Implemented by

STRATEGIJA OBNOVE ZGRADA U REPUBLICI SRPSKOJ

ENEF 2019.

ANALIZA POSTOJEĆEG FONDA ZGRADA

- **Stambene zgrade**
  - SLOBODNOSTOJEĆE KUĆE
  - KUĆE U NIZU
  - MANJE STAMBENE ZGRADE
  - STAMBENE ZGRADE U NIZU
  - VELIKI STAMBENI BLOKOVI
  - NEBODERI
- **Nestambene zgrade**
  - JAVNE ZGRADE
    - PREDŠKOLSKI ODGOJ
    - OBRAZOVANJE
    - ZDRAVSTVO
    - SPORT
    - ADMINISTRACIJA
    - CJELODNEVNI BORAVAK
  - KOMERCIJALNE ZGRADE
    - HOTELI I RESTORANI
    - VELEPRODAJA I MALOPRODAJA
    - POSLOVNE PRIVATNE ZGRADE

Tipologija stambenih zgrda u BIH

Tipologija stambenih zgrda u BIH

Ukupan broj domaćinstava je oko 1.03 miliona ali je ovaj broj korigovan da se dobiju tačniji podaci iz Tipologije.

Uvijek se odvojeno posmatraju individualne kuće u odnosu na zgrade kolektivnog stanovanja (ZKS)

Br.	Individualne kuće		ZKS				
	SH	TH	MH	AB1	AB2	H	Ukupno
Up_to_1945	10023	514	723	550	0	17	11827
1946-1960	25400	697	8912	3089	5321	193	43611
1961-1970	91687	2346	16148	5639	14717	1669	132205
1971-1980	203140	3271	16893	6050	31709	1833	262896
1981-1991	254945	6330	3851	3121	12715	226	281187
1992-2014	253085	3252	18719	4296	18505	127	297984
Total	838279	16410	65247	22744	82967	4064	1029711

Tipologija stambenih zgrda u BIH

Ukupne površine koje "pokrivaju" gore navedena domaćinstva raspoređeni po tipovima zgrada odnosno stambenim jedinicama:

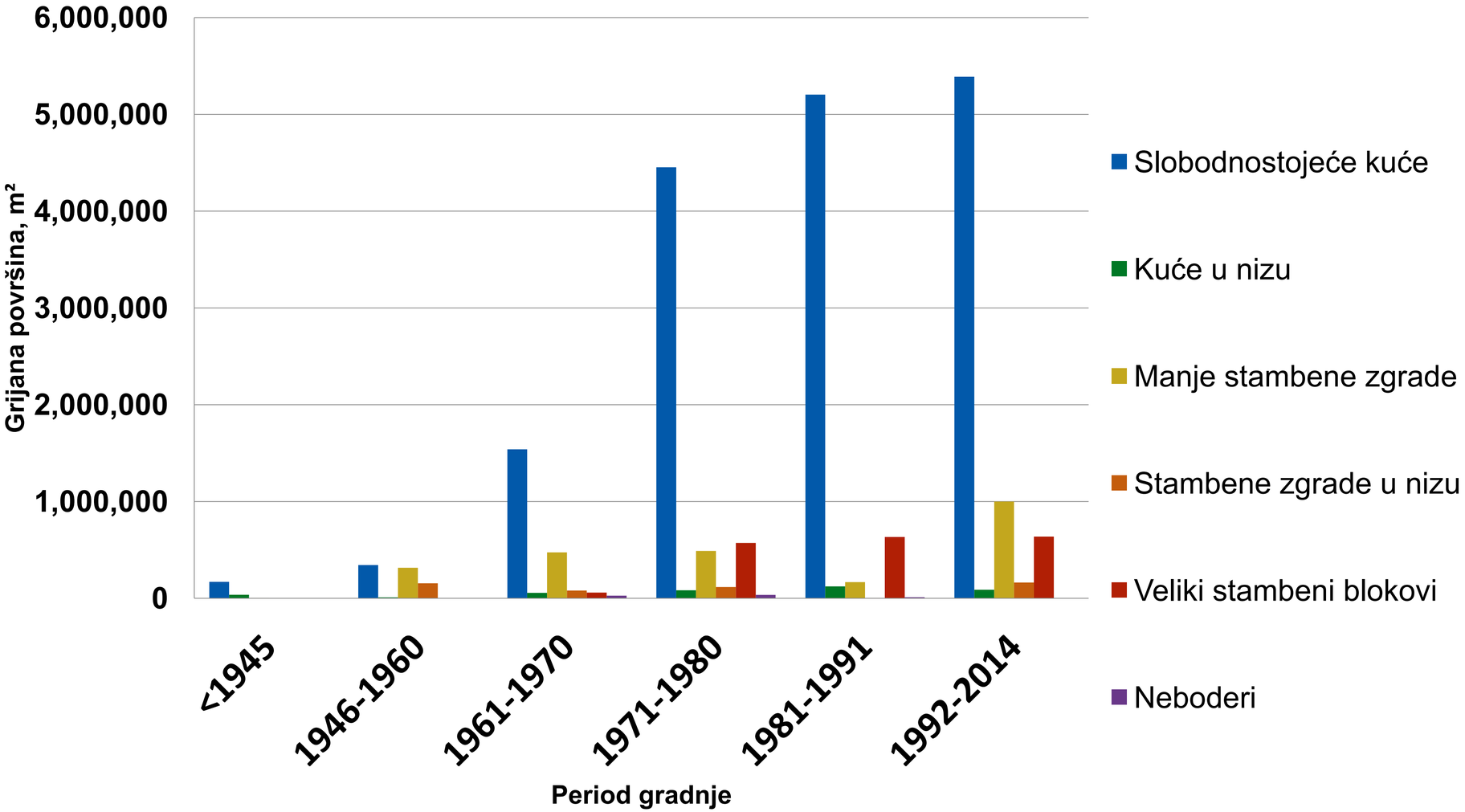
m2	Individual nekuće		ZKS				
	SH	TH	MH	AB1	AB2	H	Ukupno
Up_to_1945	475,293.92	56,867.79	82,515.98	94,968.36	-	-	709,646.06
1946-1960	1,154,282.70	73,453.93	803,271.36	341,444.70	638,486.89	-	3,010,939.57
1961-1970	4,473,211.35	435,007.09	1,559,774.58	584,347.00	1,529,334.16	237,857.41	8,819,531.58
1971-1980	13,080,507.38	611,691.11	1,757,296.82	-	4,290,304.01	239,866.67	19,979,665.98
1981-1991	18,751,828.36	1,068,134.61	513,501.56	567,361.21	1,606,764.01	-	22,507,589.76
1992-2014	20,893,008.56	-	2,285,731.71	414,861.67	1,567,525.90	-	25,161,127.84
Sum	58,828,132.26	2,245,154.53	7,002,092.02	2,002,982.94	9,632,414.97	477,724.08	80,188,500.80

ANALIZA FONDA STAMBENIH ZGRADA

- Ukupan broj stambenih jedinica u Republici Srpskoj iznosi 584.261, od toga se stalno koristi 419.800

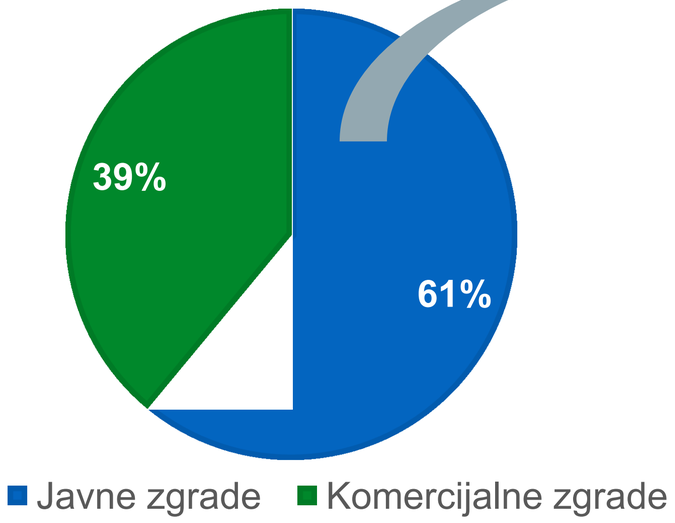
- Ukupna površina stambenih jedinica iznosi 40.641.416 m², od toga površina stalno korištenih stambenih jedinica iznosi 33.738.979 m²

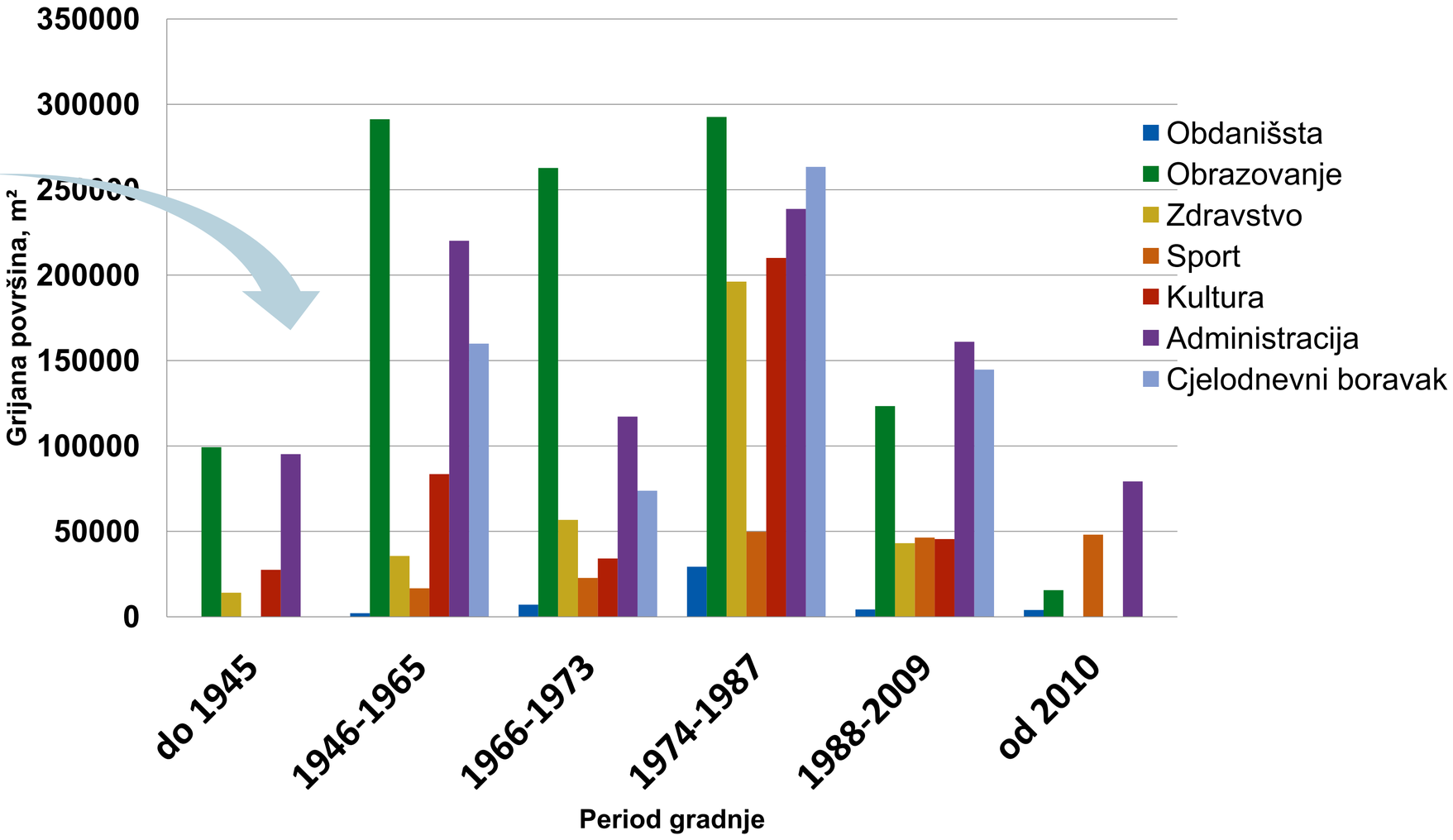
GRIJANA POVRŠINA STAMBENIH ZGRADA



GRIJANA POVRŠINA NESTAMBENIH ZGRADA

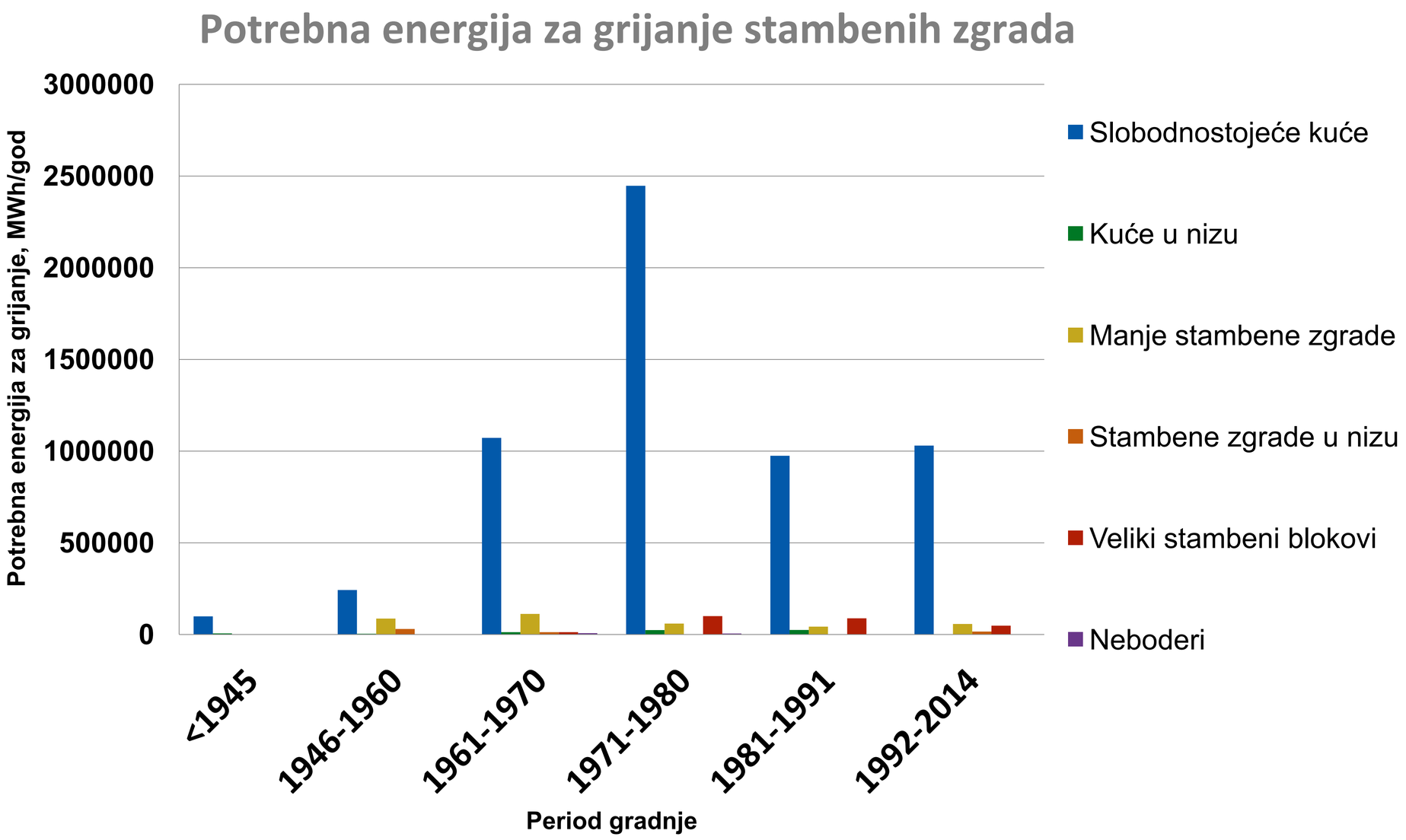
- Ukupna površina nestambenih zgrada u RS iznosi 5.890.000 m²





