

# Serbia and RES heating

Aleksandar Macura, RES Foundation, Sofia, 21st June 2022

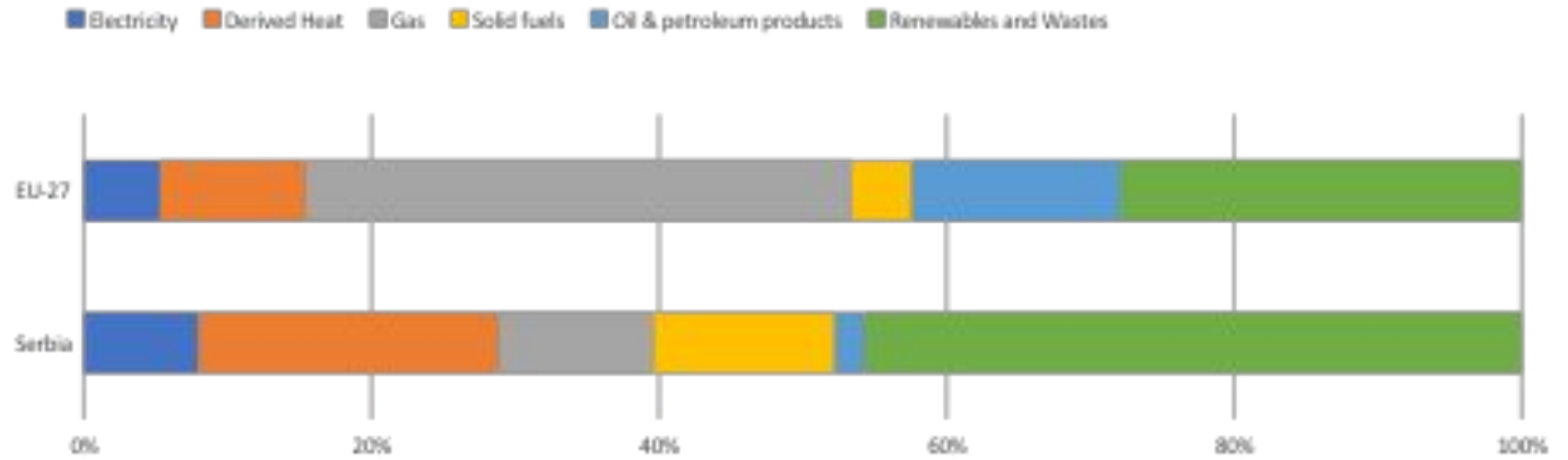
## Buildings in Serbia

Total floor area	Occupied floor area	Individual households IHs		Multi-apartment buildings MABs	
		Share of IHs	Occupied floor area	Share of MABs	Occupied floor area
m <sup>2</sup>	m <sup>2</sup>	%	m <sup>2</sup>	%	m <sup>2</sup>
230,518,414	179,703,282	67.5%	121,299,715	32.5%	58,403,567

