Discrepancies between different official data sources available

Decarbonization of the energy sector in Bosnia and Herzegovina| 30.03.2021.

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Implemented by
german cooperation
DEUTSCHE ZUSAMMENARBEIT
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

AGENCIJA ZA STATISTIKU BOSNE I HERCEGOVINE
AGENCY FOR STATISTICS OF BOSNIA AND HERZEGOVINA

SAOPĆENJE
FIRST RELEASE

Molimo korisnike da prilikom upotrebe podataka obavezno navedu izvor
Users are kindly requested to mention the data source

GODINA/ YEAR II | SARAJEVO, 03.04.2018. | BROJ/ NUMBER 2

VIŠEPODRUČNE STATISTIKE
MULTI DOMAIN STATISTICS

STATISTIKA ENERGIJE
ENERGY STATISTICS

UKUPNI ENERGETSKI BILANS, BiH, 2014-2016
TOTAL ENERGY BALANCE, BIH, 2014-2016

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 uglja (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 uglja (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**

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

EUROPEAN COMMISSION
EUROSTAT

Directorate E: Sectoral and regional statistics
Unit E.5: Energy

SHARES Tool Manual

Version 2019.02102020

4.1. Definition of RES-E share

The ratio determining a Member State's RES-E share is not defined directly in the Directive, as such. Article 5 defines only what one could consider as the numerator of such ratio. However, footnote 5 in the *Template for Member State progress reports under Directive 2009/28/EC* provides additional information about how this ratio should be considered in Table 1: gross final consumption of electricity from renewable sources divided by gross final consumption of electricity.

The numerator 'gross final consumption of electricity from renewable sources' is, for the purpose of the calculations in the SHARES tool, defined as the sum of the following elements:

- Gross electricity production by hydropower in accordance with the normalisation rules set out in Annex II, excluding the production of electricity in pumped storage units from water that has previously been pumped uphill. Gross electricity production in mixed hydro plants[7] is included without its electricity production due to pumped storage.

The denominator 'gross final consumption of electricity' is, for the purpose of the calculations in the SHARES tool, defined as:

- Gross electricity production from all energy sources (actual production, no normalisation for hydro and wind), excluding the production of electricity in pumped storage units from water that has previously been pumped uphill
- plus total imports of electricity
- minus total exports of electricity.

EUROPEAN COMMISSION
EUROSTAT

Directorate E: Sectoral and regional statistics
Unit E.5: Energy

SHARES Tool Manual

Version 2019.02102020

4.1. Definition of RES-E share

The ratio determining a Member State's RES-E share is not defined directly in the Directive, as such. Article 5 defines only what one could consider as the numerator of such ratio. However, footnote 5 in the *Template for Member State progress reports under Directive 2009/28/EC* provides additional information about how this ratio should be considered in Table 1: gross final consumption of electricity from renewable sources divided by gross final consumption of electricity.

The numerator 'gross final consumption of electricity from renewable sources' is, for the purpose of the calculations in the SHARES tool, defined as the sum of the following elements:

- Gross electricity production by hydropower in accordance with the normalisation rules set out in Annex II, excluding the production of electricity in pumped storage units from water that has previously been pumped uphill. Gross electricity production in mixed hydro plants[7] is included without its electricity production due to pumped storage.

H&C Numerator: Final energy consumption of renewable energies **other than** electricity, heat and bioliquids in sectors **other than** transport. Using the terminology and definitions of joint annual energy questionnaires, this covers:

- all consumption reported under 'Industry sector' and 'Other sectors' on the renewables questionnaire;
- all consumption reported under 'Transformation sector — Blast furnaces' on the renewables questionnaire.

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 uglja (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 uglja (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**

Implemented by

Definition of RES-E share

The numerator is 'gross final consumption of electricity from renewable sources'

$$RES(E) = \frac{(477)}{(1344 + 333 - 517)}$$

$$RES(E) = 41\%$$

The denominator is Gross electricity production from all energy sources plus **total imports** of electricity minus **total exports** of electricity.

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 uglja (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 uglja (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**

Implemented by

Definition of RES-E share

The numerator is 'gross final consumption of electricity from renewable sources'

eurostat

Electricity generation from all sources	2015
Total (RES-E denominator)	1,159.4
RES-E [%]	**41.05%**

The denominator is
Gross electricity production from all energy sources
plus **total imports** of electricity
minus **total exports** of electricity.