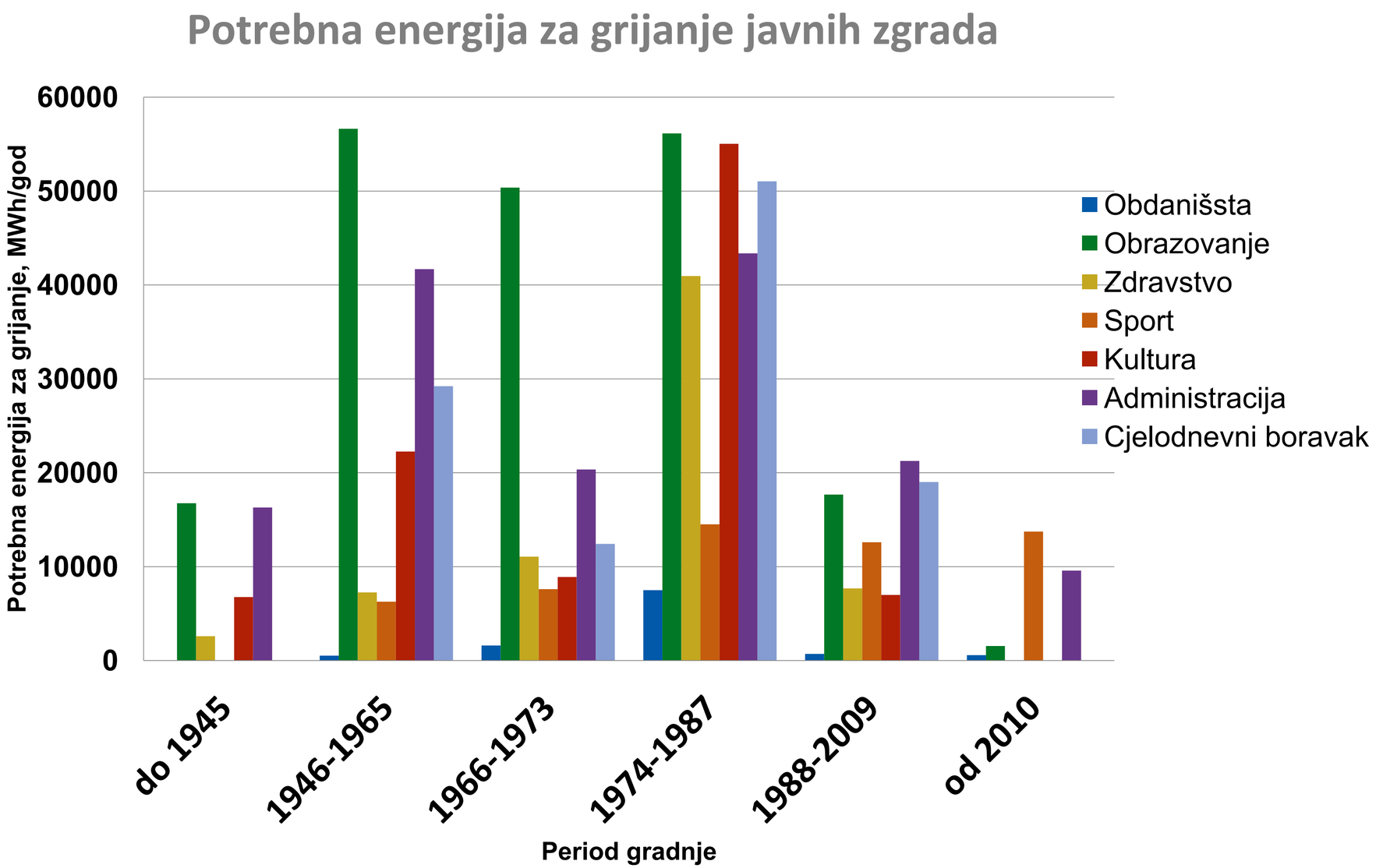
ENERGETSKE POTREBE STAMBENIH ZGRADA

- Potrebna toplotna energija za grijanje – 6.618.700 MWh
- Na osnovu specifične energije za grijanje i površine stambenih jedinica koje su u stalnoj upotrebi



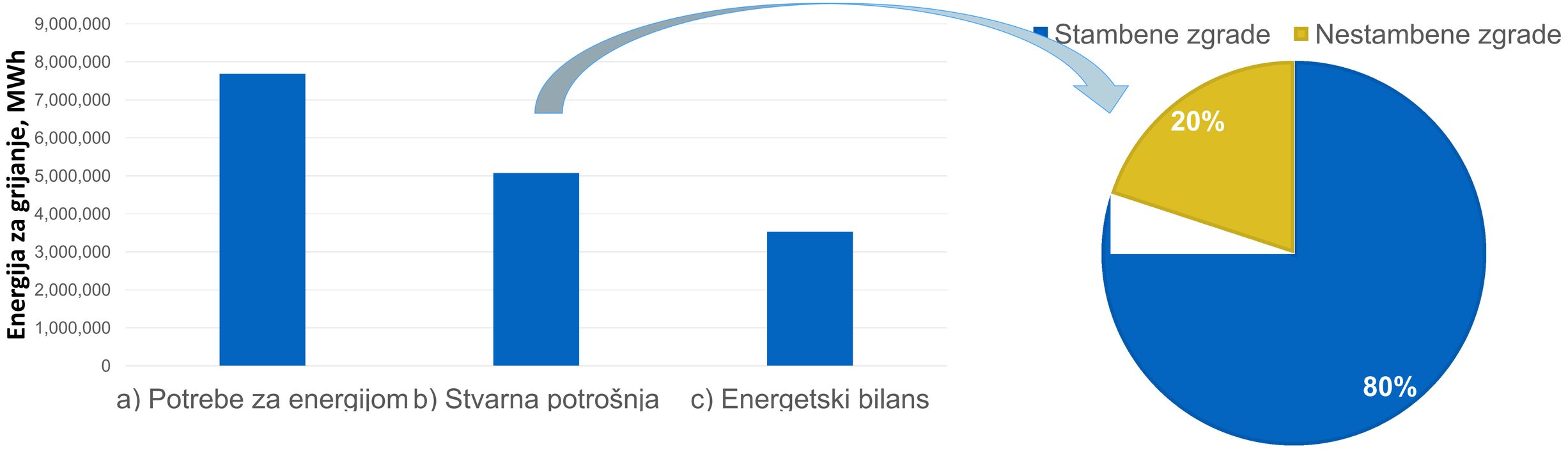
ENERGETSKE POTREBE NESTAMBENIH ZGRADA

- Godišnja potrebna toplotna energija za grijanje nestambenih zgrada u RS - 1.067.090 MWh
- 65% javne zgrade i 35% na komercijalne zgrade.

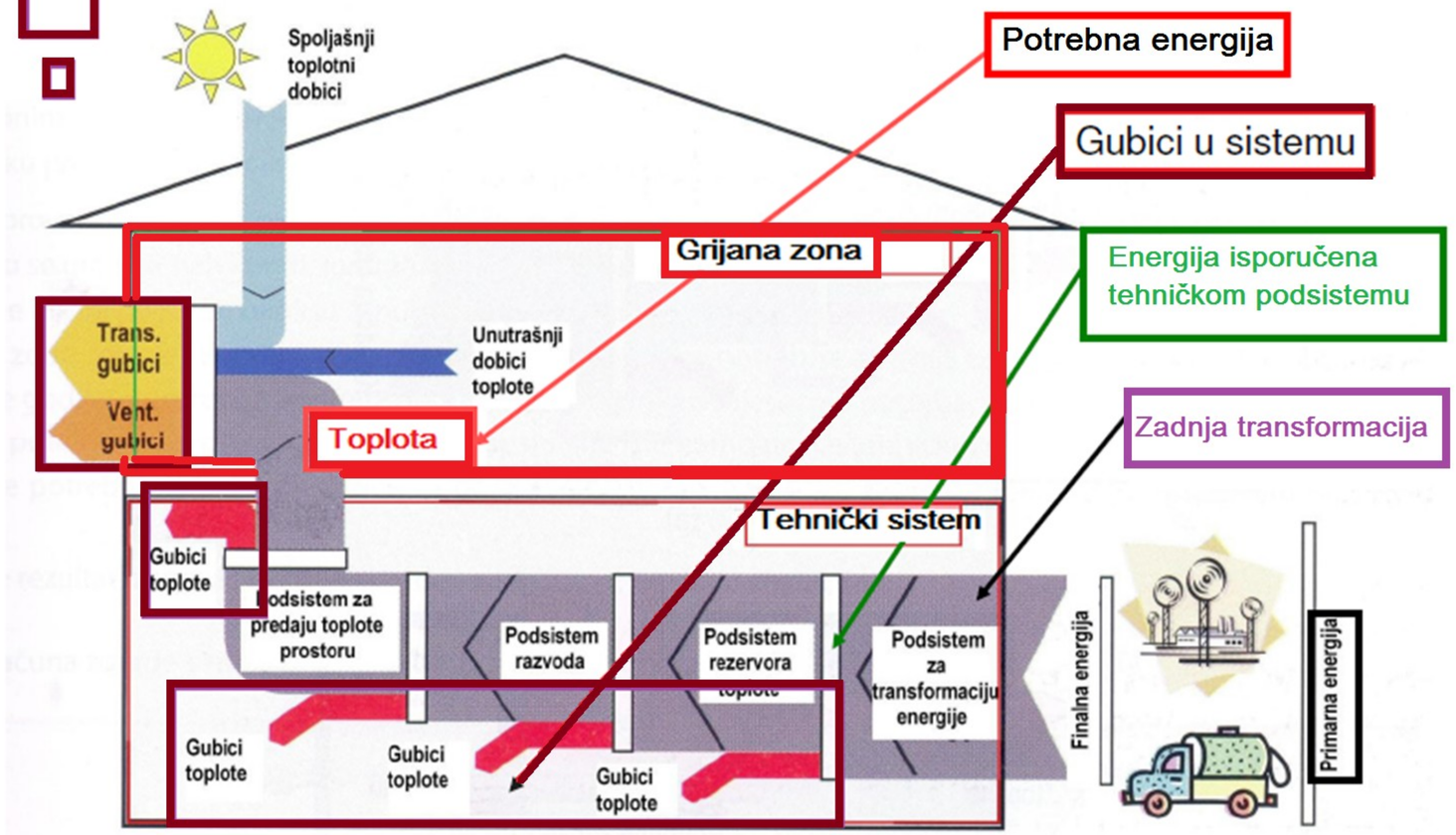


STVARNA POTROŠNJA ENERGIJE ZA GRIJANJE

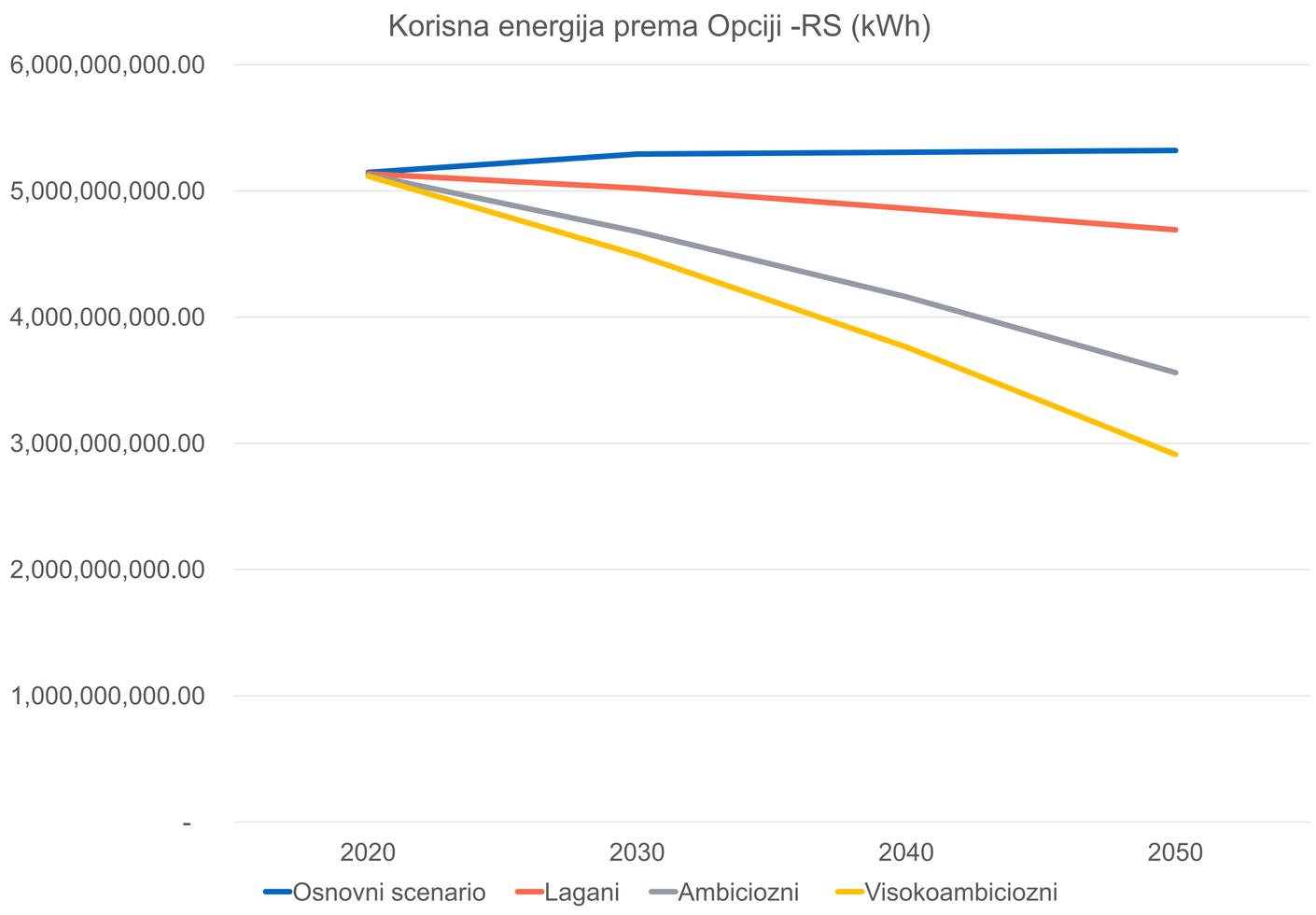
- Ukupna grijana površina stambenih zgrada u RS iznosi od 22.435.720 m², odnosno 66,5% od ukupne stalno korištene površine, odnosno 72% ukupne površine svih zgrada
- Stvarna potrošnja toplotne energije za grijanje stambenog fonda u RS je 4.061.538 MWh
- Na osnovu prosječne grijane površine stanova i specifičnih energija potrebnih za grijanje stambenih zgrada, pod pretpostavkom da su sve stambene jedinice grijane na 20 ^{o}C



Toplotni bilans zgrade – zimski uslovi



EFEKTI IMPLEMENTACIJE SCENARIJA OBNOVE DO 2050

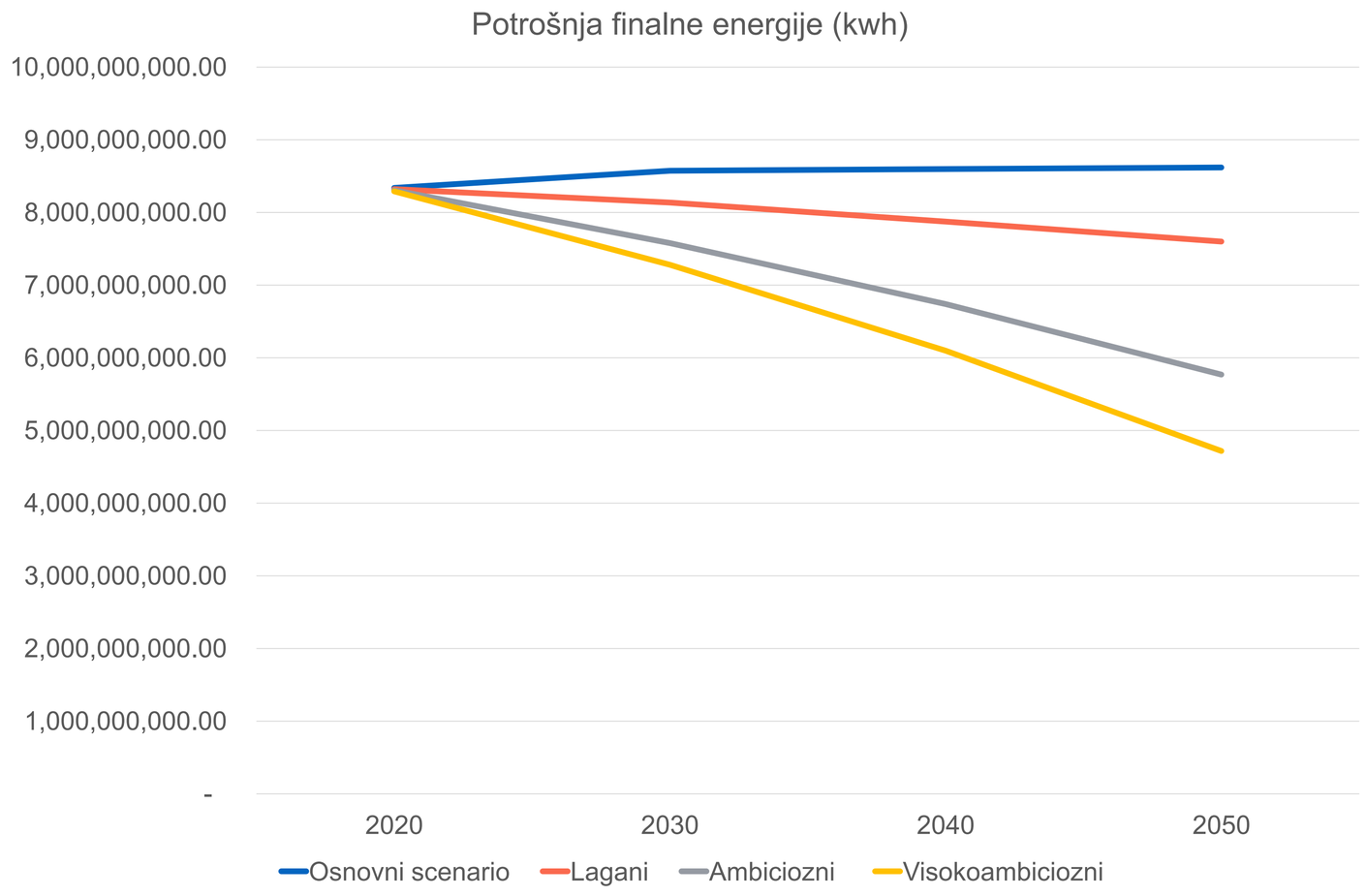


Smanjenje potrošnje energije za grijanje za 35% do 2050.