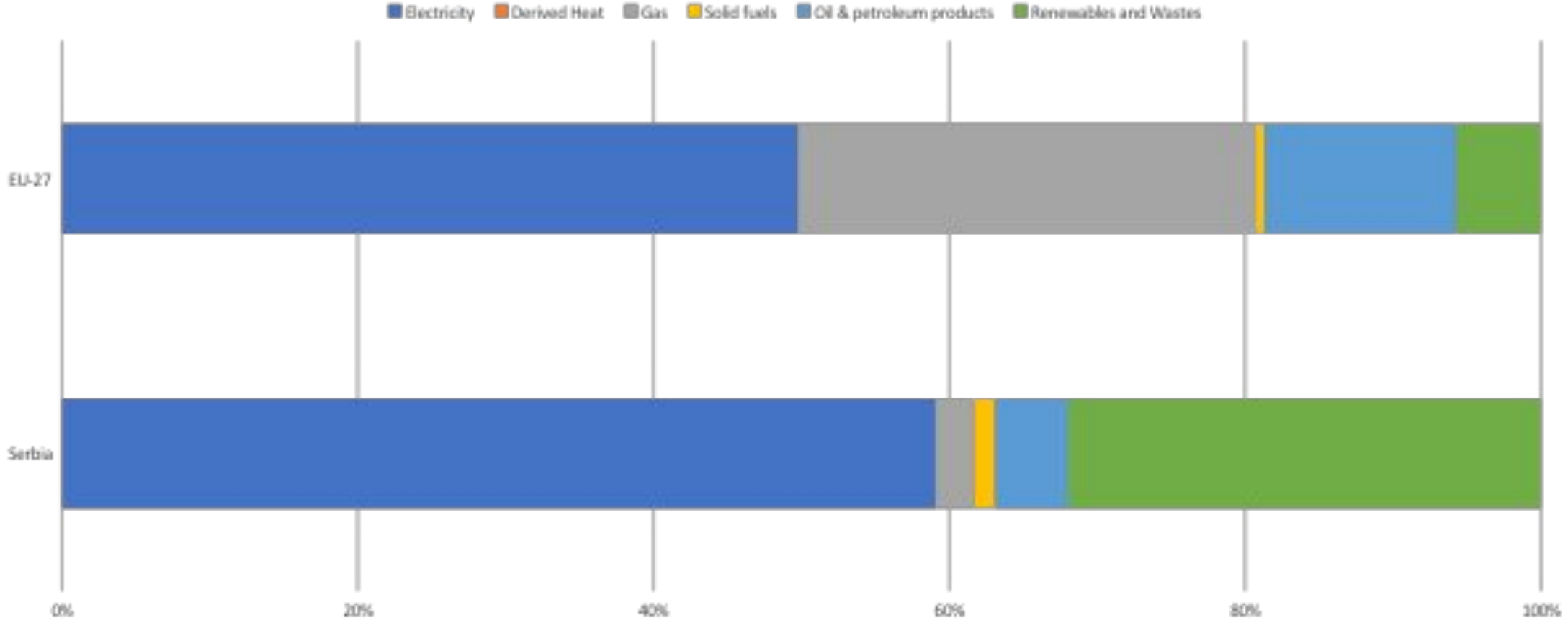
# Renovation scenarios

Period of renovation	Annual renovation rate	Cumulative renovation rate
Already renovated	1.0%	1.0%
2022	2.0%	3.0%
2023	2.0%	5.0%
2024	2.0%	7.0%
2025	3.0%	10.0%
2026	3.0%	13.0%
2027	3.0%	16.0%
2028	3.0%	19.0%
2029	3.0%	22.0%
2030	3.0%	25.0%
2031	3.5%	28.5%
2032	3.5%	32.0%
2033	3.5%	35.5%
2034	3.5%	39.0%
2035	3.5%	42.5%
2036	3.5%	46.0%
2037	3.5%	49.5%
2038	3.5%	53.0%
2039	3.5%	56.5%
2040	3.5%	60.0%
2041	4.0%	64.0%