Bosnia and Herzegovina

eurostat

ktoe 2015		TOTAL	C0000X0350-0370	O4000XBIO	O4100_TOT	G3000	RA000	RA100	R5110-5150_W6000RI	H8000	E7000
		Total	Solid fossil fuels	Oil and petroleum products	Crude oil	Natural gas	Renewables and biofuels	Hydro	Primary solid biofuels	Heat	Electricity
+ Primary production	PPRD	4,367.4	3,165.1	0.0	0.0	0.0	1,202.3	477.3	725.0	0.0	Z
+ Recovered & recycled products	RCV_RCY	0.0	0.0	0.0	Z	Z	0.0	Z	Z	Z	Z
+ Imports	IMP	3,314.1	958.0	1,845.7	946.4	177.4	0.0	Z	0.0	0.0	332.9
- Exports	EXP	1,230.8	313.0	240.1	0.0	0.0	161.2	Z	144.3	0.0	516.5
+ Change in stock	STK_CHG	-267.6	-194.6	-73.0	-2.0	0.0	0.0	Z	0.0	Z	Z
= Gross available energy	GAE	**6,183.1**	**3,615.4**	**1,532.7**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
- International maritime bunkers	INTMARB	0.0	0.0	0.0	Z	0.0	0.0	Z	Z	Z	Z
= Gross inland consumption	GIC	**6,183.1**	**3,615.4**	**1,532.7**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
- International aviation	INTAVI	6.3	Z	6.3	0.0	Z	0.0	Z	Z	Z	Z
= Total energy supply	NRGSUP	**6,176.8**	**3,615.4**	**1,526.4**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
Gross inland consumption (Europe 2020-2030)	GIC2020-2030	6,183.1	Z	Z	Z	Z	Z	Z	Z	Z	Z
Primary energy consumption (Europe 2020-2030)	PEC2020-2030	6,113.9	Z	Z	Z	Z	Z	Z	Z	Z	Z
Final energy consumption (Europe 2020-2030)	FEC2020-2030	3,497.3	Z	Z	Z	Z	Z	Z	Z	Z	Z
Transformation input	TI_E	**5,554.0**	**3,951.8**	**985.7**	**944.4**	**45.1**	**571.4**	**477.3**	**94.1**	**0.0**	**0.0**
+ Electricity & heat generation	TI_EHG_E	3,384.2	2,807.3	41.3	0.0	45.1	490.5	477.3	13.2	0.0	0.0
+ Main activity producer electricity only	TI_EHG_MAPE_E	2,959.8	2,475.8	6.7	0.0	0.0	477.3	477.3	0.0	0.0	Z
+ Main activity producer CHP	TI_EHG_MAPCHP_E	84.0	84.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	Z
+ Main activity producer heat only	TI_EHG_MAPH_E	97.3	21.1	27.8	0.0	35.3	13.2	Z	13.2	0.0	Z
+ Autoproducer electricity only	TI_EHG_APE_E	199.1	182.5	6.7	0.0	9.9	0.0	0.0	0.0	0.0	Z
+ Charcoal production plants	TI_CPP_E	80.9	Z	Z	Z	Z	80.9	Z	80.9	Z	Z
Transformation output	TO	**3,410.3**	**621.0**	**927.0**	**0.0**	**0.0**	**31.0**	**Z**	**Z**	**157.4**	**1,413.4**
+ Electricity & heat generation	TO_EHG	1,570.9	Z	Z	Z	Z	Z	Z	Z	157.4	1,413.4
+ Main activity producer electricity only	TO_EHG_MAPE	1,356.9	Z	Z	Z	Z	Z	Z	Z	Z	1,356.9
+ Main activity producer CHP	TO_EHG_MAPCHP	56.7	Z	Z	Z	Z	Z	Z	Z	37.8	18.9
+ Main activity producer heat only	TO_EHG_MAPH	84.5	Z	Z	Z	Z	Z	Z	1344	Z	84.5	Z
+ Autoproducer electricity only	TO_EHG_APE	37.6	Z	Z	Z	Z	Z	Z	Z	Z	37.6
+ Autoproducer heat only	TO_EHG_APH	35.2	Z	Z	Z	Z	Z	Z	42	Z	35.2	Z
+ Coke ovens	TO_CO	776.1	621.0	Z	Z	Z	Z	Z	Z	Z	Z

Bosnia and Herzegovina

eurostat

6114

250

ktoe 2015		TOTAL	C0000X0350-0370	O4000XBIO	O4100_TOT	G3000	RA000	RA100	R5110-5150_W6000RI	H8000	E7000
		Total	Solid fossil fuels	Oil and petroleum products	Crude oil	Natural gas	Renewables and biofuels	Hydro	Primary solid biofuels	Heat	Electricity
+ Primary production	PPRD	4,367.4	3,165.1	0.0	0.0	0.0	1,202.3	477.3	725.0	0.0	Z
+ Recovered & recycled products	RCV_RCY	0.0	0.0	0.0	Z	Z	0.0	Z	Z	Z	Z
+ Imports	IMP	3,314.1	958.0	1,845.7	946.4	177.4	0.0	Z	0.0	0.0	332.9
- Exports	EXP	1,230.8	313.0	240.1	0.0	0.0	161.2	Z	144.3	0.0	516.5
+ Change in stock	STK_CHG	-267.6	-194.6	-73.0	-2.0	0.0	0.0	Z	0.0	Z	Z
= Gross available energy	GAE	**6,183.1**	**3,615.4**	**1,532.7**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
- International maritime bunkers	INTMARB	0.0	0.0	0.0	Z	0.0	0.0	Z	Z	Z	Z
= Gross inland consumption	GIC	**6,183.1**	**3,615.4**	**1,532.7**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
- International aviation	INTAVI	6.3	Z	6.3	0.0	Z	0.0	Z	Z	Z	Z
= Total energy supply	NRGSUP	**6,176.8**	**3,615.4**	**1,526.4**	**944.4**	**177.4**	**1,041.1**	**477.3**	**580.7**	**0.0**	**-183.6**
Gross inland consumption (Europe 2020-2030)	GIC2020-2030	6,183.1	Z	Z	Z	Z	Z	Z	Z	Z	Z
Primary energy consumption (Europe 2020-2030)	PEC2020-2030	6,113.9	Z	Z	Z	Z	Z	Z	Z	Z	Z
Final energy consumption (Europe 2020-2030)	FEC2020-2030	3,497.3	Z	Z	Z	Z	Z	Z	Z	Z	Z
Transformation input	TI_E	**5,554.0**	**3,951.8**	**985.7**	**944.4**	**45.1**	**571.4**	**477.3**	**94.1**	**0.0**	**0.0**
+ Electricity & heat generation	TI_EHG_E	3,384.2	2,807.3	41.3	0.0	45.1	490.5	477.3	13.2	0.0	0.0
+ Main activity producer electricity only	TI_EHG_MAPE_E	2,959.8	2,475.8	6.7	0.0	0.0	477.3	477.3	0.0	0.0	Z
+ Main activity producer CHP	TI_EHG_MAPCHP_E	84.0	84.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	Z
+ Main activity producer heat only	TI_EHG_MAPH_E	97.3	21.1	27.8	0.0	35.3	13.2	Z	13.2	0.0	Z
+ Autoproducer electricity only	TI_EHG_APE_E	199.1	182.5	6.7	0.0	9.9	0.0	0.0	0.0	0.0	Z
+ Charcoal production plants	TI_CPP_E	80.9	Z	Z	Z	Z	80.9	Z	80.9	Z	Z
Transformation output	TO	**3,410.3**	**621.0**	**927.0**	**0.0**	**0.0**	**31.0**	**Z**	**Z**	**157.4**	**1,413.4**
+ Electricity & heat generation	TO_EHG	1,570.9	Z	Z	Z	Z	Z	Z	Z	157.4	1,413.4
+ Main activity producer electricity only	TO_EHG_MAPE	1,356.9	Z	Z	Z	Z	Z	Z	Z	Z	1,356.9
+ Main activity producer CHP	TO_EHG_MAPCHP	56.7	Z	Z	Z	Z	Z	Z	Z	37.8	18.9
+ Main activity producer heat only	TO_EHG_MAPH	84.5	Z	Z	3212	Z	Z	Z	Z	84.5	Z
+ Autoproducer electricity only	TO_EHG_APE	37.6	Z	Z	Z	Z	Z	Z	Z	Z	37.6
+ Autoproducer heat only	TO_EHG_APH	35.2	Z	Z	Z	Z	Z	Z	Z	35.2	Z
+ Coke ovens	TO_CO	776.1	621.0	Z	Z	Z	Z	Z	Z	Z	Z
Energy sector	NRG_E	**426.3**	**3.4**	**143.9**	**0.0**	**0.0**	**0.0**	**Z**	**0.0**	**1.4**	**122.5**
Distribution losses	DL	**129.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**Z**	**0.0**	**8.7**	**119.9**
Available for final consumption	AFC	**3,477.8**	**281.3**	**1,323.9**	**0.0**	**131.8**	**500.7**	**0.0**	**486.6**	**147.3**	**987.4**
Final non-energy consumption	FC_NE	**69.1**	**0.0**	**69.1**	**0.0**	**0.0**	**0.0**	**Z**	**Z**	**Z**	**Z**
+ Non-energy use industry/transformation/energy	TI_NRG_FC_IND_NE	69.1	0.0	69.1	0.0	0.0	0.0	Z	Z	Z	Z
+ Non-energy use in industry sector	FC_IND_NE	69.1	Z	69.1	0.0	0.0	0.0	Z	Z	Z	Z
Final energy consumption	FC_E	3,316.9	281.0	1,256.0	0.0	131.8	500.7	Z	486.6	124.2	917.9