Smanjenje potrošnje energije za grijanje za 16% do 2050.

Smanjenje potrošnje energije za grijanje za 46% do 2050.

EFEKTI IMPLEMENTACIJE SCENARIJA OBNOVE DO 2050



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SCENARIJI OBNOVE ZGRADA

Polazne pretpostavke

Socijalni aspekt

Razmatrani period

Buduća izgradnja

- Povećanje grijane površine sa 72% na 100%.
- Početak implementacije mjera 2020. godine, do 2050.
- Povećanje površine objekata za 10% do 2050

SCENARIJI OBNOVE ZGRADA

3 scenarija obnove - različiti nivoi ambicija u pogledu buduće obnove, bazirano na 2 parametra:

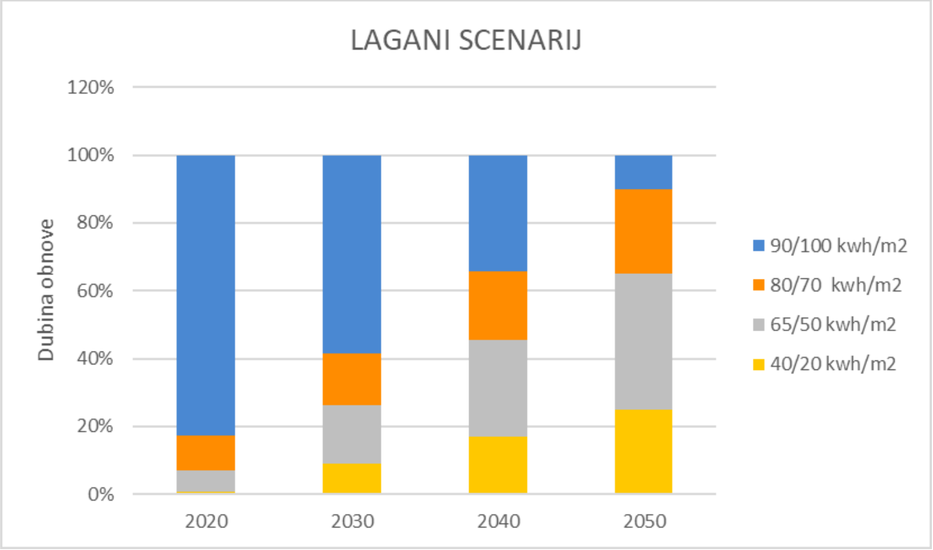
- **Stopa obnove,** definisana je kao postotak korisne podne površine godišnje obnovljenih zgrada podijeljenih s ukupnom korisnom površinom cjelokupnog građevinskog fonda
- **Dubina obnove,** koja upućuje na uštedu energije ostvarenu izborom mjera obnove

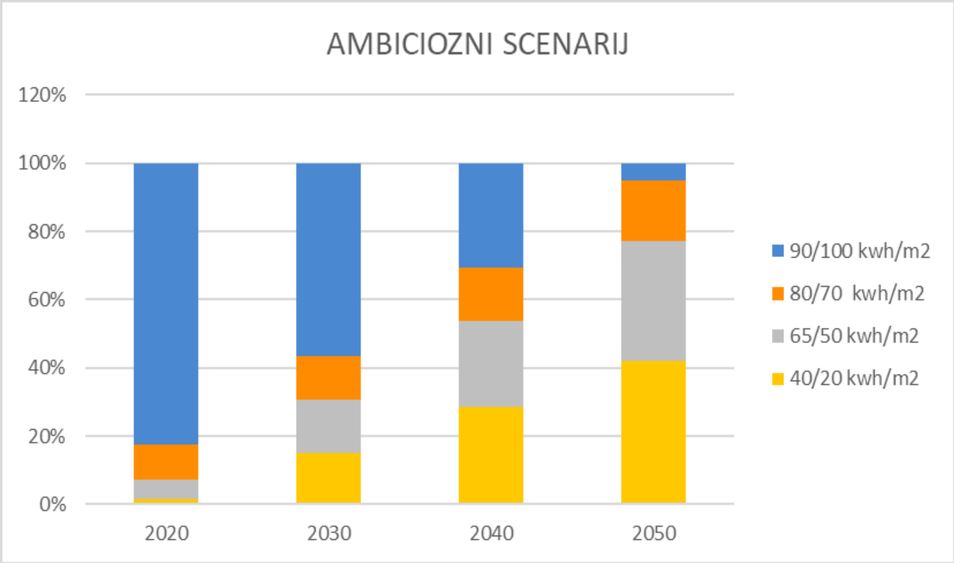
Scenariji obnove	Prosječna stopa obnove	Prosječna dubina obnove
Lagani	1.0%	58%
Ambiciozni	2.2%	61%
Visoko ambiciozni	2.8%	63%

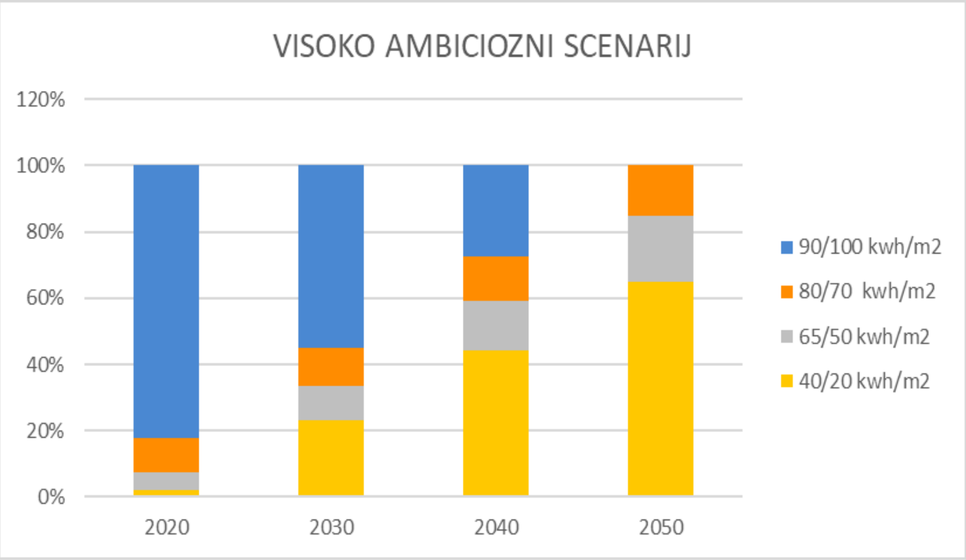
DUBINE OBNOVE ZGRADA

Dubina obnove	Energetski učinak (kWh/m^2)	
	Stambene zgrade	Nestambene zgrade
Veoma duboka/nZEB	40	20
Duboka	65	50
Srednja	80	70
Plitka	90	100

KOMBINACIJE DUBINA OBNOVE U POJEDINIM SCENARIJIMA







PAKETI MJERA OBNOVE ZGRADA

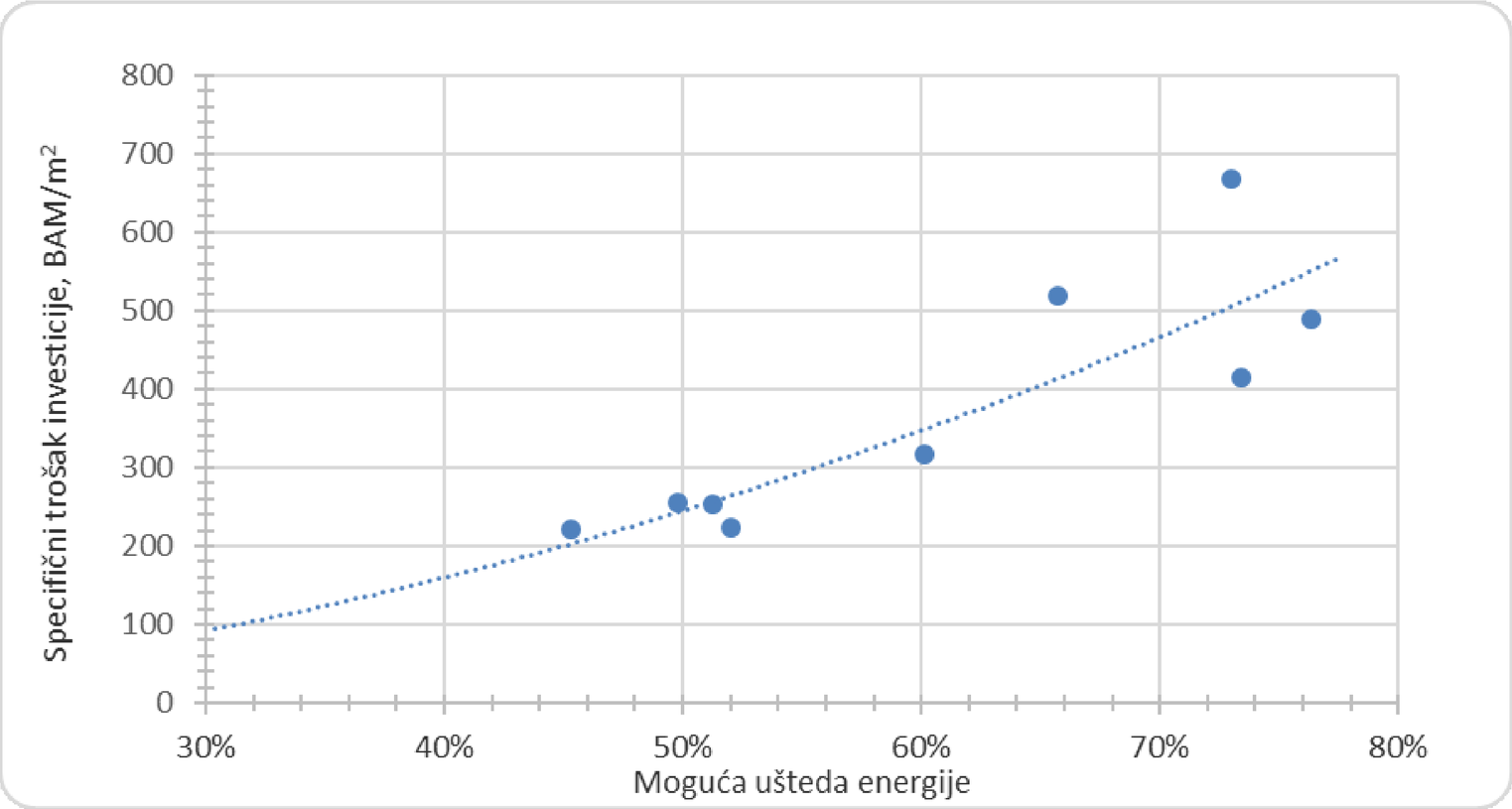
Obnova zgrada podrazumijeva upotrebu različitih kombinacija paketa mjera obnove zgrada.

Svaki paket mjera sadrži tri grupe mjera, i to:

- mjere primijenjene na vanjskoj ovojnici zgrade,
- mjere primijenjene na sistemu grijanja i
- mjere primijenjene na sistemu pripreme potrošne tople vode (PTV).

PROCJENA TROŠKOVA

Bazirano na osnovu podataka prikazanih u troškovno-optimalnoj analizi



UKUPNI TROŠKOVI MJERA U STAMBENOM SEKTORU – ambiciozni scenario RS

Trošak obnove, BAM	2020	2030	2040	2050
90	88,684,638	60,916,454	33,148,270	5,380,086
80	15,949,191	19,961,567	23,973,942	27,986,317
65	11,222,709	29,421,697	47,620,684	65,819,672
40	4,547,359	50,020,944	95,494,530	140,968,116
Ukupno	**120,403,897**	**160,320,661**	**200,237,426**	**240,154,190**
Novi FTE poslovi	5928	7893	9858	11823

OBLIGACIONE ŠEME?

Godina	2020	2025	2030
Obligacione sheme (KM)	53,451,351.00	77,139,309.00	120,182,663.00
FBIH	37,415,945.70	53,997,516.30	84,127,864.10
RS	16,035,405.30	23,141,792.70	36,054,798.90
Učešće obligacionih šema u ukupnim troškovima			
Lagani	27%	37%	56%
Ambiciozni	13%	13%	13%
Visokoambiciozni	10%	10%	10%

