



Energy Efficiency Trends vs. Energy Poverty in SE Europe

A Comparative Analysis (2022–2025) with attention to Serbia

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Introduction – Why This Matters

- **SE Europe** faces a dual challenge:
 - Improving **energy efficiency** to meet EU climate goals
 - Addressing **energy poverty** affecting vulnerable populations
- **Key drivers of energy poverty:**
 - High energy costs relative to income
 - Inefficient housing stock
 - Reliance on traditional fuels (wood, coal)
 - Geographic disparities (rural vs. urban)
- **EU Alignment:** European Green Deal, REPowerEU, Energy Efficiency Directive (2023/1791/EU)

Energy Efficiency – Regional Overview



Country	Key Policy Highlights
Albania	NECP 2023–2030: 42% RES target, 11.5% CO ₂ reduction; World Bank \$120M loan
BiH	€2.41M Revolving Fund; new energy laws (2023); NECP in finalization
Bulgaria	Updated NECP (2024); Energy Efficiency Act; nuclear expansion plans
Croatia	Updated NECP (2023); self-consumption amendments
Cyprus	NECP: 31–34% RES by 2030; 93.5% solar thermal adoption
Greece	NECP: 82% RES in electricity by 2030; €1.5B "Saving at Home" program
Hungary	NECP: 0.8% annual consumption reduction; carbon neutrality by 2050
Israel	Climate Law (2023): 30% GHG reduction by 2030; €24.3M efficiency investment
Kosovo	National Energy Strategy 2022–2031: 35% RES by 2031
Montenegro	NECP finalization; €13M EU support; Energy Efficient Home Project
North Macedonia	Energy Efficiency Fund (2023); Green Financing Facility (2024)
Romania	National Energy Strategy 2025–2035; biomethane plant; price caps extended
Serbia	Eco-design regulations; INECP with 46 efficiency measures
Slovenia	NECP: 35% efficiency improvement, 27% RES by 2030
Turkey	Energy Efficiency 2030 Strategy; \$20B investment target



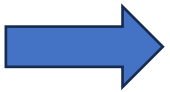
Energy Poverty – Regional Overview (Part 1)



Country	Poverty Rate / Affected Population	Key Challenges
Albania	~30% below national poverty line	High electricity/heating costs; solid fuel use
BiH	~15% households poor	Rising energy prices; coal reliance; no national strategy
Bulgaria	15–20% in energy poverty	Coal reliance; inefficient infrastructure; low incomes
Croatia	10–15% affected	Energy-inefficient housing; rural disparities
Cyprus	19% in vulnerable households	High cooling costs; poorly insulated homes
Greece	20–30% affected	Economic crisis; high unemployment; rising prices
Israel	Low-income & marginalized groups	High energy costs; unequal access to renewables
Kosovo	~20% below poverty line	Chronic shortages; coal reliance; low efficiency

Energy Poverty – Regional Overview (Part 2)

Country	Poverty Rate / Affected Population	Key Challenges
Montenegro	Significant, especially rural	High heating costs; wood/coal reliance; untargeted subsidies
North Macedonia	~23% affected	Rising prices; old buildings; rural fuel reliance
Romania	~23% affected	Low-income households; rural fuel use; inefficient housing
Serbia	Low-income & rural groups	Coal dependence; subsidized but unaffordable prices
Slovenia	10–12% affected	Rural disparities; rising prices; fossil fuel dependence
Turkey	Millions affected	Inflation >65%; rising prices; rural/urban disparities



Comparative Analysis: Efficiency Leaders vs. Poverty Hotspots



High Efficiency, Lower Poverty:

- **Slovenia:** Strong NECP, 25.07% RES achieved, 10–12% poverty
- **Croatia:** Updated NECP, 10–15% poverty
- **Cyprus:** 93.5% solar thermal, 19% vulnerable households

Moderate Efficiency, High Poverty:

- **Greece:** Ambitious NECP (82% RES), but 20% poverty
- **Bulgaria:** NECP updates, but 20-30% poverty
- **Romania:** New strategy, but ~23% poverty

Low Efficiency, Severe Poverty:

- **Kosovo:** 35% RES target by 2031, ~20% below poverty line
- **BiH:** NECP pending, ~15% poor, no national poverty strategy
- **Serbia:** NECP prepared, slow progress, rural poverty

Key Findings: The Efficiency-Poverty Gap



1. Policy ambition $\neq$ immediate poverty reduction

- Countries with strong NECPs still face high energy poverty

2. Heating costs are the primary driver

- Cold climates (Montenegro, Serbia, Kosovo) rely on inefficient fuels

3. Subsidies are often insufficient or poorly targeted

- Vulnerable groups (elderly, rural, low-income) remain underserved

4. Housing stock is a critical barrier

- Old, poorly insulated buildings drive up costs and consumption

5. Data gaps hinder progress

- Limited quantitative data on industrial efficiency and poverty metrics

Serbia Heating Fuel Price Comparison (2023–2025)



Fuel Type	2023	2024	2025	Trend
Diesel (retail, RSD/Liter)	~190–208	~193–199	~186–201	 Modest rise after 2023 peak
Firewood (chopped, RSD/m ³)	~9,000	~5,400–9,000	~6,500–9,000	 Dropped in 2024, stabilizing
Natural Gas (household, RSD/kWh)	~6.6 (Dec peak)	~5.6–6.4	~4.87–5.8	 Peaked late 2023, then fell