eurostat

Year	2015	2016	2017	2018	2019
RES [%]	**26.61%**	**25.36%**	**23.24%**	**35.97%**	**37.58%**

$$RES_{2018}[\%]=\frac{1667}{4635}$$

	RES share
(a) RES electricity	513.60=515.67-2.07 (transport)
(b) RES heating and cooling	1,151.94
(c) RES transport	2.07
(a) + (b) + (c)	1,667.61

In the Eurostat balance for 2018

551.8 hydro + 8.9 Wind

Hydro share is calculated through averaage load factor

Ukupni energetski bilans, BiH, 2014*
*Total energy balance, BiH, 2014**

BILANS 2014 / BALANCE 2014	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*	3.768	-	-	-	510	1.829	-	-	6.107
Uvoz / *Import*	909	971	760	169	-	-	272	-	3.081
Saldo zaliha / *Stock changes*	30	57	- 8	-	-	-	-	-	79
Izvoz / *Export*	- 395	-	- 302	-	-	- 274	- 516	-	- 1.487
Međunarodna skladišta / *Bunkers*	-	-	-	-	-	-	-	-	-
Bruto domaća potrošnja energije / *Gross inland consumption*	**4.312**	**1.028**	**451**	**169**	**510**	**1.555**	**- 244**	**-**	**7.780**
Energetska transformacija - ulaz / *Transformation input*	**4.573**	**1.028**	**34**	**45**	**-**	**-**	**-**	**-**	**5.679**
Termoelektrane / *Thermal power plants*	3.244	-	7	-	-	-	-	-	3.251
Samoproizvođači / *Autoproducers*	240	-	4	10	-	-	-	-	255
Toplane / *District heating plants*	21	-	23	35	-	-	-	-	78
Prerada uglja (briketi, koks) / *Patent fuel, briquetting and coke-oven plants*	1.068	-	-	-	-	-	-	-	1.068
Rafinerije / *Rafineries*	-	1.028	-	-	-	-	-	-	1.028
Energetska transformacija - izlaz / *Transformation output*	**583**	**-**	**988**	**-**	**-**	**-**	**879**	**119**	**2.570**
Termoelektrane / *Thermal power plants*	-	-	-	-	-	-	845	32	877
Samoproizvođači / *Autoproducers*	-	-	-	-	-	-	35	15	50
Toplane / *District heating plants*	-	-	-	-	-	-	-	72	72
Prerada uglja (briketi, koks) / *Patent fuel, briquetting and coke-oven plants*	583	-	-	-	-	-	-	-	583
Rafinerije / *Rafineries*	-	-	988	-	-	-	-	-	988
Izmjene i transferi, povratni tokovi / *Exchanges and transfers, returns*	**-**	**-**	**-**	**-**	**- 510**	**-**	**510**	**-**	**-**
Potrošnja grane energetike / *Consumption of the energy branch*	**4**	**-**	**138**	**-**	**-**	**3**	**122**	**1**	**268**
Gubici prenosa i distribucije energije / *Losses*	**-**	**-**	**-**	**1**	**-**	**-**	**114**	**8**	**123**
Raspoloživo za finalnu potrošnju / *Available for final consumption*	**318**	**-**	**1.266**	**123**	**-**	**1.552**	**910**	**110**	**4.280**
Finalna ne-energetska potrošnja / *Final non-energy consumption*	**-**	**-**	**66**	**-**	**-**	**-**	**-**	**-**	**66**