EFEKTI IMPLEMENTACIJE SCENARIJA OBNOVE DO 2050

1

Renovirana površina:
30-84%

2

Ušteda energije:
Od 16% do 46%

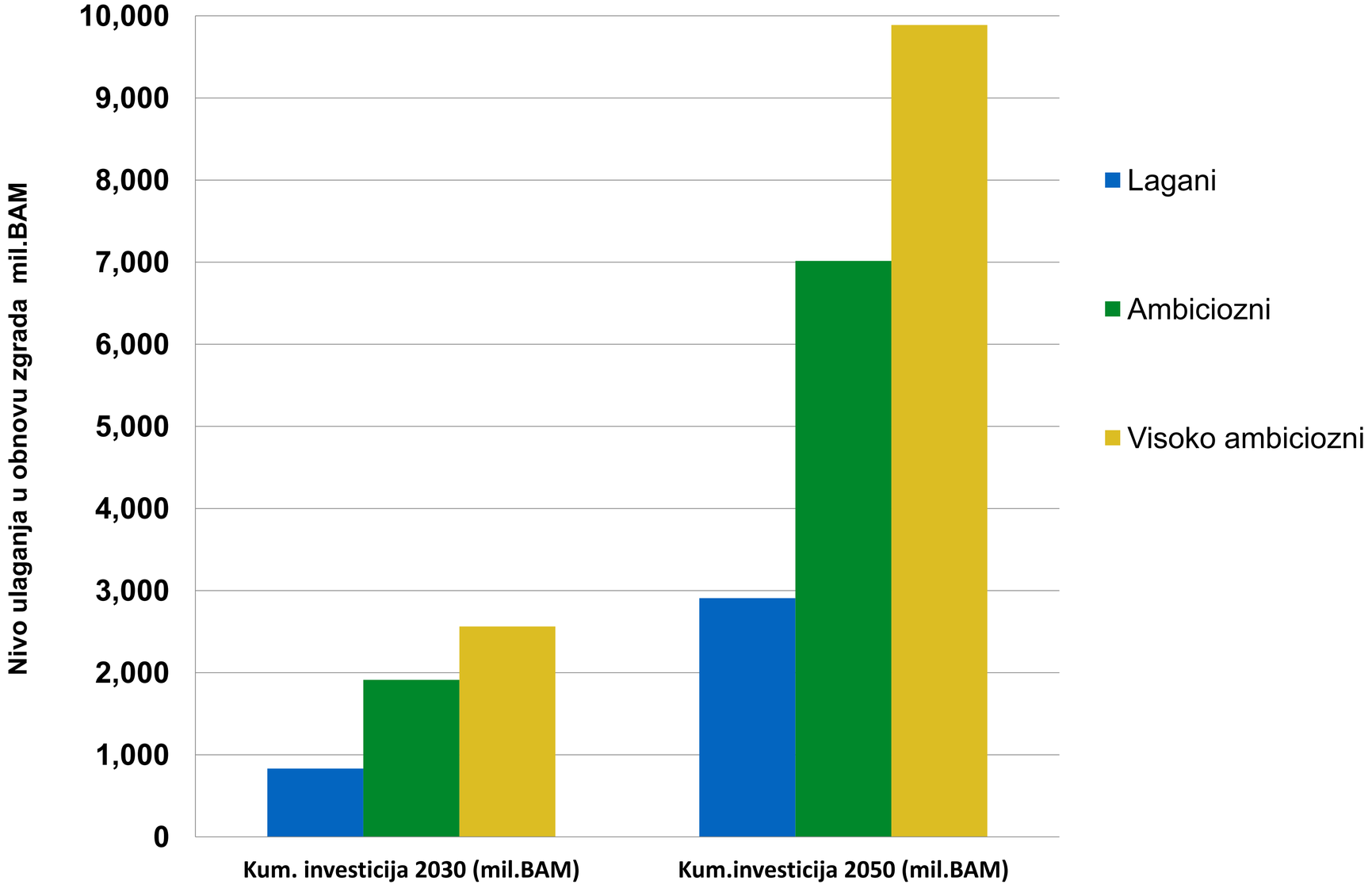
3

Prihodi od poreza:
500-1.700 miliona KM

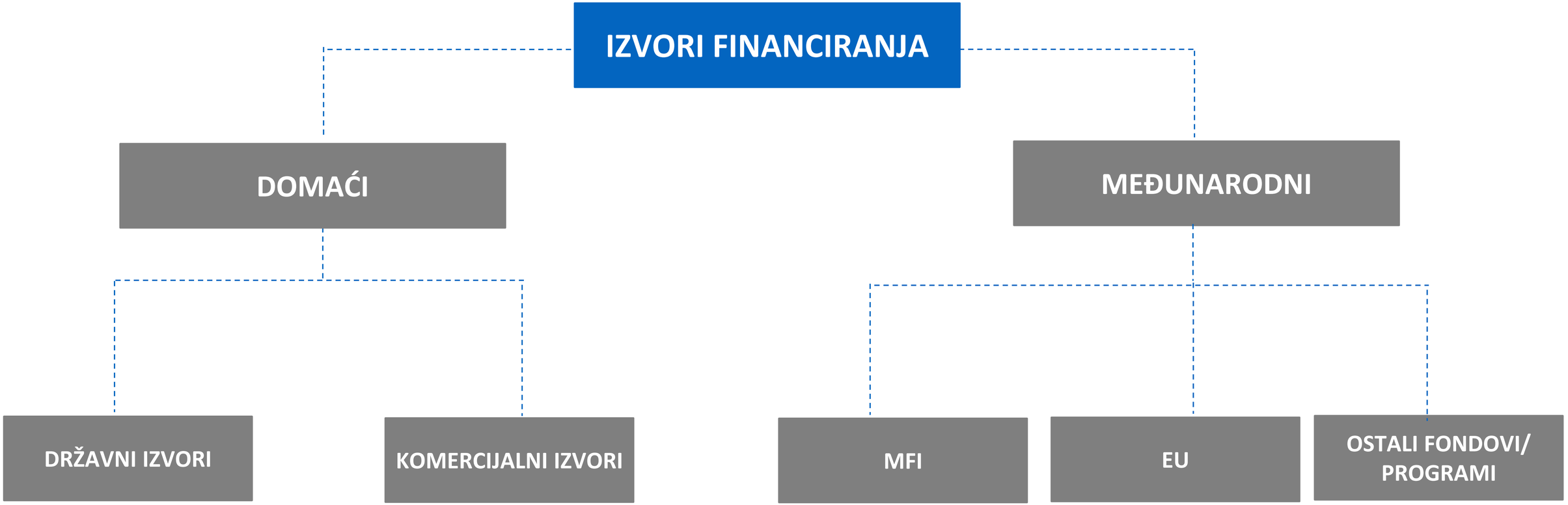
4

Isfinansiranih radnih mjesta:
8.400-28.500

NIVOI POTREBNIH ULAGANJA



RASPOLOŽIVI IZVORI FINANCIRANJA U RS

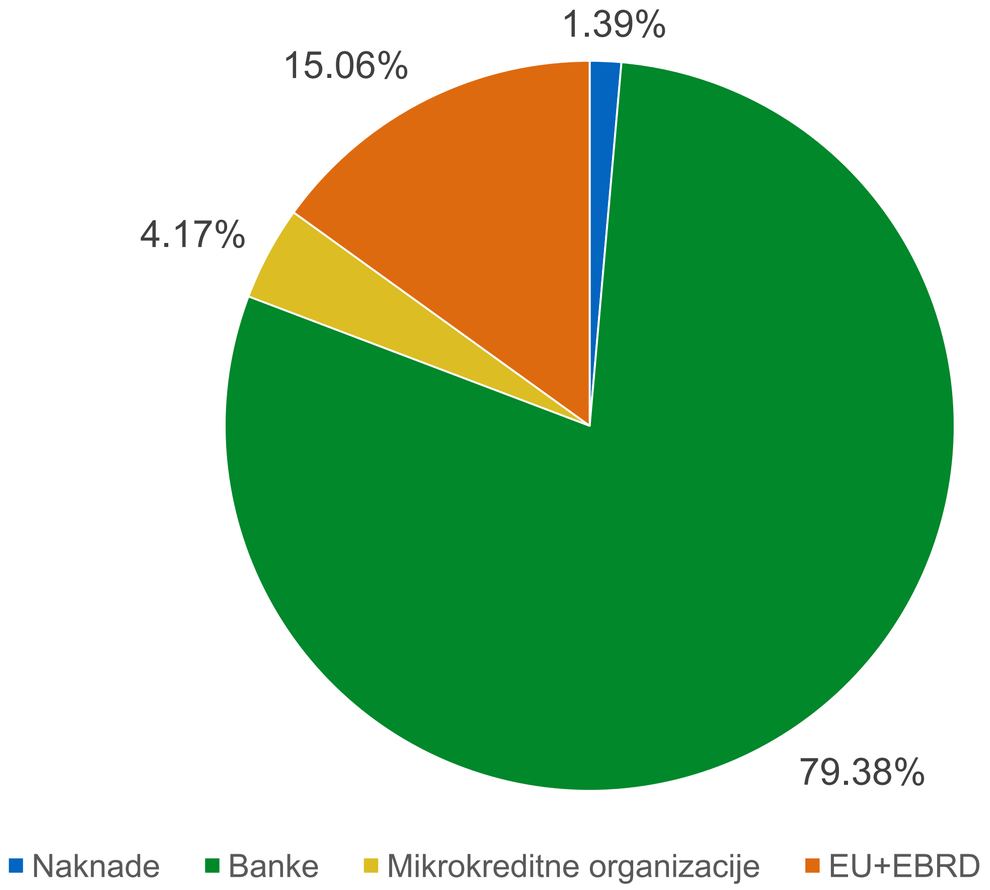


NAČIN RASPODJELE TRENUTNO DOSTUPNIH IZVORA FINANSIRANJA

IZVORI FINANCIRANJA			POSREDNICI/DISTRIBUCIJA	INSTRUMENTI
Domaći	Državni	Budžetska sredstva	Ministarstvo za prostorno uređenje, građevinarstvo i ekologiju RS	Grant
			Fond za zaštitu životne sredine i energetsku efikasnost RS	
		Naknada zagađivača okoliša	Fond za zaštitu životne sredine i energetsku efikasnost RS	Beskamatni krediti i krediti pod povoljnim uslovima
		Naknada korisnika okoliša		
		Posebne naknade za okoliš koja se plaća pri svakoj registraciji motornih vozila		Grant
	Komercijalni	Vlastiti izvori finansiranja	Banke	Kredit
			Mikrokreditne organizacije	
Međunarodni		EU fondovi	Banke Mikrokreditne organizacije	Kredit Kredit+Grant
		Međunarodne financijske institucije (EBRD, IFC)		
		Ostali međunarodni izvori		

RASPOLOŽIVI IZNOS FINANSIRANJA (2018.GODINA)

Izvor financiranja	Financijska sredstva (BAM)
Naknade	920.000
Banke	52.696.200
Mikrokreditne organizacije	2.770.000
EU+EBRD	10.000.000
Ukupno	**66.386.200**



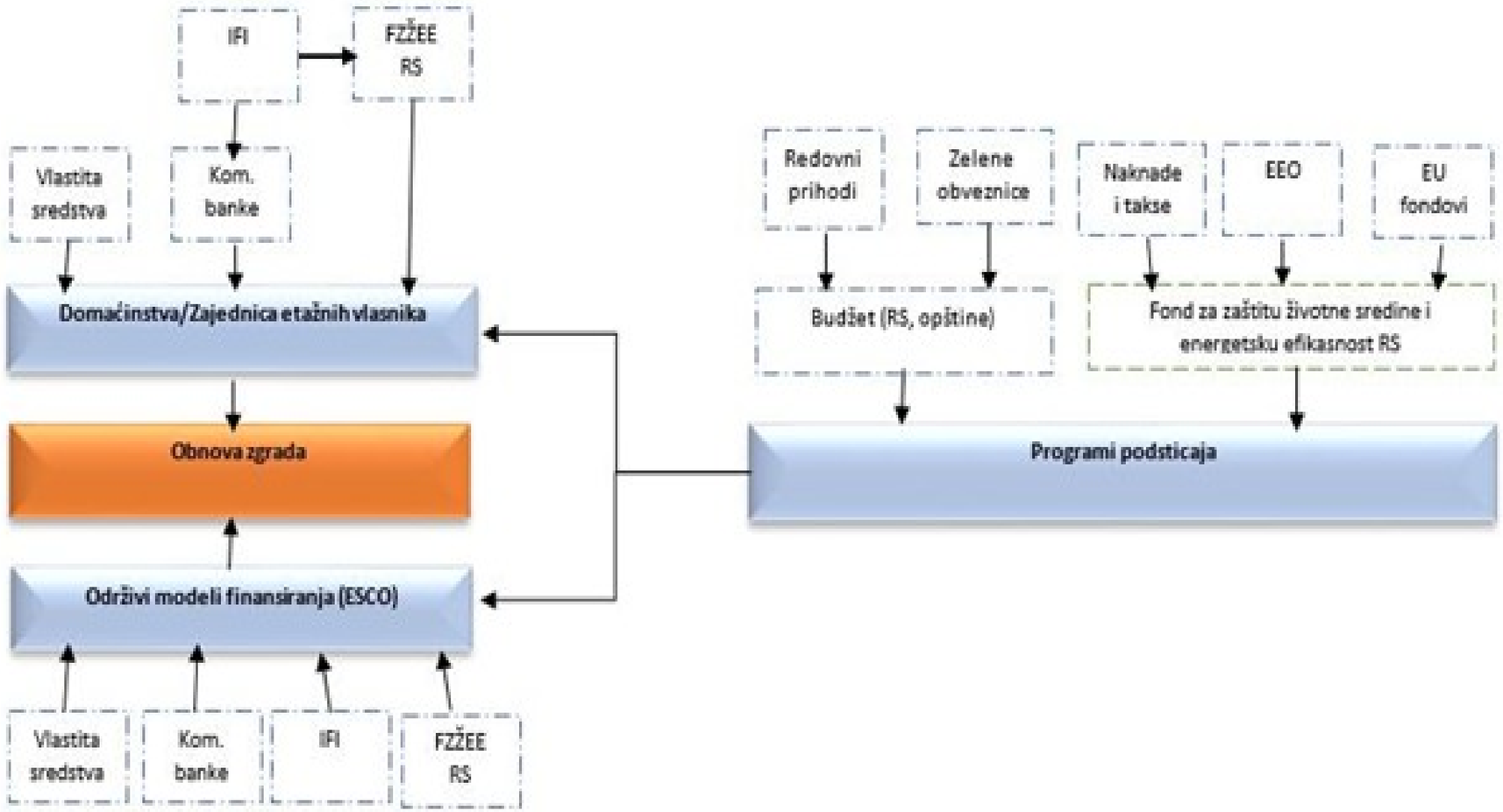
MODELI FINANSIRANJA OBNOVE ZGRADA U PRIVATNOM VLASNIŠTVU

Opcija 1: Vlastita sredstva+Grant

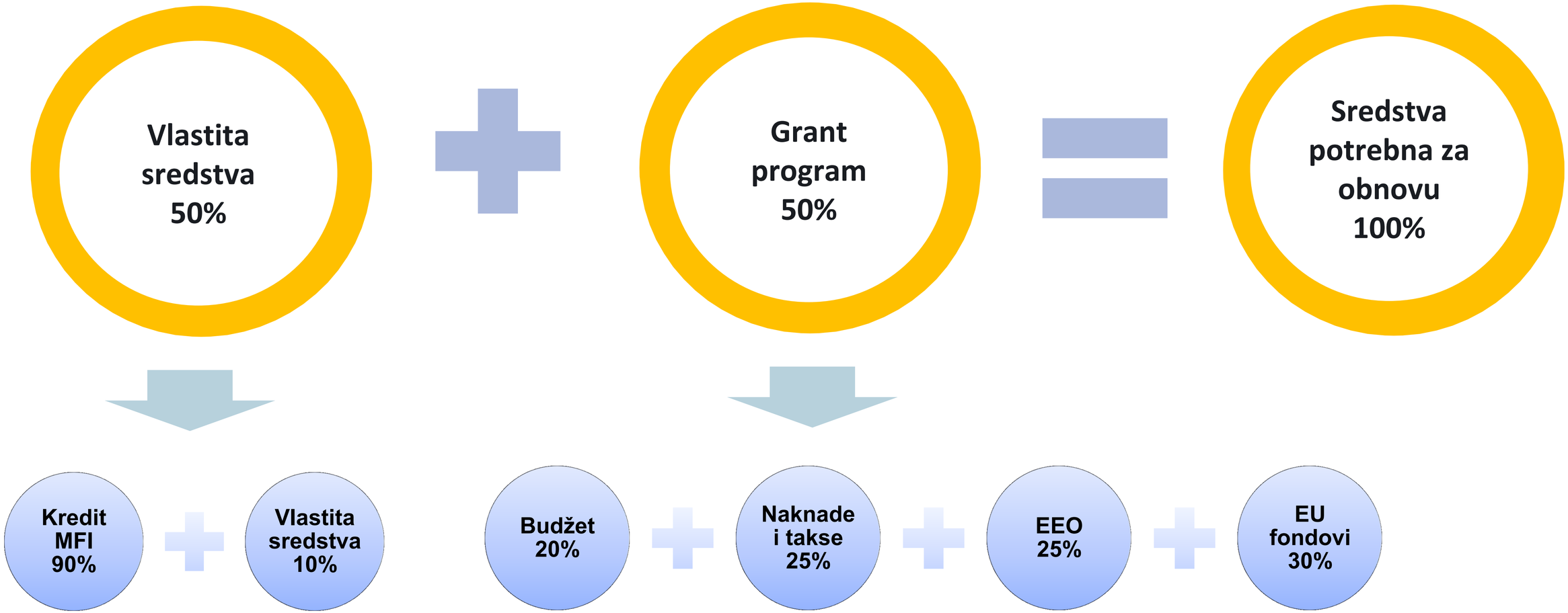
- Vlasnici zgrada/zajednica etažnih vlasnik ulažu u mjere EE
- Grant sredstva iz namjenskog programa Fonda za zaštitu životne sredine i energetsku efikasnost RS

Opcija 2: ESCO partner

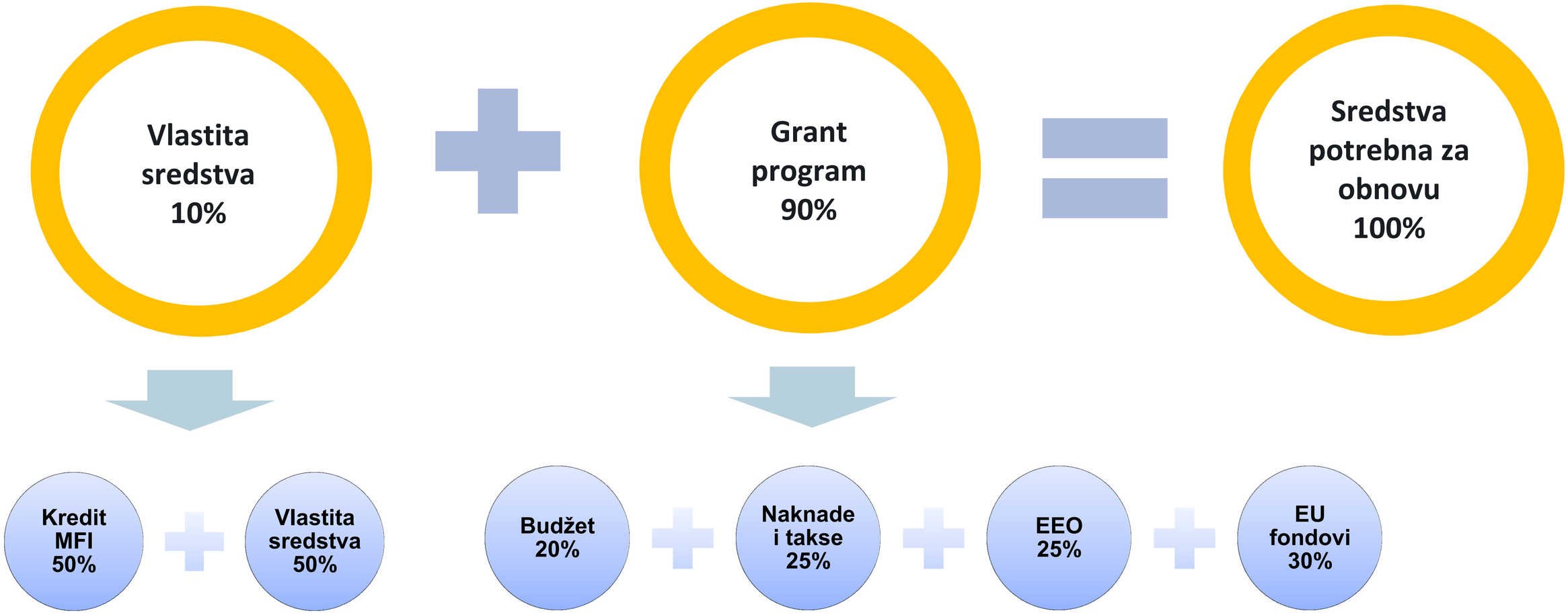
- ESCO partner implementira mjere EE
- Otplata investicije ostvariva kroz uštede energije
- Ugovor ESCO partnera sa vlasnicima zgrada/udruženjima etažnih vlasnika o plaćanju iste cijene toplotne energije