Detailed Data for Energy Fuels in Serbia 2023-2026



Diesel

- **2023:** Retail prices ranged **190–208 RSD/liter** under government price caps, with eurodiesel max at 208 RSD and min at 190 RSD
- **2024:** Prices stabilized around **193–199 RSD/liter**; June 2024 saw eurodiesel at 199 RSD
- **2025–2026:** Prices climbed to **214–231 RSD/liter**; by August 2026, diesel reached **231 RSD/liter**, up **19.7%** year-on-year

Key feature: Government regulates maximum retail prices, creating a flat price line

Firewood (Heating)

- **2022/2023 season:** Wood chip prices spiked to **180 EUR/ton** (up from 75–90 EUR prior)
- **2023:** Oak/beech firewood around **9,000 RSD/m³**; chopped beech and oak cost **9,300–10,000 RSD/m³**
- **2024:** Prices dropped **20–25%**, with some areas (South Banat) as low as **5,500 RSD/m³**
- **2025:** Stabilized around **6,430–9,000 RSD/m³** depending on region; Čačak area beech at **7,500 RSD/m³** (uncut) and **8,500 RSD** (chopped)

Key feature: About **half of Serbian households** still rely on firewood for heating, though demand is shifting to gas and pellets

Natural Gas (Household Consumers)

- **2023 (Dec):** Peak price of **0.057 EUR/kWh** (including all taxes and levies), the historical high
- **2024:** Prices began declining; **0.054–0.055 EUR/kWh** range
- **2025:** Further decline to **0.054 EUR/kWh** (including all taxes) for small consumers; AERS reported **4.87 RSD/kWh** for small consumption category including households

Key feature: Natural gas prices for public supply **did not change throughout 2025**; regulated by AERS (Agencija za Energetiku Republike Srbije)

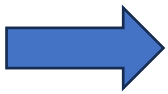
Industrial Energy **Efficiency**: 2000–2022 Trends

Country	Efficiency Improvement	Key Highlights
Greece	-2.4%/yr; -42% energy use	3.2 Mtoe savings in 2022
Bulgaria	-22% total; 2.7 Mtoe saved	SME-level projects (~100 MWh)
Romania	-3.3%/yr; -52% since 2000	~5.4 Mtoe total savings
Slovenia	Notable improvements	36–52% savings range
Turkey	Data too general	Targeted reporting needed
Serbia	Promising potential	Waste heat, engine upgrades; unquantified



Industrial Output Trends (2022–2025)

Country	Key Trends
Greece	2024: +5.2%; early 2025 volatile (+1.7% to -2%)
Bulgaria	Data not available
Romania	2023: -4.9%; May 2025: +3.7% rebound
Serbia	Quantitative data unavailable
Turkey	May 2025: +4.9%; PMI near stabilization
Slovenia	Sharp decline 2023 (~-10%); partial stabilization 2024



Common Themes in Energy Poverty



- **Energy affordability** – central issue across all countries
- **Heating** – significant concern in colder climates
- **Subsidies** – exist but often insufficient/poorly targeted
- **Energy efficiency** – major challenge due to old housing stock
- **Vulnerable groups** – elderly, low-income families, rural communities

Drivers of Energy **Poverty** in SEE



- 1. High heating costs** – winter months, inefficient systems
- 2. Rising energy prices** – market reforms, global crises
- 3. Energy inefficiency** – old buildings, outdated appliances
- 4. Vulnerable populations** – elderly, low-income, rural
- 5. Economic inequality** – limits upward mobility (World Bank)

Policy Responses – What's Working?



Measure	Examples	Effectiveness
Social tariffs/subsidies	Greece, Bulgaria, Slovenia	Helpful but insufficient
Energy efficiency programs	Greece "Saving at Home", Romania Renovation	Positive but slow
Smart metering	Albania, North Macedonia, Turkey	Promising for management
Energy cooperatives	Albania, Bulgaria, Croatia	Community empowerment
Regulatory reforms	Croatia, Romania, Serbia	Ongoing, mixed results
EU/IFI funding	WB, EIB, EU Support Packages	Critical but needs absorption

Challenges & Gaps

- **Implementation delays** – bureaucracy, absorption rates (~60% in Greece)
- **Inflation impact** – rising construction costs affect budgets
- **Data scarcity** – limited post-2022 data, especially for industry
- **Targeting issues** – subsidies not always reaching most vulnerable
- **Structural barriers** – outdated infrastructure, coal dependence
- **Policy-poverty disconnect** – ambitious NECPs don't immediately reduce poverty

Recommendations

1. **Strengthen targeting** of energy subsidies to vulnerable groups
2. **Accelerate building renovations** – prioritize low-income households
3. **Expand smart metering** – empower consumers to manage consumption
4. **Enhance data collection** – especially industrial efficiency and poverty metrics
5. **Integrate energy poverty into NECPs** – explicit goals and monitoring
6. **Leverage EU/IFI funding** – improve absorption capacity
7. **Promote energy cooperatives** – community-level solutions
8. **Address root causes** – economic inequality, rural infrastructure

Conclusion



- **SE Europe** has made progress in energy efficiency policy, with strong NECPs and EU alignment
- **However**, energy poverty remains widespread, affecting 10–30% of populations in many countries
- **Key gap:** Policy ambition vs. “on-the-ground” impact
- **Way forward:** Integrated approach combining efficiency, social protection, and targeted support
- **Long-term goal:** Sustainable, affordable, and equitable energy transition for all

References

- IEA Energy Efficiency 2024
- EU Directives: 2012/27/EU, 2018/2002/EU, 2023/1791/EU
- World Bank, WBIF, UNESCAP
- National Energy and Climate Plans (NECPs) – various countries
- ODYSSEE-MURE Country Profiles
- Energy Community Secretariat
- National government reports and strategies

Thank you for your attention!