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 uglja (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 uglja (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**

eurostat

Year	2015	2016	2017	2018	2019
RES [%]	**26.61%**	**25.36%**	**23.24%**	**35.97%**	**37.58%**

$$RES_{2018}[\%] = \frac{1667}{4635} = 35.97$$

(a) RES electricity	513.60
(b) RES heating and cooling	1,151.94
(c) RES transport	2.07
(a) + (b) + (c)	1,667.61

Eurostat RES Share

- 7.7 Charcoal
- 1,119.1 Solid biofuels
- 29,8 Solid biofuels heat

In the Eurostat balance for 2018

- 7.7 Charcoal
- 1119.1 Solid biofuels
- 30.8 Solid biofuels heat

eurostat

Year	2015	2016	2017	2018	2019
RES [%]	**26.61%**	**25.36%**	**23.24%**	**35.97%**	**37.58%**

$$RES_{2018}[\%]=\frac{1667}{4635}=35.97$$

COAL questionnaire	571.2
OIL questionnaire	1,443.8
NATURAL GAS questionnaire	148.1
ELECTRICITY questionnaire	1,345.9
RENEWABLES questionnaire	**1,126.8**
Total	4635.8

Res share tool

Industry	17.2
Charcoal	7.7
Solid biofuels	1,101.92
Total	1,126.92

Eurostat balance

Industry	17.2
Charcoal	7.7
Solid biofuels	1,101.92
Total	1,126.92

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

ANKETA O POTROŠNJI ENERGIJE U DOMAĆINSTVIMA U BIH

SURVEY ON HOUSEHOLD ENERGY CONSUMPTION IN BIH

2015

Bosna i Hercegovina
Bosnia and Herzegovina

Tabela 5. Način na koji se pretežno zagrijava stambena jedinica, %

Table 5. The way in which predominantly heated housing unit, %

	Ne grije se *Not heated*	**Sobno grijanje** *Rooms heating*	**Etažno/vlastito centralno grijanje** *Own central heating*	**Centralno grijanje iz toplana** *Central heating from heating plant*
Bosna i Hercegovina	0,2*	72.9	19.0	7.9
Federacija BiH	0,1*	69.8	20.4	9.6
Republika Srpska	0,4*	78.2	16.3	5.2
Brčko distrikt BiH	0,7*	78.2	21.1	_

Tabela 6. Energenti koji se uglavnom koriste za pretežno etažno/vlastito centralno grijanje, %

Table 6. The energy commodities which are mainly used for predominantly own central heating, %

	Električna energija *Electricity*	**Prirodni plin** *Natural gas*	**Lož ulje** *Fuel oil*	**Ugalj** *Coal*	**Drvo** *Wood*
Bosna i Hercegovina	3.4	9.1	1,6*	31.4	54.5
Federacija BiH	1,2*	13.4	1,4*	38.8	45.1
Republika Srpska	8,1**	0.0	1,9*	13.3	76.7
Brčko distrikt BiH	7.0	0.0	1,9*	45.7	45.5

Number of households: 1,155,736.00

Energy carrie	Electricity kwh	Gas m3	LPG (kg)	Wood prm	Waste kg	Coal (Tons)	DH kWh
BIH	4568.2	871.7	67.4	**10.8**	3162.2	3.9	7909
FBiH	4483.80	871.70	63.80	9.50	3685.30	3.90	7863.10
RS	4700.40		71.60	12.90	2203.10	3.80	8067.70
BD	4906.00		60.30	11.90	1381.50	4.60	
Caloric value	1	9.6	11.6	1670	0.85	2.8	1
Unit	kWh/kWh	kwh/m3	kWh/kg	kWh/prm	kWh/kg	kWh/kg	kWh/kWh
Caloric value	1	10.8	12.8	2070	4	5.6	1
	Electricity kwh	**Gas m3**	**LPG (kg)**	**Wood prm**	**Waste kg**	**Coal (Tons)**	**DH kWh**
Energy (kWh)	4568.20	8368.32	781.84	18036.00	2687.87	21840.00	7909.00

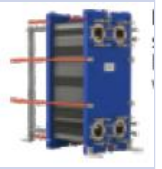
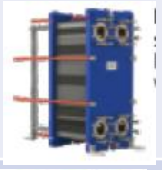
1339.07 ktoe

What type of energy carrier your household predominantly uses during the heating season?
What do you heat with? (Coal, electricity, wood, wood and coal, heavy oil)

N	852797
Drva (cjepanice)	74.8%
Struja	8.9%
Pelet (biomasa)	6.6%
Gas	4.7%
Ugalj	4.3%
Mazut	0.2%

There are more than 100 thousand housheolds attached to DH systems

	Individual houses		Multi/apartment buildings - MABs			
	SINGLE-FAMILY HOUSES SFH	TERRACED HOUSES TH	Multi-Family Houses MH	Attached Apartment Buildings AB	Appartment Blocks AB2	High Rise Buildings H
A <1945						
B 1946/ 1960						
C 1961- 1970						
D 1971- 1980						
E 1981- 1990						
F 1991- 2014						

	Individual houses		Multi/apartment buildings - MABs				
	SINGLE-FAMILY HOUSES SFH	TERRACED HOUSES TH	Multi-Family Houses MH	Attached Apartment Buildings AB	Appartment Blocks AB2	High Rise Buildings H	
A <1945							
B 1946/ 1960							
C 1961- 1970							
D 1971- 1980							
E 1981- 1990							
F 1991-2014							

