all units
- Efficient path and line routing
- Maximum privacy between modules

Distribution:

- North: Modules 1-3
- East: Modules 4-6
- South: Modules 7-9
- West: Modules 10-12

5. Microgrid Energy System

The heart of the EKO-Village-inBox project is the fully autonomous microgrid energy system, which ensures complete independence from the public power grid.

5.1 System Architecture

Decentralized Generation + Central Control

- Each residential unit: Own solar system + battery storage + inverter
- Central building: Main battery + Energy Management System (EMS)
- Microgrid network: Connects all units for energy exchange

5.2 Components per Residential Unit

Photovoltaic System

- Capacity: 3-5 kWp (depending on module size)
- Installation: On container roof
- Annual Yield: ~3.500-5.500 kWh (depending on size)

Battery Storage

- Capacity: 5-10 kWh (Lithium-ion)
- Function: Storage for night hours
- Lifespan: 10-15 years

Inverter

- Capacity: 3-5 kW
- Function: DC/AC conversion + grid feed-in
- Smart Grid capable

5.3 Central Energy Infrastructure

- Main Battery Storage: 50-100 kWh
- Energy Management System (EMS): Intelligent load distribution
- Monitoring: Real-time monitoring of all components
- Backup: Emergency power supply for critical systems

5.4 Energy Distribution

Radial (star) topology:

- 12 underground power cables from center to each unit
- Bidirectional energy flow (feed-in & consumption)
- Intelligent load control through EMS
- Excess energy is stored centrally

6. Water & Wastewater System

6.1 Water Supply

Deep Well

- Depth: 40-80 Meter (depending on groundwater level)
- Capacity: Sufficient for 12 households
- Pump: Solar-powered deep well pump
- Location: At central building

Water Treatment

- Multi-stage filter system
- UV disinfection
- Drinking water quality according to EU standards
- Central water treatment facility

Distribution System

- 12 underground water pipes (radially from center)
- Pressure maintenance through buffer storage
- Separate pipes for drinking and service water (optional)

6.2 Wastewater System

- Decentralized small treatment plants per residential unit
- Alternative: Central plant-based treatment facility
- Greywater recycling for garden irrigation
- Septic tank or infiltration system

7. Infrastructure & Community Facilities

7.1 Central Building (150 m²)

The central building combines technical infrastructure with community facilities and is the heart of the settlement.

Technical Infrastructure

- Main Battery Storage (50-100 kWh)
- Energy Management System (EMS)
- Deep Wellpumpe und Water Treatment
- Server room for data infrastructure
- Workshop for maintenance work

Community Facilities

- Community Lounge: Shared common area
- Bar area: Small counter for social gatherings
- Sauna (optional): Wellness area
- Pool table (optional): Recreation
- Table tennis table (optional): Sports and games

7.2 Pathway System

Optimized footpaths connect all areas of the settlement:

- Ring path: Outer ring around all residential units
- Radial paths: 12 direct connections to the center
- Cross paths: Connections between neighboring units
- Material: Sand-colored, barrier-free design

7.3 Green & Recreation Areas

12 Green Zones (~2.500 m² total)

- 4 corner zones: L-shaped areas with rounded edges
- 8 inner zones: Between residential units
- Northern garden: Extended green space
- Southern park: Larger open space

Outdoor Fitness (Southern Zone)

- Outdoor fitness equipment
- Jogging/walking track
- Stretching area

Children's Playground (Northern Zone)

- Age-appropriate play equipment
- Sandbox
- Seating for parents

7.4 Underground Channels

Each residential unit is connected to the center through 3 underground channels:

1. Power channel: Microgrid connection (bidirectional)
2. Water channel: Fresh water supply
3. Data channel: Fiber optic for internet and communication

8. Sustainability & Environmental Aspects

8.1 Energy Autonomy

- 100% renewable energy (photovoltaic)
- No connection to public power grid required
- CO_2 savings: ~15-20 tons/year (vs. grid electricity)
- Battery storage enables 24/7 supply

8.2 Water Independence

- Own water supply through deep well
- No connection to public water network needed
- Rainwater utilization for garden irrigation
- Greywater recycling reduces fresh water demand

8.3 Modular Construction

- Reuse of shipping containers
- Reduction of construction waste
- Fast construction time (3-6 months)
- Expandability and adaptability
- Fully dismantleable and relocatable if needed

8.4 Green Spaces & Biodiversity

- ~50% of total area as green spaces
- Native planting promotes local biodiversity
- No surface sealing except paths and buildings
- Natural infiltration of rainwater

9. Economic Analysis

9.1 Investment Costs (Estimate)

Item	Cost (EUR)
Land (5,000 m²)	Acquired ✓
12 container modules (incl. conversion)	180,000 - 240,000
Central building	50,000 - 80,000
Photovoltaics & battery storage	120,000 - 180,000
Deep well & water treatment	20.000 - 30,000
Infrastructure (paths, channels, greenery)	30,000 - 50,000
Planning, permits, miscellaneous	20.000 - 40,000
Total investment (estimated)	**420.000 - 620.000**

9.2 Operating Costs

Due to energy and water self-sufficiency, running costs are significantly lower than conventional residential settlements:

- No electricity costs (100% self-production)
- No water costs (own well)
- PV system maintenance: ~500-1.000 €/year
- Water treatment maintenance: ~300-500 €/year
- Building maintenance: ~2-3% of investment/year

10. Roadmap & Timeline

Phase 1: Completed ✓

- **Pre-Seed funding: €100,000 secured**
- **Land acquisition: 5,484 m² acquired (Land Registry No. 5258 & 5259, Vlaška/Mladenovac) + 20,000+ m² extension areas (sole ownership 1/1, unencumbered)**
- Concept development and technical planning
- Site analysis and feasibility study

Phase 2: In Planning (Q2-Q4 2026)

- Building permit and official approvals
- Detailed infrastructure planning
- Tender and award
- Seed funding round (optional)

Phase 3: Construction Phase (2027)

- Site development
- Deep well drilling
- Installation of underground channels
- Construction of central building
- Setup and conversion of container modules
- Installation of PV systems and battery storage
- Creation of paths and green spaces

Phase 4: Commissioning (2027/2028)

- Test runs of all systems
- Calibration of Energy Management System
- Ready-to-occupy handover of residential units
- Resident move-in and community building

11. Conclusion

EKO-Village-inBox is a fully funded, real project with concrete technical specifications and a clear implementation plan.

Project Status: Implementation

✓ Funded: €100,000 Pre-Seed capital

✓ Land secured: 5,484 m² (Land Registry 5258 & 5259, Vlaška/Mladenovac) + 20,000+ m² extensions, sole ownership 1/1, unencumbered

✓ Technically mature: Detailed planning completed

→ Next step: Building permit and implementation

Core Advantages

- **100% energy self-sufficiency through microgrid system**
- **Complete water independence**
- **Modular, flexible construction**
- **Community-oriented living**
- **Ecologically sustainable and CO_2-neutral**
- **Low operating costs**

EKO-Village-inBox combines technological innovation with ecological responsibility and creates a future-proof, autonomous living space for a modern community.

Contact & Further Information

EKO-Village-inBox Project
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