# Heating



# Cooking



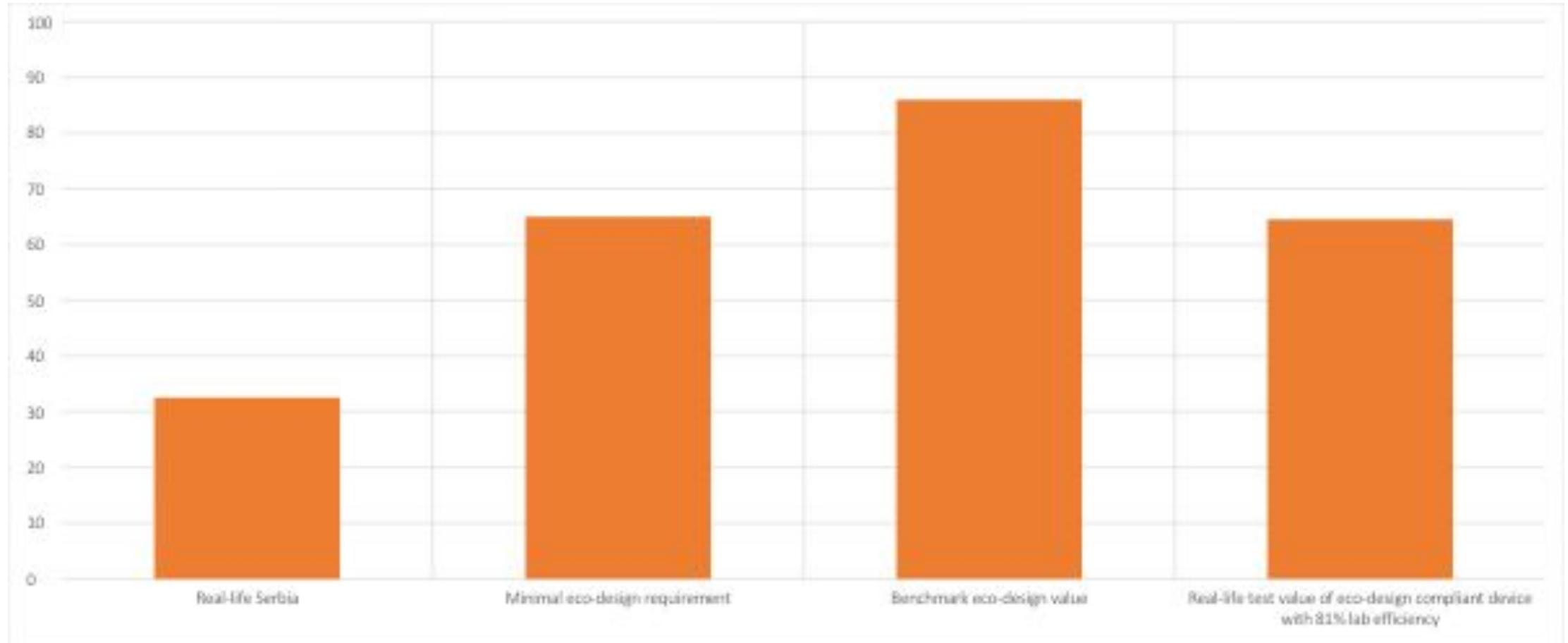
# Main heating devices

Serbia	
Wood or coal stove	39.9
Room wood or coal heater	5.6
Pellet boiler	4.0
Wood or coal boiler	16.0
Gas heater	9.6
District heating via heating plant	17.9

# Investing in the past- inefficient devices

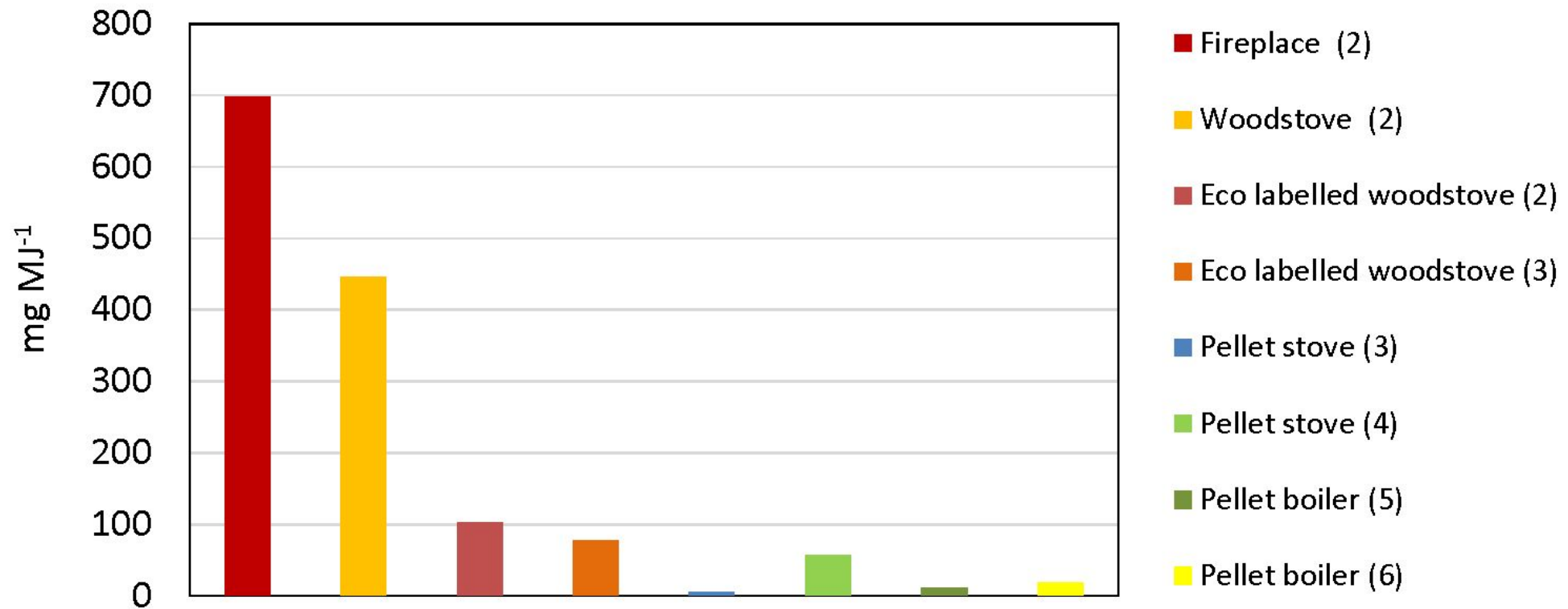
- 56450 annual sales of technologically outdated devices
- 16 million EUR
- ECODESIGN DIRECTIVE