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Tabela 12. Potrebna toplotna energija za grijanje stambenih objekata u BiH (MWh/god.) | **Table 12.** Energy need for heating of residential buildings in BiH (MWh/year)

	INDIVIDUALNO STANOVANJE | SINGLE-FAMILY HOUSING		KOLEKTIVNO STANOVANJE | COLLECTIVE HOUSING					
	Slobodnostojeća kuća Single-family house SF	Kuća u nizu Terraced house TH	Manja stambena zgrada Multi-family house MH	Stambena zgrada u nizu/ gradskom bloku Attached apartment building in urban blocks AB1	Veliki stambeni blok/ stambena lamela Apartment block AB2	Neboderi High-rise building H	UKUPNO TOTAL	UKUPNO TOTAL
do 1945. | up to 1945	244.439	8.433	17.488	20.151			290.512	1,48%
1946-1960	719.865	28.327	195.151	58.365	24.688		1.026.397	5,24%
1961-1970	2.752.871	87.198	327.081	80.437	284.792	58.326	3.590.706	18,32%
1971-1980	6.350.897	156.250	189.255		662.681	34.574	7.393.657	37,74%
1981-1991	3.101.309	89.498	115.571	3.022	197.170		3.506.571	17,90%
1992-2014	3.528.879		116.191	35.918	105.050		3.786.038	19,32%
UKUPNO | TOTAL	**16.698.261**	**369.706**	**960.738**	**197.893**	**1.274.382**	**92.900**	**19.593.880**	**100,00%**
UKUPNO | TOTAL	**85,22%**	**1,89%**	**4,90%**	**1,01%**	**6,50%**	**0,48%**	**100,00%**	

Tabela 13. Potrebna toplotna energija za grijanje stambenih objekata FBiH (MWh/god.) | **Table 13.** Energy need for heating of residential buildings in FBiH (MWh/year)

	INDIVIDUALNO STANOVANJE | SINGLE-FAMILY HOUSING		KOLEKTIVNO STANOVANJE | COLLECTIVE HOUSING					
	Slobodnostojeća kuća Single-family house SF	Kuća u nizu Terraced house TH	Manja stambena zgrada Multi-family house MH	Stambena zgrada u nizu/ gradskom bloku Attached apartment building in urban blocks AB1	Veliki stambeni blok/ stambena lamela Apartment block AB2	Neboderi High-rise building H	UKUPNO TOTAL	UKUPNO TOTAL
do 1945. | up to 1945	127.926	1.239	15.701	20.151			165.017	1,45%
1946-1960	422.283	23.471	93.771	23.181	24.688		587.395	5,15%
1961-1970	1.470.968	72.020	183.739	65.858	270.121	49.772	2.112.477	18,52%
1971-1980	3.371.104	127.791	103.175		545.930	27.988	4.175.989	36,61%
1981-1991	1.880.636	60.368	65.656	2.679	94.309		2.103.647	18,44%
1992-2014	2.193.218		37.394	4.725	26.464		2.261.801	19,83%
UKUPNO | TOTAL	**9.466.135**	**284.889**	**499.436**	**116.594**	**961.512**	**77.760**	**11.406.326**	**100,00%**
UKUPNO | TOTAL	**83,00%**	**2,49%**	**4,38%**	**1,02%**	**8,43%**	**0,68%**	**100,00%**	

Tabela 14. Potrebna toplotna energija za grijanje stambenih objekata RS (MWh/god.) | **Table 14.** Energy need for heating of residential buildings in RS (MWh/year)

	INDIVIDUALNO STANOVANJE | SINGLE-FAMILY HOUSING		KOLEKTIVNO STANOVANJE | COLLECTIVE HOUSING					
	Slobodnostojeća kuća Single-family house SF	Kuća u nizu Terraced house TH	Manja stambena zgrada Multi-family house MH	Stambena zgrada u nizu/ gradskom bloku Attached apartment building in urban blocks AB1	Veliki stambeni blok/ stambena lamela Apartment block AB2	Neboderi High-rise building H	UKUPNO TOTAL	UKUPNO TOTAL
do 1945. | up to 1945	115.900	7.194	738	0			123.833	1,60%
1946-1960	283.258	4.857	101.380	35.184	0		424.678	5,49%
1961-1970	1.252.205	14.863	131.506	14.579	14.671	8.555	1.436.379	18,58%
1971-1980	2.857.897	28.002	69.671		116.751	6.585	3.078.908	39,84%
1981-1991	1.137.924	28.721	49.915	343	102.862		1.319.766	17,08%
1992-2014	1.203.258		67.156	18.696	56.464		1.345.575	17,41%
UKUPNO | TOTAL	**6.850.443**	**83.638**	**420.368**	**68.801**	**290.749**	**15.140**	**7.729.138**	**100,00%**
UKUPNO | TOTAL	**88,63%**	**1,08%**	**5,44%**	**0,89%**	**3,76%**	**0,20%**	**100,00%**	

emented by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

1686 ktoe

Table 2: Information about the properties and operating instructions given by the manufacturers of the five Serbian furnaces F1 till F5 tested within this project