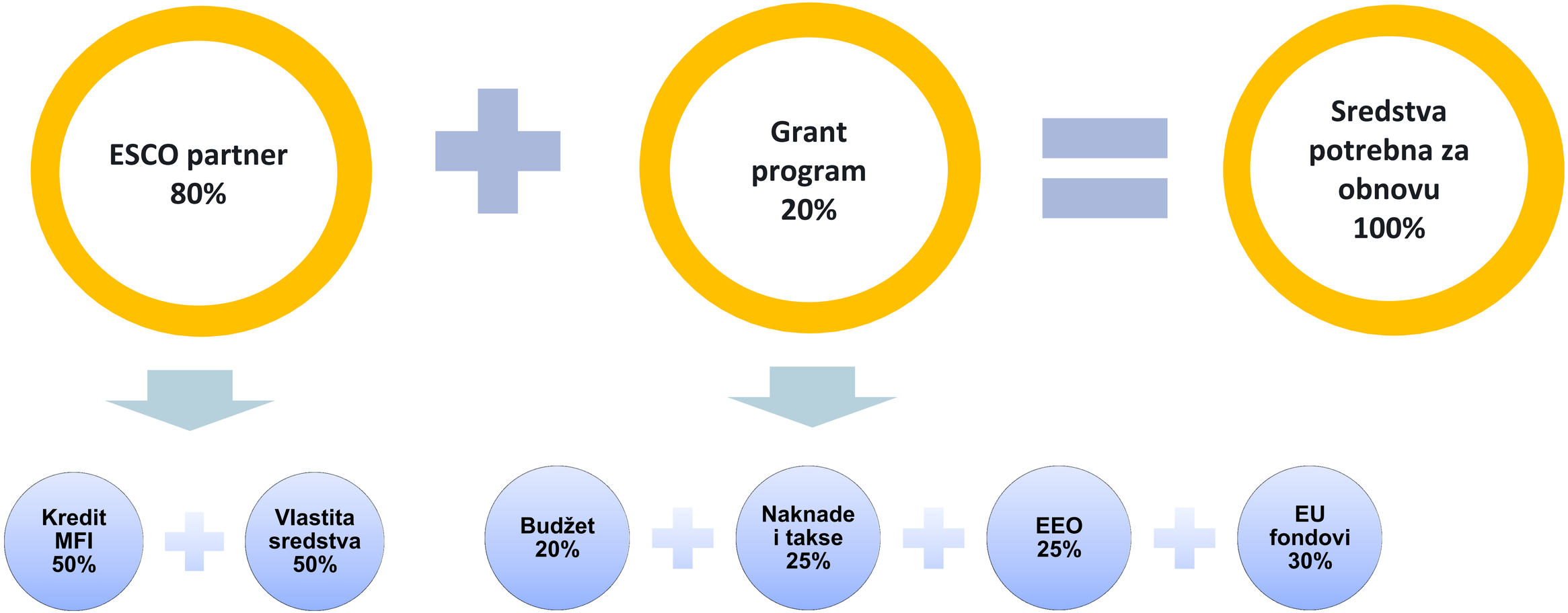
Opcija 1: Domaćinstva sa prosječnim i iznadprosječnim primanjima



Opcija 1: Socijalno ugrožena domaćinstva



Opcija 2: ESCO partner



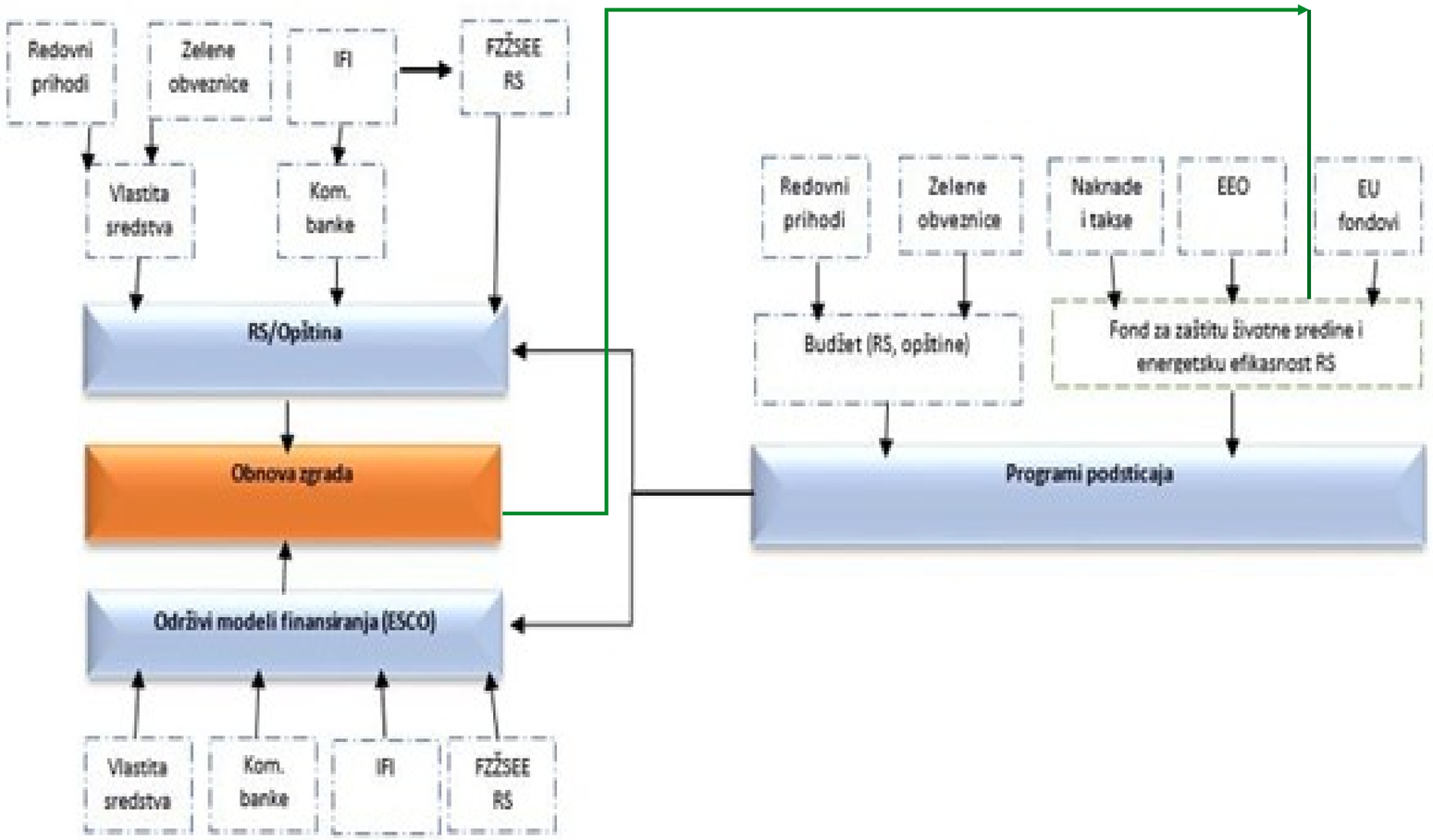
MODELI FINANSIRANJA OBNOVE ZGRADA U JAVNOM VLASNIŠTVU

Opcija 1:Vlastita sredstva+Grant

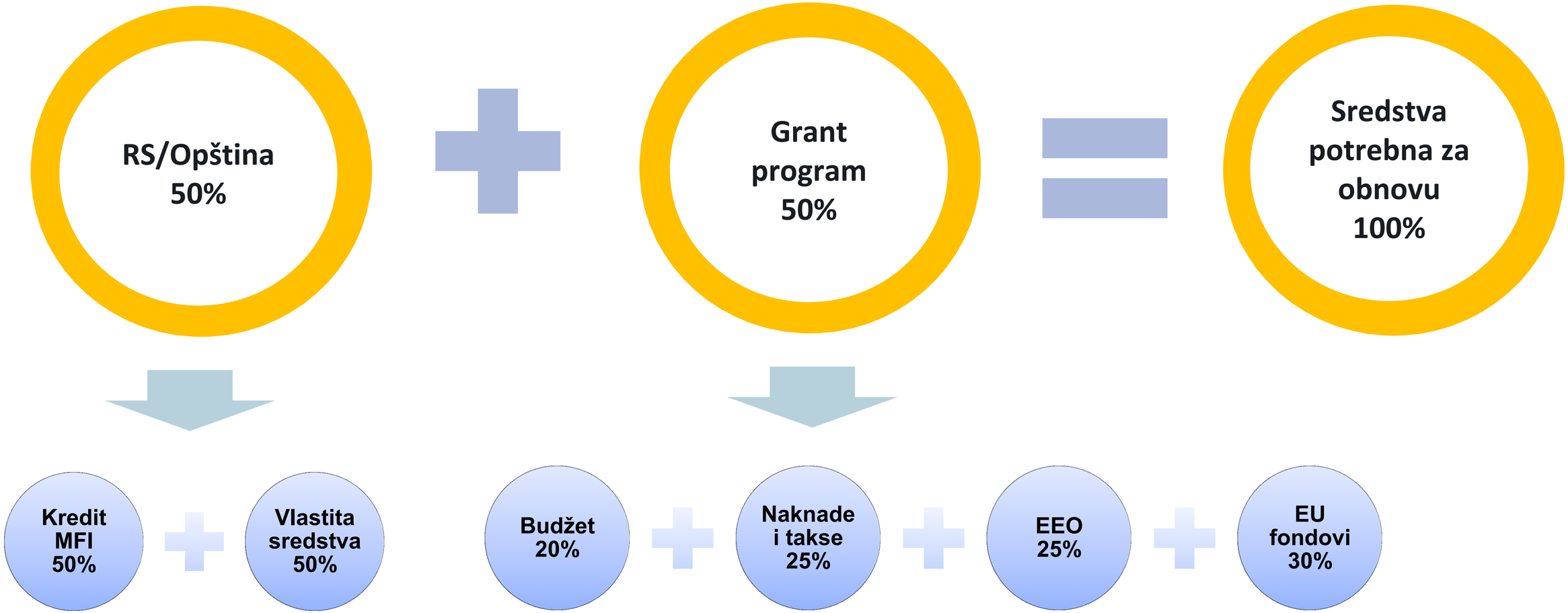
- Vlastita sredstva-budžet
- Grant sredstva iz namjenskog programa Fonda za zaštitu životne sredine i energetsku efikasnost RS

Opcija 2: ESCO partner

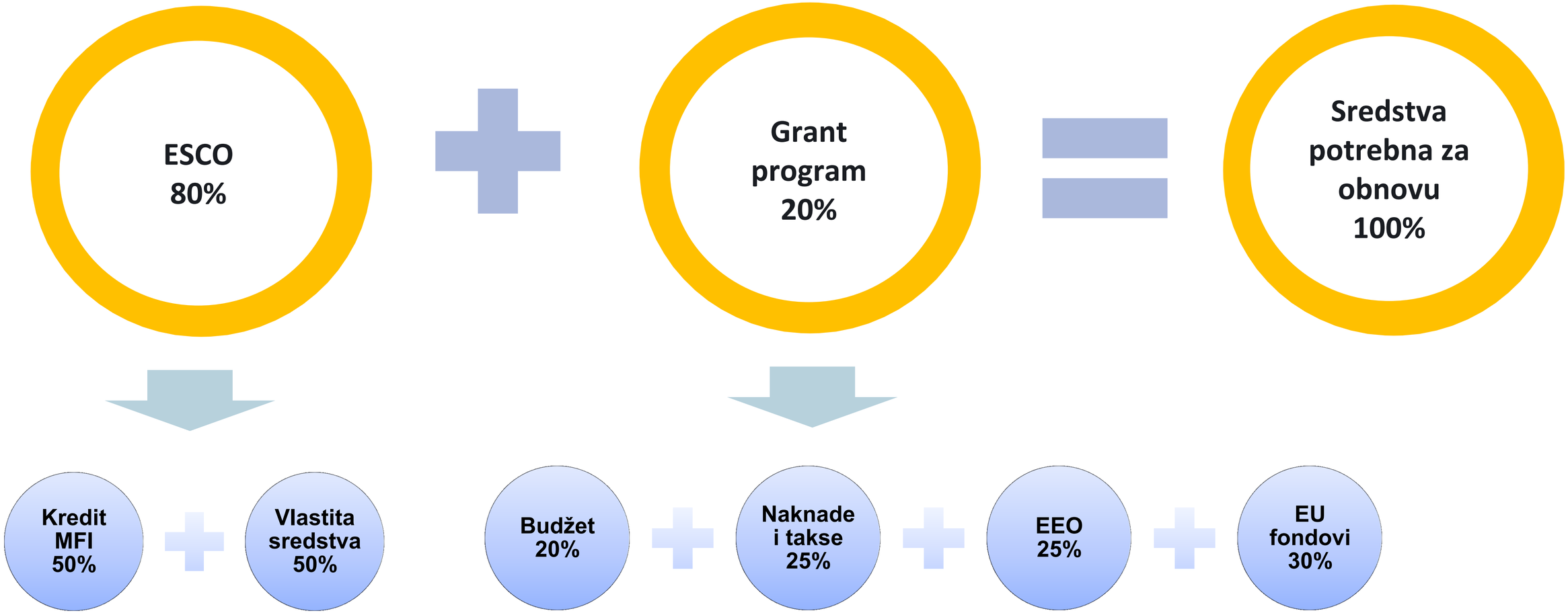
- ESCO partner implementira mjere EE
- Otplata investicije ostvariva kroz uštede energije
- Ugovor ESCO partnera sa vlasnicima zgrada/udruženjima etažnih vlasnika o plaćanju iste cijene toplotne energije



Opcija 1:Vlastita sredstva+Grant



Opcija 2: ESCO partner



POTREBNA SREDSTAVA ZA OBNOVU ZGRADA U RS

Domaćinstva
(Privatne zgrade)