# Wood stoves efficiency





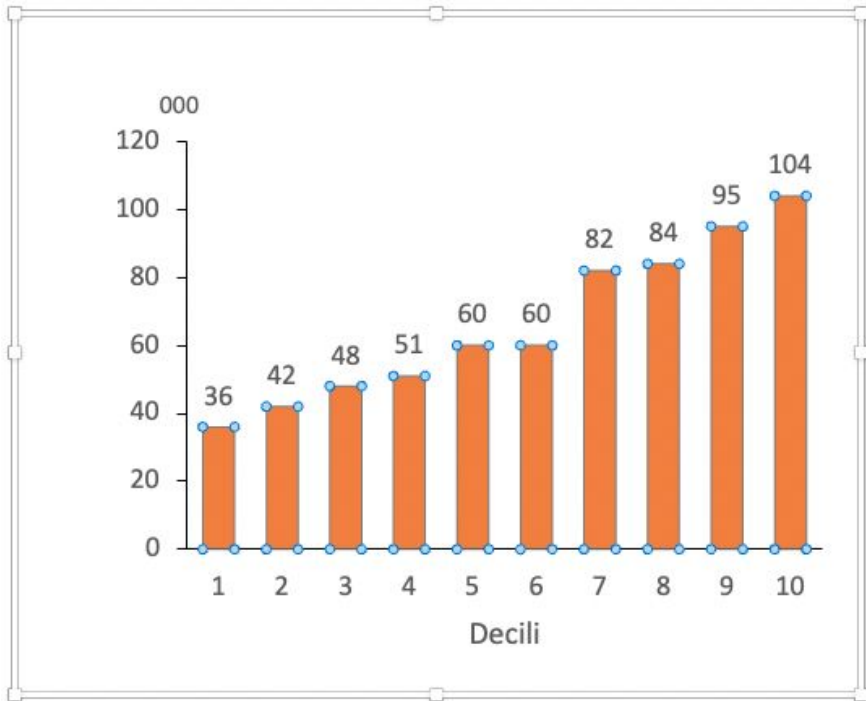
# Wood stove emissions



# Levelised costs of heat (calc. from 21)

	Investment cost- equipment, and installation	Fixed operation and maintenance costs	Lifetime estimation	Fuel/energy carrier price assumption	Levelized cost of heat
	(EUR)	(EUR/a)	(years)	(EUR/MWh)	(EUR/MWh)
Eco-design compliant wood cooker	670	25	20	27	51.81
Eco-design compliant pellet stoves	1,200	30	20	40	63.41
Direct electrical heating	750	0	20	120	192.34
Thermal accumulation heater	1,000	0	20	50	87.01
Air-to-air heat pump	1,700	40	12	90	56.53
District heating annual costs Belgrade					83.3

# Decile analysis



	Fuel wood	kWh electricity	Useful heat(kWh)	Average surface	Median expenditures for energy (EUR)	Median share of energy expenditures
Decile 1	3.5	1630	2608	64	306	34
Decile 2	4.1	1902	3043	68.1	357	19
Decile 3	4.7	2174	3478	71.3	408	16
Decile 4	5.0	2309	3695	71.6	434	15
Decile 5	5.9	2717	4347	76.9	510	13

# Difficulties (from 2021)

- 90% of households pay their housing costs with difficulties or with extreme difficulties

# Unexpected costs (SILC survey)

- Over 30% households cannot meet unexpected costs in the amount of 110 EUR.

# Support schemes

- Ministry of environment- reduction of pollution from individual heating: 2 M EUR in 2021 and 2022.
- Solely dedicated to heating and energy efficiency of housing stock. Via local self governments. Level of co-financing by LSGs and end users not pre-set.
- Ministry of energy-energy efficiency, PV, broader set of measures. 9.5MEUR in 21 and 22.
- Via local self governments. Level of co-financing by LSGs and end users pre-set for end users (not less than 50%). LSGs compete (in the first round it was set)

# Scheme administratio n

Dokumenta koja se podnose	Niš	Kraljevo	Novi Pazar	Užice	Priboj	Kosjerić
obrazac	✓	✓	✓	✓	✓	✓
izjava o podacima o ličnosti			✓			✓
saglasnost za služ. dužnost		✓				✓
izjava o načinu grejanja			✓		✓	✓
izjava o stanju stolarije			✓			
izjava o stanju fasade			✓			
izjava o tačnosti podataka				✓		✓
izjava da podnosilac stanuje na lokaciji					✓	
izjava o naslednom redu					✓	
izjava o neotuđenju za 5 god.					✓	
lična karta vlasnika	✓	✓	✓	✓	✓	✓
građevinska dozvola	✓	✓	✓	✓		✓
dokaz o legalnosti	✓	✓	✓			✓
potvrda o postupku ozakonjenja						✓
izvod iz lista nepokretnosti		✓	✓	✓	✓ (sajt)	✓
rešenje o porezu	✓	✓ (po službenoj dužnosti)	✓ (po službenoj dužnosti)	✓ (po službenoj dužnosti)	✓ (po službenoj dužnosti)	✓ (po službenoj dužnosti)
predračun	✓	✓	✓	✓	✓	✓
dokaz o prebivalištu članova						✓ (po službenoj dužnosti)
dokaz o standardu kotla		✓				
potvrda o nemogućnosti priključenja	✓	✓ (po službenoj dužnosti - toplana)	✓	✓ (po službenoj dužnosti - toplana)	✓ (po službenoj dužnosti - toplana)	

# Support to vulnerable groups Priboj