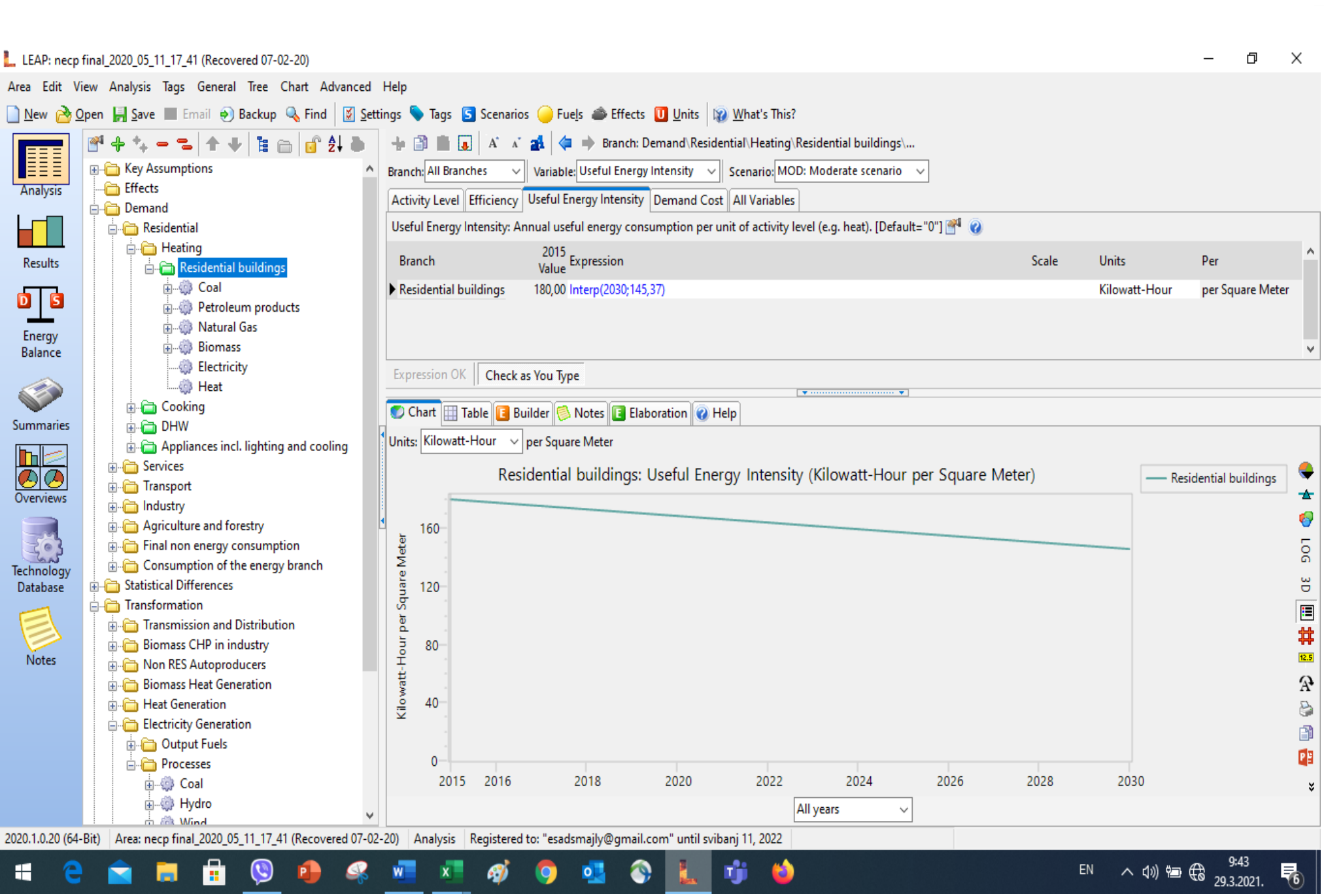
	F1	F2	F3	F4	F5
Manufacturer / Name	*Tim Sistem* Rittium 6	*Alfa Plam* Commo	*Alfa Plam* 70F	*MBS* 7 RZ Plus	*Radijator* FK 20
Nominal thermal capacity	8 kW	21 kW	7 kW	8,5 kW	25 kW
Nominal efficiency	86 %	86,1 %	74 %	85 %	>85 %





Table 2: Information about the properties and operating instructions given by the manufacturers of the five Serbian furnaces F1 till F5 tested within this project