- Vlastito učešće → 4-66 miliona BAM/god
- Grant → 19-119 miliona BAM/god

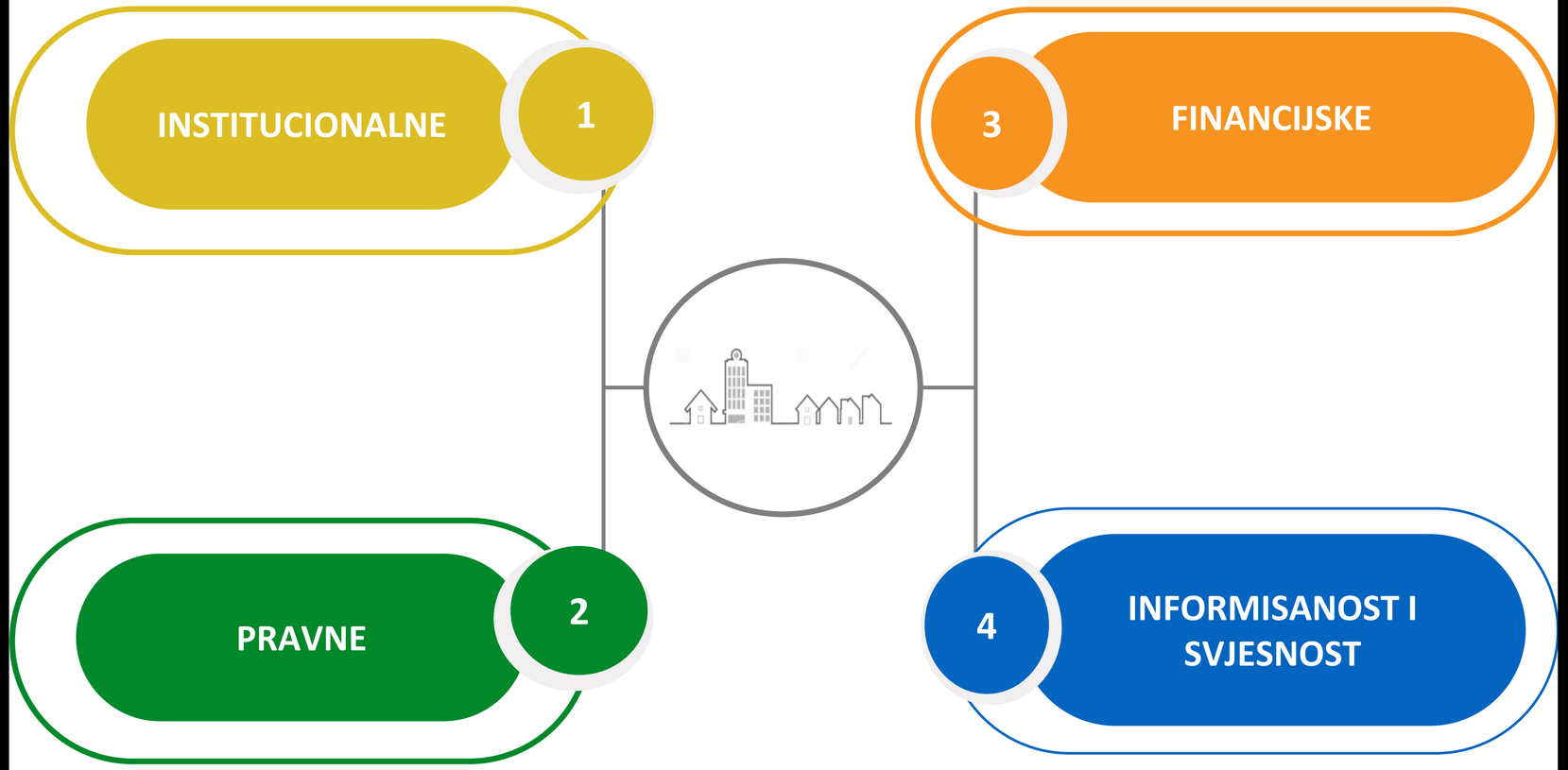
RS/Opština
(Javne zgrade)

- Vlastito učešće → 5-17 miliona BAM/god
- Grant → 5-17 miliona BAM/god

ESCO
(Privatne+javne zgrade)

- Vlastito učešće → 39-132 miliona BAM/god
- Grant → 10-33 miliona BAM/god

E PREPREKE I PREDLOŽENE MJERE ZA OBNOVU ZGRADA U RS



INSTITUCIONALNE PREPREKE

Prepreke	Mjere
• Nedostatak stručnih i ljudskih kapaciteta u institucijama	• Edukacija postojećeg kadra za samostalno implementiranje i praćenje provedbe akcionih planova, informatička podrška institucijama

PRAVNE PREPREKE

Prepreke	Mjere
• **Otežana implementacija obnove zgrada u zgradama kolektivnog stanovanja zbog načina na koji se donose odluke**	• Izmjene i dopune Zakona o održavanju zgrada u stavu 2 člana 29. i previdjeti donošenje odluke za aktivnosti obnove zgrada na osnovu nadpolovične saglasnosti od ukupnog broja etažnih vlasnika
• Na fond zgrada ispod 200 m2 se ne primjenjuju minimalni zahtjevi za energetske karakteristike zgrada	• Izmijeniti i dopuniti Pravilnik o minimalnim zahtjevima za energetske karakteristike zgrada, i uskladiti isti sa Direktivom 2010/31/EU
• Obligacione šeme nisu propisane nijednim pravnim aktom	• Izmjene Zakona o energetskoj efikasnosti potrebne u svrhu implementacije obligacionih šema u Republici Srpskoj, podzakonskih akata i detaljnih smjernica sprovođenje obligacionih šema.
• Propisi o javnim nabavkama ne potiču energijsku efikasnost	• Uvesti obavezu primjene kriterijuma energetske efikasnosti u javnim nabavkama, • Izvršiti izmjene i dopune zakona o energetskoj efikasnosti, • Usvojiti pravilnik o primjeni kriterijuma energetske efikasnosti u javnim nabavkama

FINANSIJSKE PREPREKE

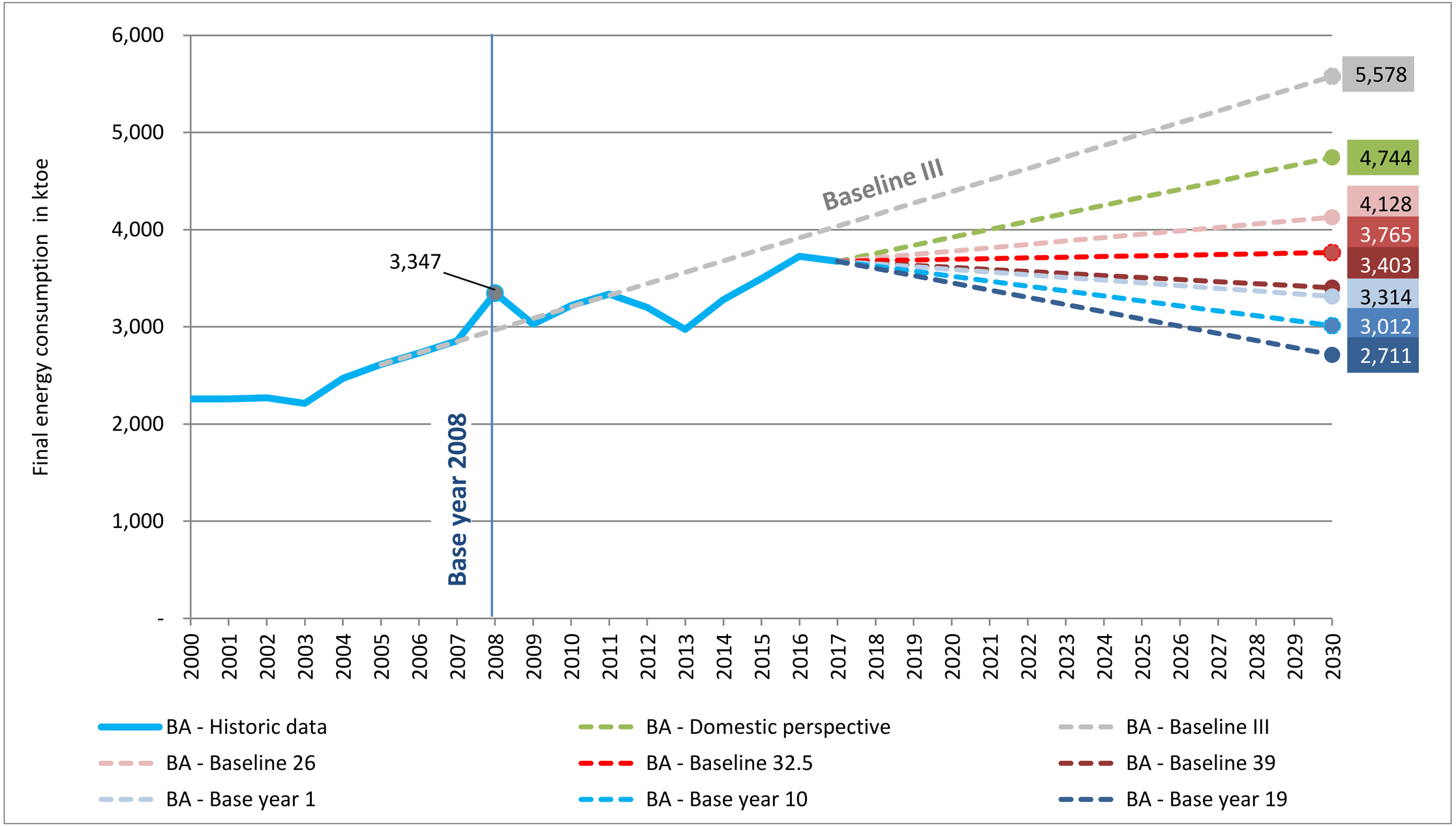
Prepreke	Mjere
• **Fond za zaštitu životne sredine i energetske efikasnosti nije dovoljno finansijski osposobljen za finansiranje mjera obnove zgrada i energetske efikasnosti u zgradarstvu**	• Potrebno je predvidjeti dodatna sredstva i naknade od kojih će se finansirati mjere EE
• Nedostatak ekonomskih instrumenata za poticanje implementacije mjera energetske efikasnosti	• Uvođenje naknade za zagađivanje vazduha i emisije CO2.
• Nedostatak izvora financiranja EE	• Izvršiti izmjene i dopune relevantnih zakona u smislu uvođenja dodatnih izvora finansiranja: naknade, takse, EEO...
• Nerazvijeno tržište energijskih usluga	• Potrebno je raditi na uspostavi tržišta energetskih usluga na osnovu ESCO modela te regulisati tržište ESCO uslugama dodatnim podzakonskim aktima kako bi se olakšala njegova uspostava
• Niske cijene energenata i energije i način obračuna	• Izvršiti tehničke pripreme koje omogućavaju naplatu realnog utroška toplotne energije u sistemu daljinskog grijanja, te utvrditi zakonske obaveze vezane za uvođenje i rad ovog sistema. • Definirati način naplate troškova za energiju te način dostavljanja odgovarajućih informacija o potrošnji energije krajnjim kupcima

FINANSIJSKE PREPREKE

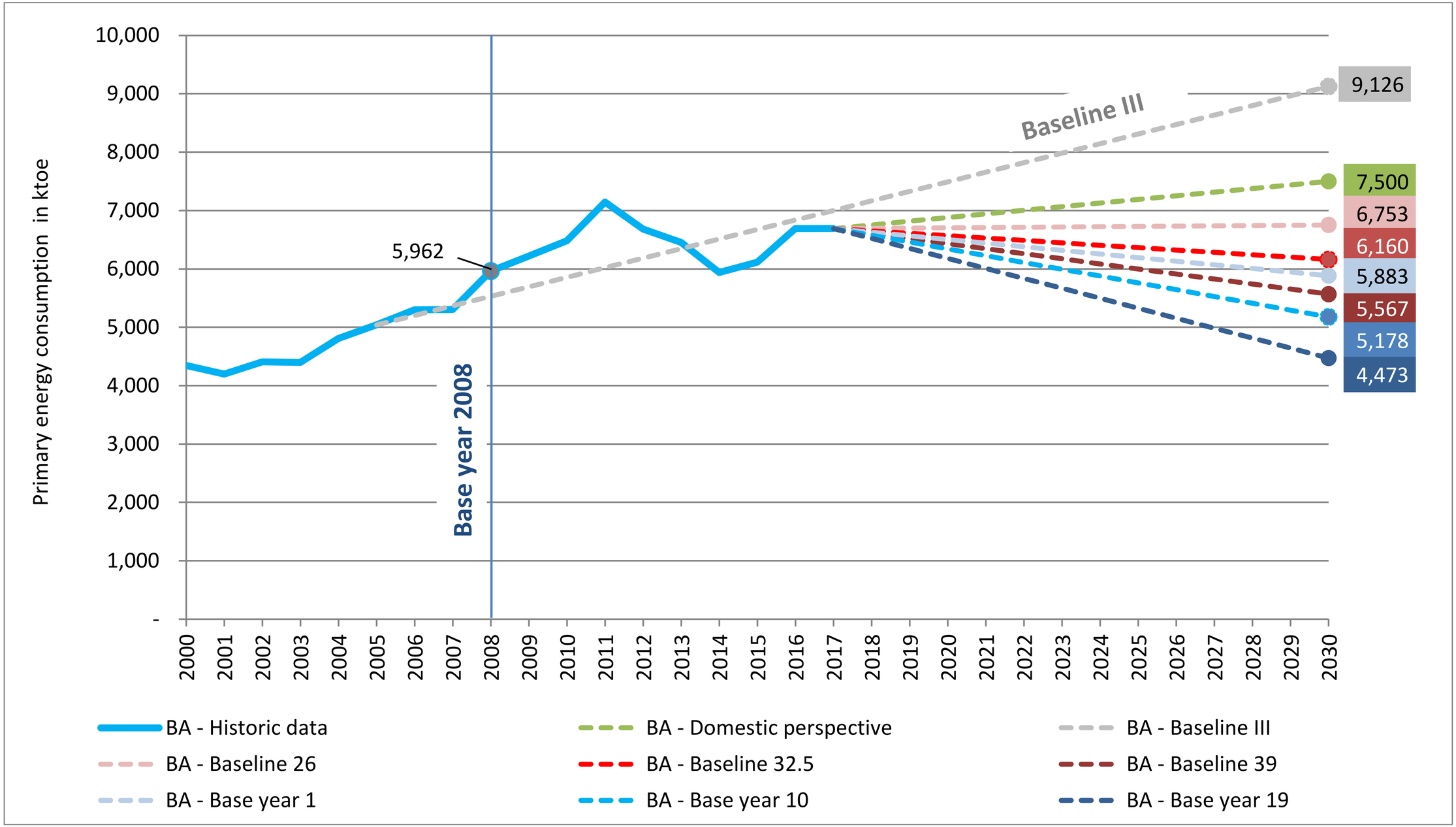
Prepreke	Mjere
• **Nemogućnost jačeg uključivanja značajnijeg kapitala privatnog sektora u realizaciju obnove javnih zgrada**	• Omogućavanje višegodišnjeg planiranja budžeta i samim tim višegodišnjeg ugovaranja finansijskih obaveza
• Nepovoljni komercijalni izvori finansiranja za implementaciju mjera obnove zgrada i energetske efikasnosti u zgradarstvu	• Potrebno je da finansijske organizacije uspostave kreditne linije za implementaciju mjera obnove zgrada i mjera energetske efikasnosti koje će imati povoljnije i prihvatljivije kamatne stope za fizička lica.

INFORMIRANOST I SVJESNOST O KORISTIMA OBNOVE

Prepreke	Mjere
Nedovoljna informiranost o EE	Informativno-motivacione javne kampanje o EE Uvođenje tema EE u sistem redovnog obrazovanja
Nedostatak znanja i vještina stručnjaka	Uspostavljanje i realizacija sistema edukacije, obuka i stručnog usavršavanja u oblasti EE za službenike nadležnih organa uprave, uslužnog sektora korisnika javnih i komercijalnih zgrada, inžinjera projektanata, izvođačkih građevinskih i mašinskih preduzeća, itd.
Snabdjevači energijom ne usmjeravaju kupce da racionalno i efikasno koriste energiju Nedostatak energetskog menadžmenta u javnim i komercijalnim zgradama sektora usluga	Snabdjevači energijom krajnjih potrošača energije moraju najmanje jednom godišnje uz račune/fakture ili na drugi primjeren način informisati krajnje potrošače energije o uticaju načina potrošnje energije na životnu sredinu i održivi razvoj, te obrazovati i usmjeravati kupce da racionalno i efikasno koriste energiju Uvođenje i provođenje energetskog menadžmenta



Ciljevi energetske efikasnosti izraženi u konačnoj energiji za različite scenarije. Osnovni pristup u usporedbi s pristupom Bazne godine naspram domaće peBihpektive



Ciljevi energetske efikasnosti izraženi u primarnoj energiji za različite scenarije. Osnovni pristup u usporedbi s pristupom Bazne godine naspram domaće peBihpektive

NA PAŽNJI!!!