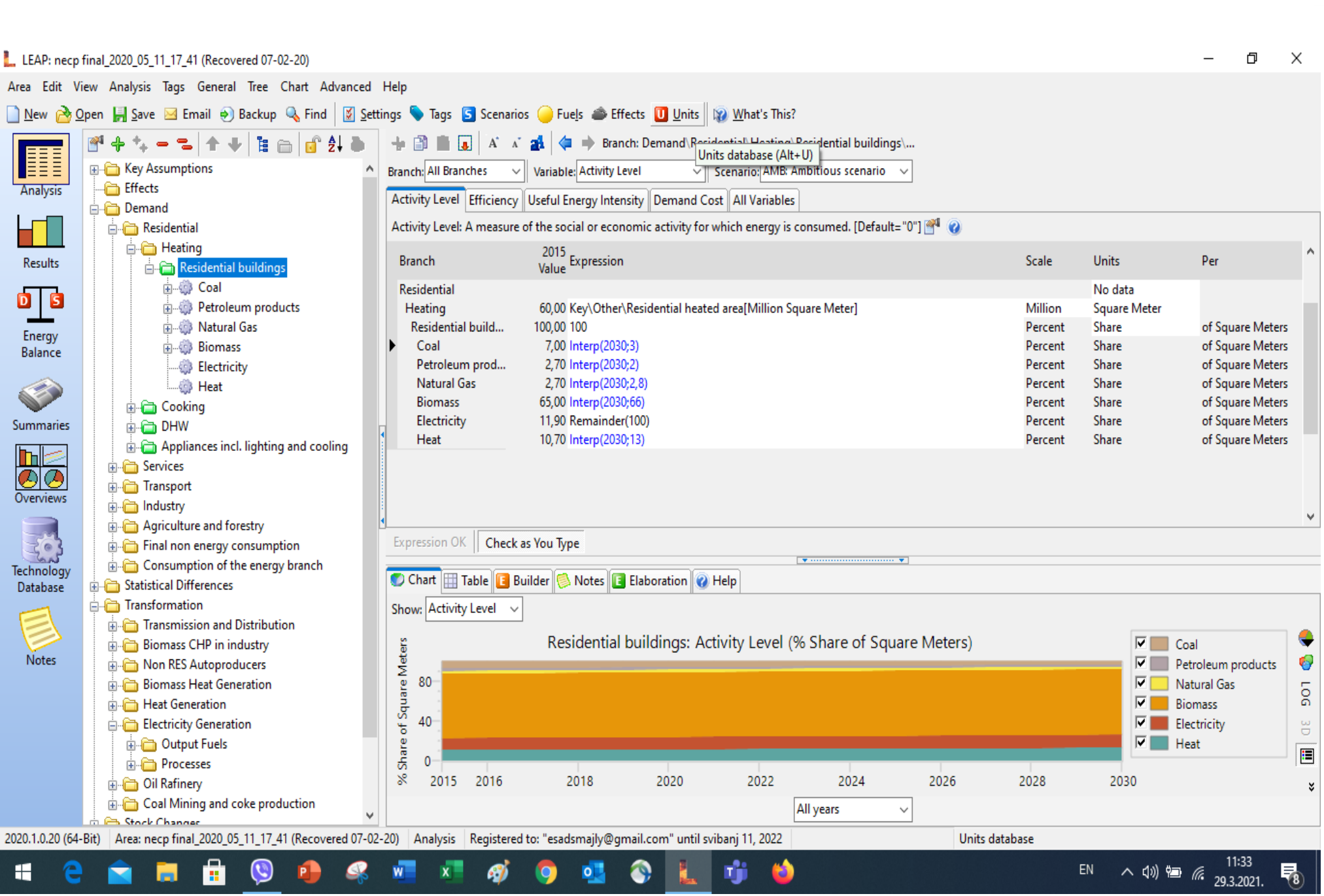
	F1	F2	F3	F4	F5
Manufacturer / Name	*Tim Sistem* Rittium 6	*Alfa Plam* Commo	*Alfa Plam* 70F	*MBS* 7 RZ Plus	*Radijator* FK 20
Nominal thermal capacity	8 kW	21 kW	7 kW	8,5 kW	25 kW
Nominal efficiency	86 %	86,1 %	74 %	85 %	>85 %
					
Measured part load effieincy	86%	83,2%	57,8%	60%	80%



Renovation strategy:
180 kwh/m^2 yearly;
60,000,000.00 m^2:

Share of:
Coal %
Biomass %
Electricity %
Oil fuels %
Gas %

Efficiencies?



Share of:
Coal 7%
Biomass 65%
Electricity 11.9%
Oil fuels 2.7%
Gas 2.7%

Efficiencies?

LEAP: necp final_2020_05_11_17_41 (Recovered 07-02-20)

Area Edit View Analysis Tags General Tree Chart Advanced Help

New Open Save Email Backup Find Settings Tags Scenarios Fuels Effects Units What's This?

Analysis
Results
Energy Balance
Summaries
Overviews
Technology Database
Notes

- Key Assumptions
- Effects
- Demand
  - Residential
    - Heating
      - Residential buildings
        - Coal
        - Petroleum products
        - Natural Gas
        - Biomass
        - Electricity
        - Heat
    - Cooking
    - DHW
    - Appliances incl. lighting and cooling
  - Services
  - Transport
  - Industry
  - Agriculture and forestry
  - Final non energy consumption
  - Consumption of the energy branch
- Statistical Differences
- Transformation
- Stock Changes
- Resources
- Non Energy
- Indicators

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

Branch: All Branches | Variable: Efficiency | Scenario: MOD1: MOD 2

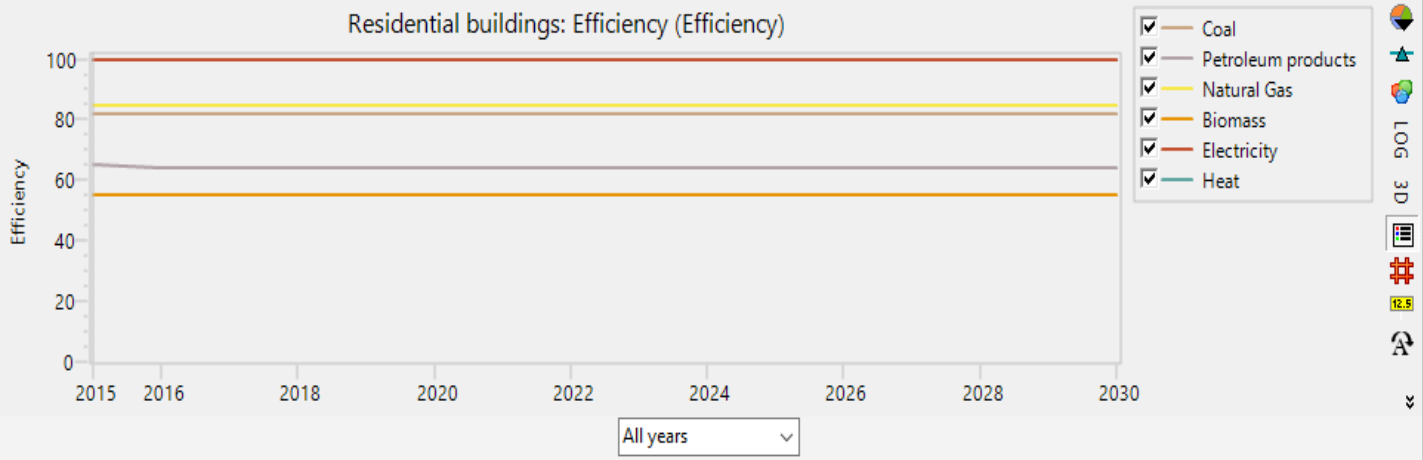
Activity Level | Efficiency | Useful Energy Intensity | Demand Cost | All Variables

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

Branch	Fuel	2015 Value	Expression	Scale	Units
Coal	Coal Unspecified	82,00	82		Efficiency
Petroleum products	Gas Diesel Oil	65,00	Interp(2016;64)		Efficiency
Natural Gas	Natural Gas	85,00	85		Efficiency
Biomass	Wood	55,00	55		Efficiency
Electricity	Electricity	100,00	100		Efficiency
Heat	Heat	100,00	100		Efficiency

Expression OK | Check as You Type

Chart | Table | Builder | Notes | Elaboration | Help



2020.1.0.20 (64-Bit) | Area: necp final_2020_05_11_17_41 (Recovered 07-02-20) | Analysis | Registered to: "esadsmajly@gmail.com" until svibanj 11, 2022

EN 9:56 29.3.2021.