Esad Smajlović
GIZ Office Sarajevo,
Promotion of Energy Efficiency in Bosnia and Herzegovina

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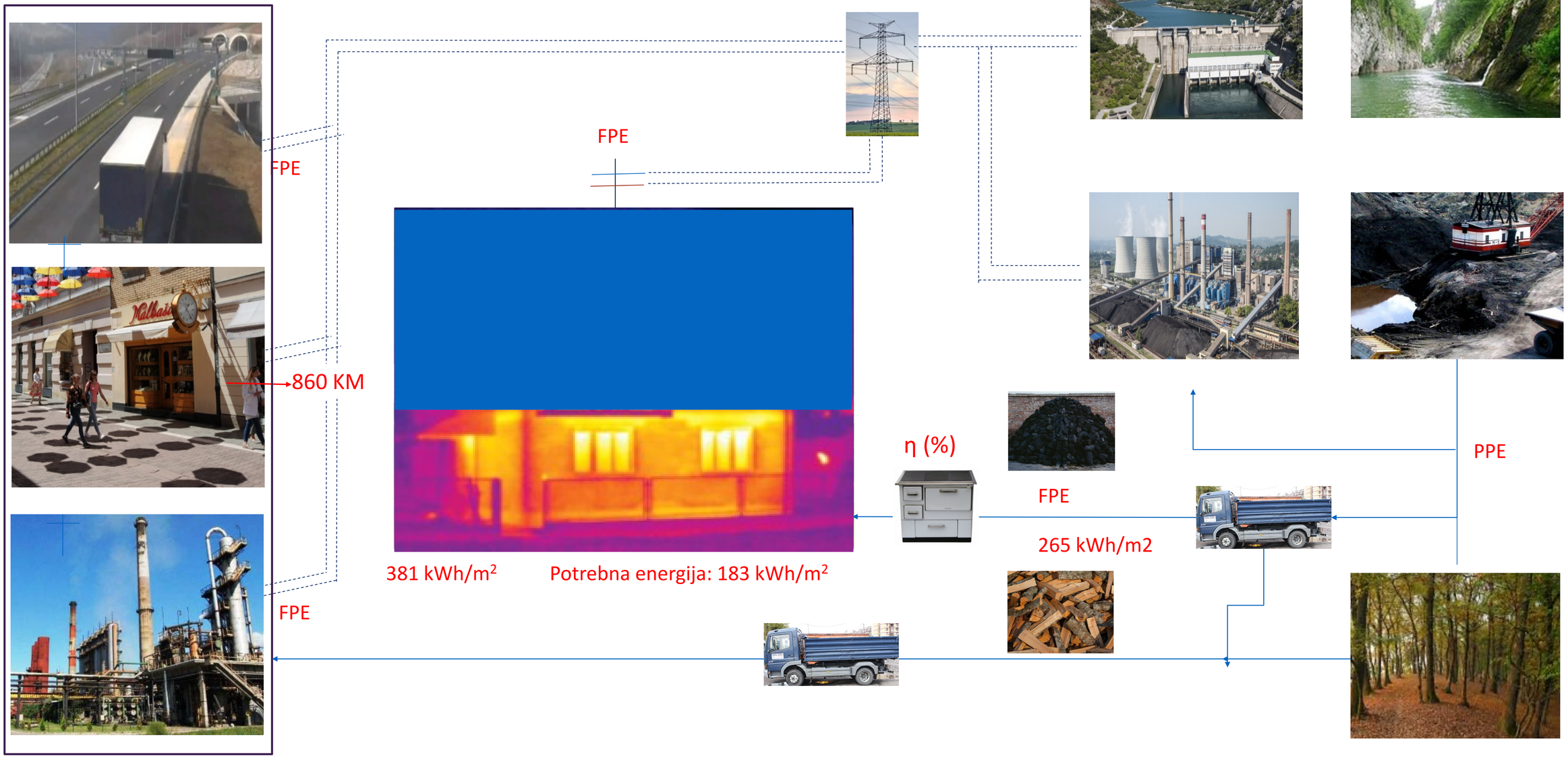

Ukupni energetski bilans, BiH, 2015*

*Total energy balance, BiH, 2015**

BILANS 2015 / BALANCE 2015	Ugalj *Coal*	Sirova nafta *Crude oil*	Derivati nafte *Oil products*	Prirodni plin *Natural gas*	Hidro *Hydro*	Biomasa *Biomass*	El. energija *Electricity*	Toplota *Heat*	UKUPNO *TOTAL*
	000 toe								
Primarna proizvodnja energije / *Primary production*	3.165	-	-	-	477	755	-	-	4.397
Uvoz / *Import*	958	947	901	177	-	1	333	-	3.317
Saldo zaliha / *Stock changes*	- 195	- 2	- 71	-	-	- 12	-	-	- 281
Izvoz / *Export*	- 313	-	- 239	-	-	- 250	- 517	-	- 1.319
Međunarodna skladišta / *Bunkers*	-	-	-	-	-	-	-	-	-
Bruto domaća potrošnja energije / *Gross inland consumption*	**3.615**	**944**	**590**	**177**	**477**	**494**	**- 184**	**-**	**6.114**
Energetska transformacija - ulaz / *Transformation input*	**3.952**	**944**	**39**	**45**	**-**	**-**	**-**	**-**	**4.980**
Termoelektrane / *Thermal power plants*	2.560	-	7	-	-	-	-	-	2.566
Samoproizvođači / *Autoproducers*	227	-	6	10	-	-	-	-	243
Toplane / *District heating plants*	21	-	26	35	-	-	-	-	82
Prerada ugljа (briketi, koks) / *Patent fuel, briquetting and coke-oven plants*	1.145	-	-	-	-	-	-	-	1.145
Rafinerije / *Rafineries*	-	944	-	-	-	-	-	-	944
Energetska transformacija - izlaz / *Transformation output*	**621**	**-**	**924**	**-**	**-**	**-**	**867**	**134**	**2.546**
Termoelektrane / *Thermal power plants*	-	-	-	-	-	-	825	79	904
Samoproizvođači / *Autoproducers*	-	-	-	-	-	-	42	17	59
Toplane / *District heating plants*	-	-	-	-	-	-	-	38	38
Prerada ugljа (briketi, koks) / *Patent fuel, briquetting and coke-oven plants*	621	-	-	-	-	-	-	-	621
Rafinerije / *Rafineries*	-	-	924	-	-	-	-	-	924
Izmjene i transferi, povratni tokovi / *Exchanges and transfers, returns*	**-**	**-**	**-**	**-**	**- 477**	**-**	**477**	**-**	**-**
Potrošnja grane energetike / *Consumption of the energy branch*	**3**	**-**	**140**	**-**	**-**	**3**	**123**	**1**	**270**
Gubici prenosa i distribucije energije / *Losses*	**-**	**-**	**-**	**0**	**-**	**-**	**120**	**9**	**129**
Raspoloživo za finalnu potrošnju / *Available for final consumption*	**281**	**-**	**1.335**	**132**	**-**	**491**	**918**	**125**	**3.282**
Finalna ne-energetska potrošnja / *Final non-energy consumption*	**-**	**-**	**70**	**-**	**-**	**-**	**-**	**-**	**70**
Finalna energetska potrošnja energije / *Final energy consumption*	**281**	**-**	**1.265**	**132**	**-**	**491**	**918**	**125**	**3.212**

Finalna energetska potrošnja energije / *Final energy consumption*	**281**	**-**	**1.265**	**132**	**-**	**491**	**918**	**125**	**3.212**
Industrija / *Industry*	**114**	**-**	**104**	**73**	**-**	**27**	**344**	**1**	**662**
Industrija željeza i čelika / *Iron & steel industry*	0	-	0	23	-	-	66	-	90
Obojeni metali / *Non-ferrous metal industry*	42	-	3	40	-	-	147	-	233
Hemijska industrija / *Chemical industry*	0	-	3	1	-	-	10	-	14
Nemetalni minerali / *Glass, pottery & building mat. industry*	62	-	13	1	-	-	14	-	90
Vađenje rude i kamena / *Ore-extraction industry*	1	-	18	-	-	-	7	-	27
Prerada hrane, pića i duhana / *Food, drink & tobacco industry*	6	-	27	5	-	-	20	-	57
Tekstil i koža / *Textile, leather & clothing industry*	2	-	3	1	-	-	10	-	15
Papir, celuloza i štampanje / *Paper and printing*	0	-	7	1	-	-	17	-	25
Mašine i oprema / *Engineering & other metal industry*	1	-	6	0	-	-	21	-	29
Ostala industrija / *Other industries*	0	-	24	0	-	27	30	-	82
Saobraćaj / *Transport*	**-**	**-**	**1.030**	**-**	**-**	**-**	**8**	**-**	**1.038**
Ostali sektori / *Other sectors*	**167**	**-**	**131**	**59**	**-**	**464**	**566**	**124**	**1.512**
Domaćinstva / *Households*	55	-	77	33	-	437	406	97	1.106
Poljoprivreda / *Agriculture*	0	-	12	-	-	0	5	-	17
Ostali potrošači / *Other*	111	-	42	26	-	27	155	28	389
Statistička razlika / *Statistical difference*	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

energycommunity.org/default.asp?action=introduction

Apps https://www.habitat... Settings Zimbra: Ulazna poš... New Tab ate

LEAP About Download License Learn Community

LEAP: Introduction

Introduction

LEAP: the Long-range Energy Alternatives Planning system.

LEAP, the Long-range Energy Alternatives Planning System, is a widely-used software tool for energy policy analysis and climate change mitigation assessment developed at the Stockholm Environment Institute.

LEAP has been adopted by thousands of organizations in more than 190 countries worldwide. Its users include government agencies, academics, non-governmental organizations, consulting companies, and energy utilities. It has been used at many different scales ranging from cities and states to national, regional and global applications.

LEAP: LEAP modifikacije 07.11.2019

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Tags: Settings

Branch: Key Assumptions\Demographics\Population

Branch: All Branches Variable: Activity Level Scenario: Current Accounts

Key Assumptions

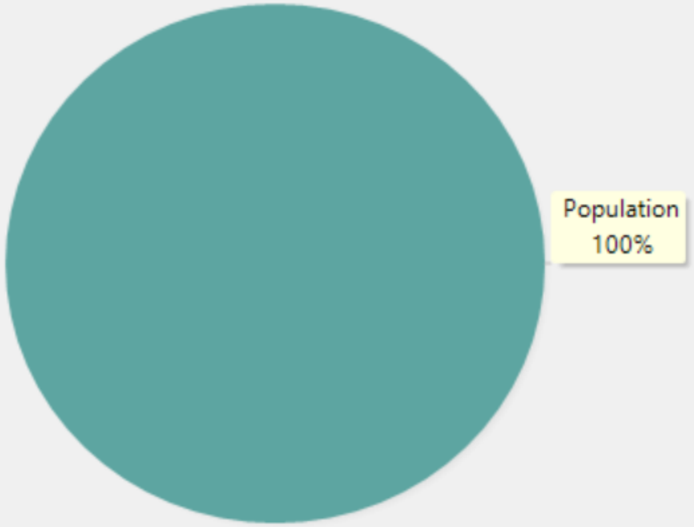
Key Assumptions: Macroeconomic, demographic or other variables not entered elsewhere. [Default="0"]

Branch	Expression	Scale	Units
Population	3.429361	Million	People
Population_Growth	-0.886		%/Yr

Expression OK Check as You Type

Chart Table Builder Notes Elaboration Help

Population: Activity Level (Thousand People)



2018.0.1.25 (64-Bit) Area: LEAP modifikacije 07.11.2019 Analysis Registered to esadsmajly@gmail.com until May 6, 2020

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        - Petroleum products
        - Natural Gas
        - Biomass
        - Electricity
        - Heat
    - Cooking
      - Coal
      - Petroleum products
      - Natural Gas
      - Biomass
      - Electricity
    - DHW
    - Appliances incl. lighting and co
  - Services
  - Transport
  - Industry

Tags: Settings

Branch: Demand\Residential\Heating\Residential buildings\...

Branch: All Branches | Variable: Activity Level | Scenario: Current Accounts

Activity Level | Efficiency | Useful Energy Intensity | TotalConsumption | All Variables

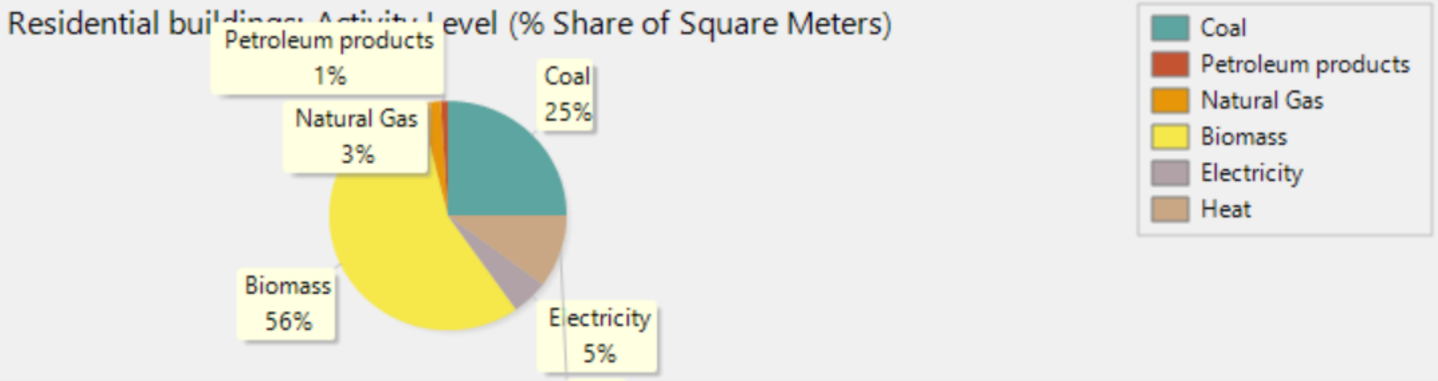
Activity Level: A measure of the social or economic activity for which energy is consumed. [Default="0"]

Branch	Expression	Scale	Units	Per
Residential			No data	
Heating	Key\Other\Residential heated area[Million Square Meter]	Million	Square Meter	
Residential buildin	100	Percent	Share	of Square Meters
Coal	25 ? Excel Individual and Collective, tab bljana	Percent	Share	of Square Meters
Petroleum produ	1	Percent	Share	of Square Meters
Natural Gas	3	Percent	Share	of Square Meters
Biomass	56	Percent	Share	of Square Meters
Electricity	5	Percent	Share	of Square Meters
Heat	10	Percent	Share	of Square Meters

Expression OK | Check as You Type

Chart | Table | Builder | Notes | Elaboration | Help

Show: Activity Level



2018.0.1.25 (64-Bit) | Area: LEAP modifikacije 07.11.2019 | Analysis | Registered to esadsmajly@gmail.com until May 6, 2020 | 2015: Population: 3,429.4 Thousand People

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    - Cooking
      - Coal
      - Petroleum products
      - Natural Gas
      - Biomass
      - Electricity
    - DHW
    - Appliances incl. lighting and co
  - Services
  - Transport
  - Industry

Tags: Settings

Branch: Demand\Residential\Heating\Residential buildings\...

Branch: All Branches | Variable: Efficiency | Scenario: BAS: Baseline

Activity Level | Efficiency | Useful Energy Intensity | All Variables

Efficiency: Efficiency of energy using devices (%) [Default="100"]

Branch	Fuel	2015 Value	Expression	Scale	Units
Coal	Coal Unspecified	70.00	70		Efficiency
Petroleum products	Gas Diesel Oil	65.00	65		Efficiency
Natural Gas	Natural Gas	85.00	85		Efficiency
Biomass	Wood	55.00	Interp(2030,50)		Efficiency
Electricity	Electricity	94.00	94		Efficiency
Heat	Heat	100.00	100		Efficiency

Expression OK | Check as You Type

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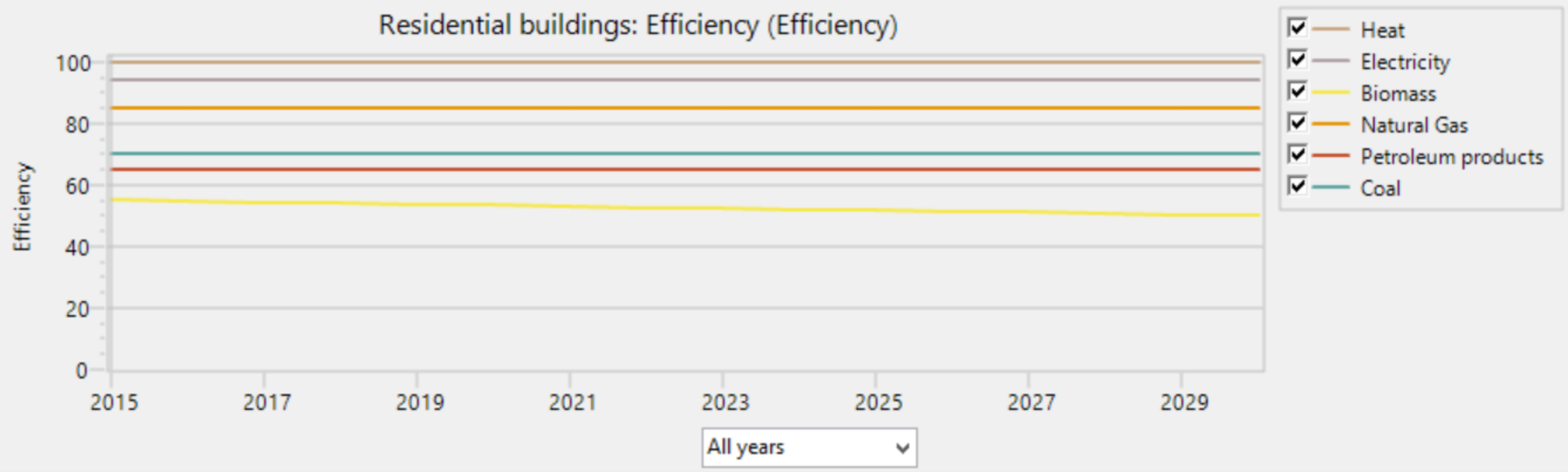

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      - Electricity
    - DHW
    - Appliances incl. lighting and co
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Tags: Settings

Branch: Demand\Residential\Heating\Residential buildings\...