LEAP: necp final_2020_05_11_17_41 (Recovered 07-02-20)

Area Edit View Advanced Help

New Open Save What's This?

Show: Fuel Groupings | Scenario: Baseline | Year: 2015 | Units: Thousand | Tonnes of Oil Equivalent | Differences: None | Demand Detail: Fuels & Sectors | Values

Table Chart Sankey Diagram

Energy Balance for Area "necp final_2020_05_11_17_41 (Recovered 07-02-20)"

Scenario: Baseline, Year: 2015, Units: Thousand Tonnes of Oil Equivalent

	Solid Fuels	Natural Gas	Crude Oil	Hydropower	Renewables	Biomass	Electricity	Oil Products	Heat	Total
Production	3.201,70	-	-	477,00	0,20	1.472,60	-	-	-	5.151,50
Imports	950,00	189,82	943,94	-	-	1,00	324,31	978,88	9,77	3.397,71
Exports	-313,00	-	-	-	-	-250,00	-500,00	-239,00	-	-1.302,00
From Stock Change	-190,00	-	-2,00	-	-	-12,00	-	-71,00	-	-275,00
Total Primary Supply	3.648,70	189,82	941,94	477,00	0,20	1.211,60	-175,69	668,88	9,77	6.972,21
Coal Mining and coke production	-572,22	-	-	-	-	-	-	-	-	-572,22
Oil Rafinery	-	-	-941,94	-	-	-	-	923,10	-	-18,84
Electricity Generation	-2.551,83	-	-	-477,00	-0,20	-	1.314,20	-	71,96	-1.642,87
Heat Generation	-20,83	-30,00	-	-	-	-	-	-17,78	36,00	-32,61
Biomass Heat Generation	-	-	-	-	-	-3,53	-	-	3,00	-0,53
Non RES Autoproducers	-216,67	-16,67	-	-	-	-	36,00	-16,67	16,00	-198,00
Biomass CHP in industry	-	-	-	-	-	-16,67	0,67	-	2,00	-14,00
Transmission and Distribution	-	-2,58	-	-	-	-	-120,57	-	-9,72	-132,87
Total Transformation	-3.361,55	-49,24	-941,94	-477,00	-0,20	-20,20	1.230,29	888,66	119,24	-2.611,95
Statistical Differences	-	-	-	-	-	-	-	-	-	-
Residential	79,73	36,18	-	-	-	1.134,64	398,20	47,99	99,36	1.796,09
Services	78,67	25,54	-	-	-	26,76	191,65	45,65	28,64	396,91
Transport	-	-	-	-	-	-	7,37	1.133,89	-	1.141,27
Industry	125,75	78,86	-	-	-	27,00	372,38	108,01	-	712,00
Agriculture and forestry	-	-	-	-	-	-	5,00	12,00	-	17,00

Animate 2015 2030 Year on Chart

2020.1.0.20 (64-Bit) Area: necp final_2020_05_11_17_41 (Recovered 07-02-20) Energy Ba Registered to: "esadsmajly@gmail.com" until svibanj 11, 2022

EN 9:53 29.3.2021.

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Conclussions and recommendations:

- To confirm concensus that RES share tool will be the main tool for observing the main parameters in each CP (therefore the real savings, not theoretical and real CO2 emissions will be observed)
- Main FEC, TPES, RES shares parameters for the RES share tool to be discerned
- Get full knowledge or transfer knowledge on RES Share calculation for modelers
- Find clear coleration between stoves/boilers and energy statistics
- Close cooperation with national statistics institutions responsible – involve them into modelling teams
- Have concensus on specific parameters data (like wood and biomass – have updated survey)
- Pinpoint all RES fuels in Eurostat and RES share (bio-Kerosene, bio-Fuels, municipal waste)
- Position efficient cogeneration against RES share

Thanks!!

Esad Smajlović
GIZ Office Sarajevo,
Decarbonization of Energy Sector of Bosnia and Herzegovina
Senior Advisor

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Ferhadija 19/2
71 000 Sarajevo
Bosnia and Herzegovina

T +387 33 204 895
F +387 33 209 858
M +387 61 486 773
E esad.smajlovic@giz.de
I www.giz.de

eurostat

Year	2015	2016	2017	2018	2019
RES [%]	**26.61%**	**25.36%**	**23.24%**	**35.97%**	**37.58%**

$$RES_{2018}[\%]=\frac{1667}{4635}=35.97$$

COAL questionnaire	571.2
OIL questionnaire	1,443.8
NATURAL GAS questionnaire	148.1
ELECTRICITY questionnaire	**1,345.9**
RENEWABLES questionnaire	1,126.8
Total	**4635.8**

Eurostat RES share		Eurostat balance
Industry Sector	375	375.5
Transport Sector	5	5.1
Residential	403	403
Commercial	196	196.3
Agriculture/Forestry	5	5.3
Fishing	0	0
T&D	116	116
Consumption energy	**107**	**138**
Heat elect	137.6	137.6
TOTAL	**1345.9**	1