Branch: All Branches | Variable: Useful Energy Intensity | Scenario: BAS: Baseline

Activity Level | Efficiency | Useful Energy Intensity | All Variables

Useful Energy Intensity: Annual useful energy consumption per unit of activity level (e.g. heat). [Default="0"]

Branch	2015 Value	Expression	Scale	Units	Per
Residential buildings	183.50	Interp(2020,182,2030,178.94)		Kilowatt-Hour	per Square Meter

Expression OK | Check as You Type

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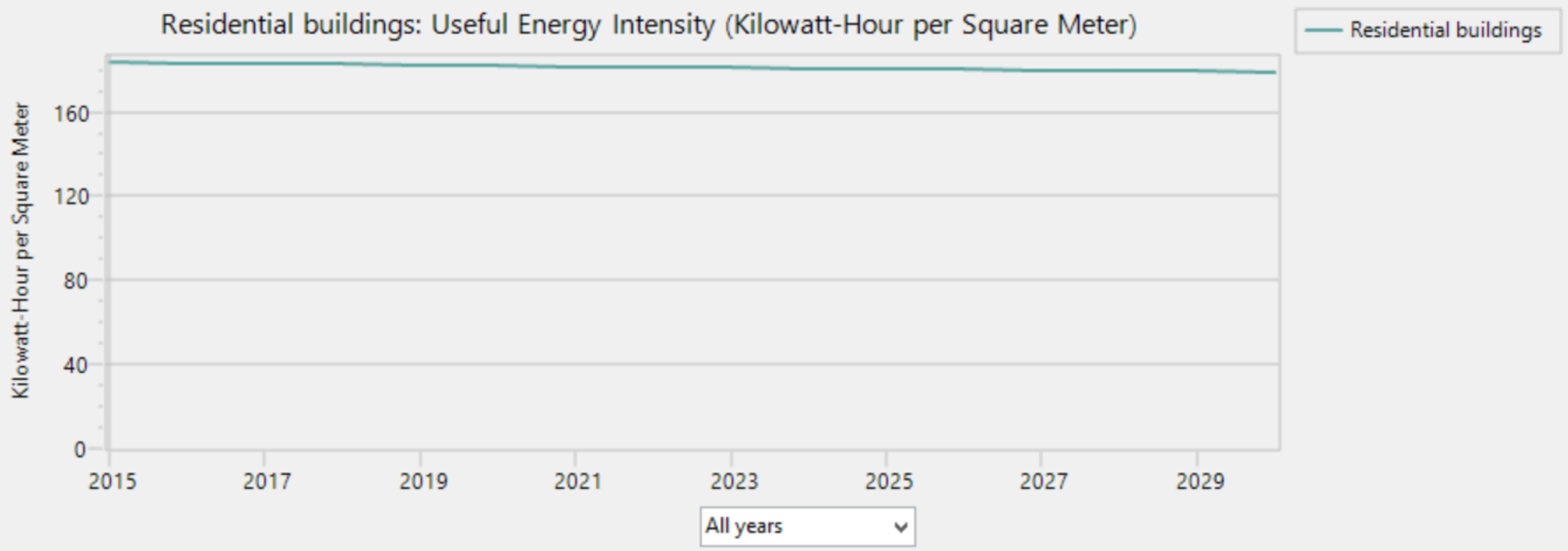
Units: Kilowatt-Hour per Square Meter



2018.0.1.25 (64-Bit) | Area: LEAP modifikacije 07.11.2019 | Analysis | Registered to esadsmajly@gmail.com until May 6, 2020 | Heat: 2018: 100.0 Efficiency

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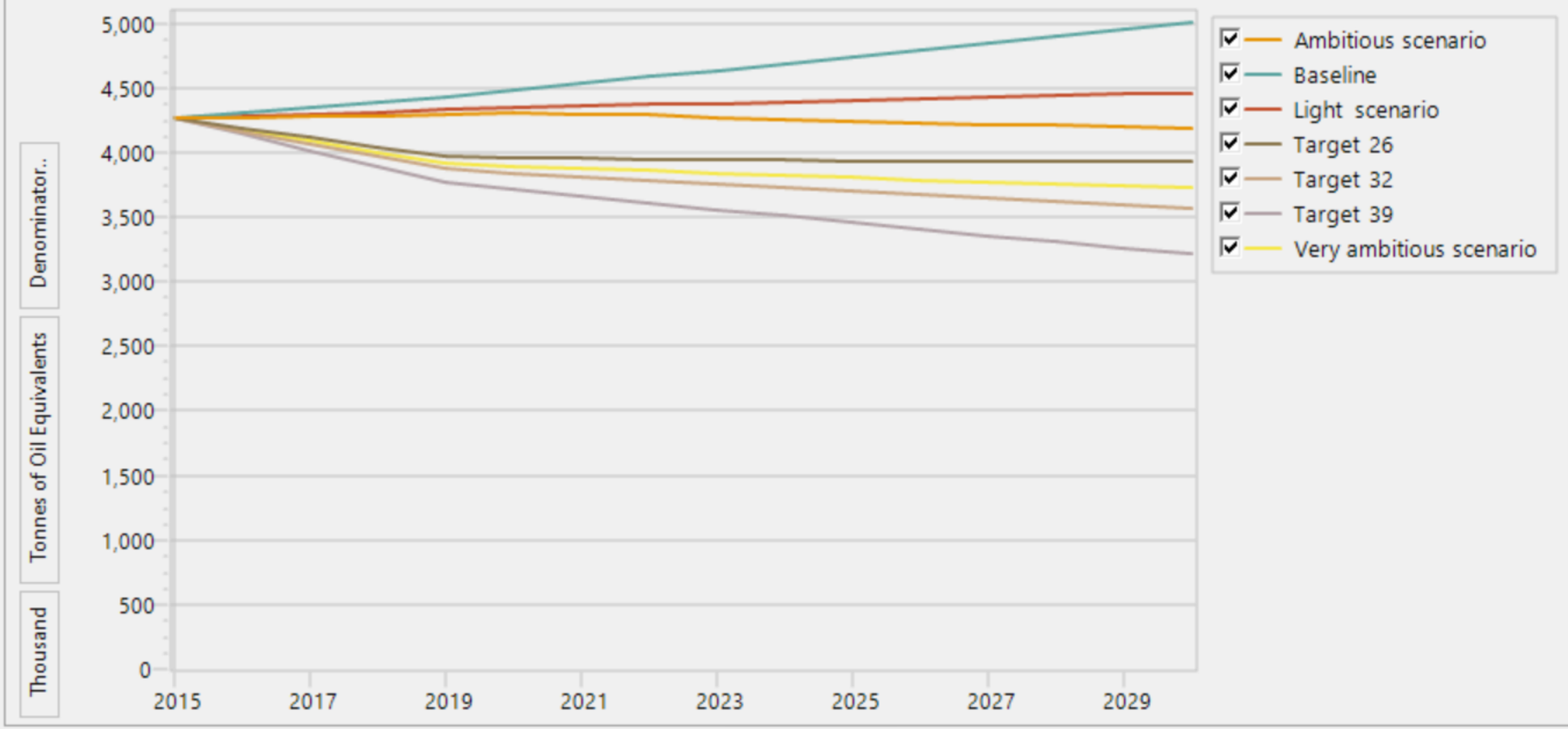
All Fuels | Less...

Absolute Values | No Comparison

Chart | Table | Split | Diagnostics

Energy Demand Final Units | All Scenarios



All Years

2018.0.1.25 (64-Bit) | Area: LEAP modifikacije 07.11.2019 | Results | Registered to esadsmajly@gmail.com until May 6, 2020 | Heat: 2018: 100.0 Efficiency

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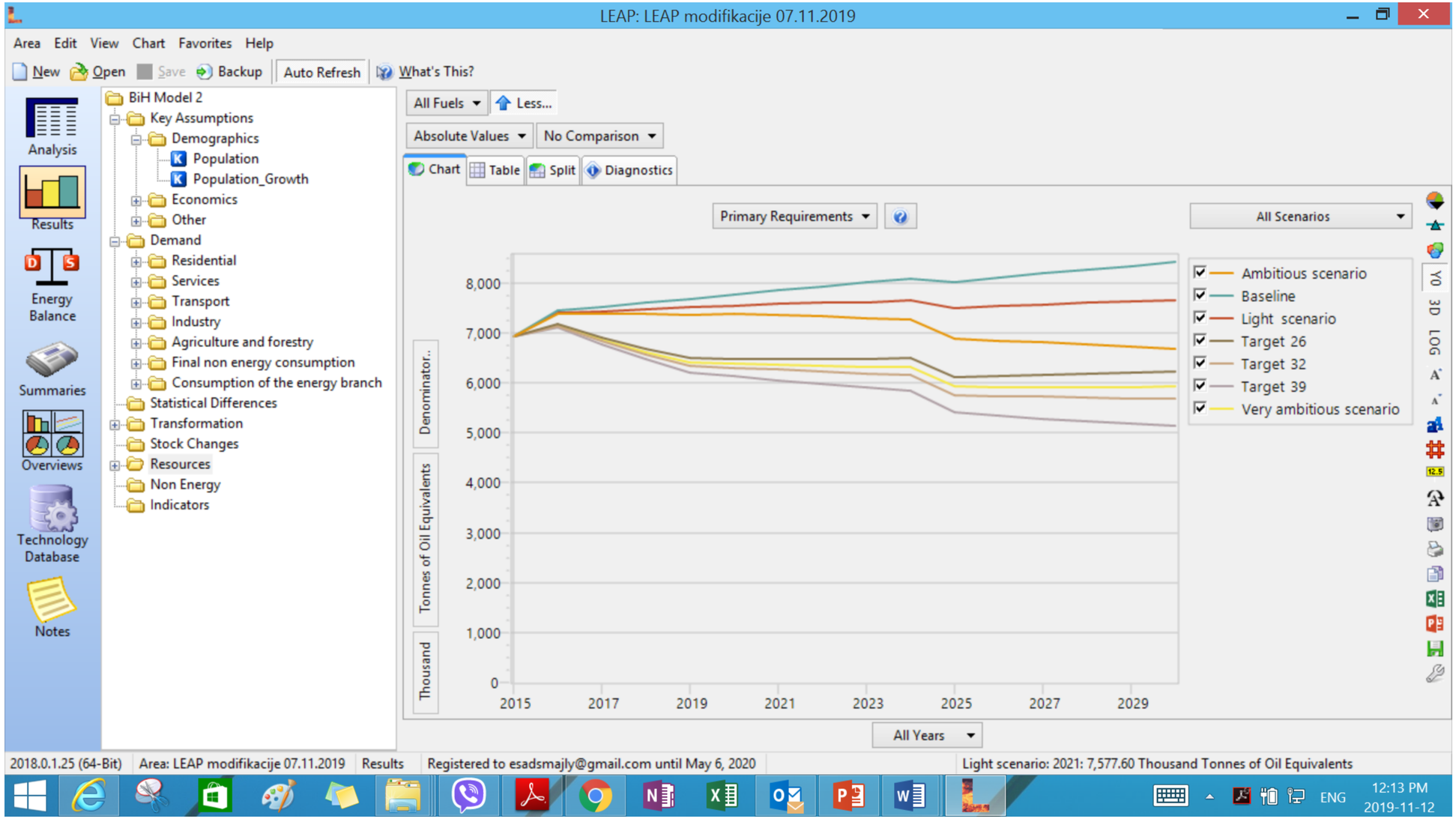
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Very ambitious scenario
Denominator..
Tonnes of Oil Equivalents
Thousand
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2015
2017
2019
2021
2023
2025
2027
2029
All Years
2018.0.1.25 (64-Bit)
Area: LEAP modifikacije 07.11.2019
Results
Registered to esadsmajly@gmail.com until May 6, 2020
Light scenario: 2021: 7,577.60 Thousand Tonnes of Oil Equivalents
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Energy Balance for Area "LEAP modifikacije 07.11.2019"
Scenario: Baseline, Year: 2015, Units: Tonnes of Oil Equivalent

	Solid Fuels	Natural Gas	Crude Oil	Hydropower	Renewables	Biomass	Electricity	Oil Products	Heat	Total
Production	3,157.8	-	-	477.0	0.6	1,378.6	-	-	-	5,014.1
Imports	1,174.4	183.7	944.8	-	-	1.0	333.0	669.9	-	3,306.9
Exports	-313.0	-	-	-	-	-250.0	-584.1	-239.0	-	-1,386.1
From Stock Change	-195.0	-	-2.0	-	-	-12.0	-	-71.0	-	-280.0
Total Primary Supply	3,824.2	183.7	942.8	477.0	0.6	1,117.6	-251.1	359.9	-	6,654.8
Coal Mining and coke production	-29.6	-	-	-	-	-	-	-	-	-29.6
Oil Rafinery	-	-	-942.8	-	-	-	-	924.0	-	-18.9
Electricity Generation	-3,040.0	-	-	-477.0	-0.6	-	1,389.6	-	-	-2,128.0
Heat Generation	-65.3	-34.8	-	-	-	-13.4	-	-28.2	115.7	-26.1
CHP	-84.4	-	-	-	-	-	19.4	-	38.0	-27.0
Transmission and Distribution	-	-2.7	-	-	-	-	-128.1	-	-9.5	-140.2
Total Transformation	-3,219.4	-37.5	-942.8	-477.0	-0.6	-13.4	1,281.0	895.8	144.2	-2,369.8
Statistical Differences	-	-	-	-	-	-	-	-	-	-
Residential	343.1	41.9	-	-	-	1,025.3	386.6	26.4	95.9	1,919.3
Services	144.7	32.3	-	-	-	49.0	165.0	49.4	29.0	469.4
Transport	-	-	-	-	-	-	7.2	853.8	-	861.1
Industry	114.0	72.0	-	-	-	27.0	343.0	104.0	-	660.0
Agriculture and forestry	-	-	-	-	-	-	5.0	12.0	-	17.0
Final non energy consumption	-	-	-	-	-	-	-	70.0	-	70.0
Consumption of the energy branch	3.0	-	-	-	-	3.0	123.0	140.0	1.0	270.0
Total Demand	604.8	146.2	-	-	-	1,104.3	1,029.9	1,255.7	126.0	4,266.8
Unmet Requirements	0.0	-0.0	-	-	-	-	-0.0	-	-18.2	-18.2

Energy Balance for Area "LEAP modifikacije 07.11.2019"
Scenario: Baseline, Year: 2030, Units: Thousand Tonnes of Oil Equivalent

	Solid Fuels	Natural Gas	Crude Oil	Hydropower	Renewables	Biomass	Electricity	Oil Products	Heat	Total
Production	3,594.7	-	-	646.9	91.5	2,072.8	-	-	-	6,405.9
Imports	1,630.1	398.1	927.1	-	-	-	165.8	443.9	-	3,565.0
Exports	-313.0	-	-	-	-	-664.8	-397.5	-181.5	-	-1,556.8
From Stock Change	-	-	-	-	-	-	-	-	-	-
Total Primary Supply	4,911.8	398.1	927.1	646.9	91.5	1,408.1	-231.8	262.5	-	8,414.1
Coal Mining and coke production	-1,132.3	-	-	-	-	-	-	-	-	-1,132.3
Oil Rafinery	-	-	-927.1	-	-	-	-	908.6	-	-18.5
Electricity Generation	-2,906.0	-	-	-646.9	-91.5	-	1,668.3	-	-	-1,976.1
Heat Generation	-46.6	-67.5	-	-	-	-20.0	-	-1.3	112.6	-22.9
CHP	-181.2	-	-	-	-	-58.5	53.4	-	110.8	-75.5
Transmission and Distribution	-	-5.9	-	-	-	-	-164.8	-	-15.7	-186.4
Total Transformation	-4,266.2	-73.5	-927.1	-646.9	-91.5	-78.5	1,556.9	907.3	207.7	-3,411.8
Statistical Differences	-	-	-	-	-	-	-	-	-	-
Residential	351.6	42.4	-	-	-	1,136.5	425.2	22.6	98.3	2,076.6
Services	182.8	39.0	-	-	-	60.1	267.7	64.3	32.7	646.6
Transport	-	-	-	-	-	-	50.4	756.3	-	806.7
Industry	108.2	238.1	-	-	-	129.9	443.8	86.6	75.8	1,082.4
Agriculture and forestry	-	5.0	-	-	-	-	15.0	30.0	-	50.0
Final non energy consumption	-	-	-	-	-	-	-	70.0	-	70.0
Consumption of the energy branch	3.0	-	-	-	-	3.0	123.0	140.0	1.0	270.0
Total Demand	645.6	324.6	-	-	-	1,329.5	1,325.2	1,169.7	207.7	5,002.3
Unmet Requirements	-	0.0	-	-	-	-0.0	0.0	-	-	-0.0

NA PAŽNJI!!!

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Promotion of Energy Efficiency in Bosnia and Herzegovina

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