



Building Stock	GR National	NOA model of the Greek residential building stock	Year	2015
Details	Basic case - year 2015			

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFH.01.Gen	SFH.02-03.Gen	SFH.04.Gen	MFH.01.Gen	MFH.02-03.Gen	MFH.04.Gen				
Dataset	GR-N-Res.2015.00.1.01	GR-N-Res.2015.00.1.02	GR-N-Res.2015.00.1.03	GR-N-Res.2015.00.1.04	GR-N-Res.2015.00.1.05	GR-N-Res.2015.00.1.06				

Thermal Envelope Average Building

Basic data

	160.7	182.8	185.3	1274.2	890.0	754.8	TABULA average buildings				
Floor area TABULA	270.0	307.1	311.4	1873.7	1308.7	1110.0					m ²
Floor area national	3.18	2.20	2.35	28.83	12.66	7.95					m ²
Number of dwellings											

Thermal envelope areas (external dimensions)

	117.8	127.2	129.3	287.3	237.0	187.0	TABULA average buildings				
Roof	169.3	243.5	148.0	663.4	785.9	440.0					m ²
Wall	38.8	29.7	25.6	387.3	192.5	96.0					m ²
Window	114.4	112.4	130.9	287.3	237.0	187.0					m ²
Floor											

Original state / not refurbished fraction of the envelope area

U-values of the original state	Building stock model - state indicators										
Roof	2.93	1.70	0.45	2.23	1.17	0.44					W/(m ² K)
Wall	2.52	1.35	0.51	2.29	1.22	0.51					W/(m ² K)
Window	4.80	4.39	2.99	4.81	4.51	2.98					W/(m ² K)
Floor	2.90	2.52	0.93	2.33	2.24	0.67					W/(m ² K)

Refurbishments (averages)

Refurbished fraction of envelope areas	Building stock model - state indicators										
Roof											
Wall											
Window											
Floor											
Total (indicative)											

U-values of the refurbished fraction (averages)	Building stock model - state indicators										
Roof											W/(m ² K)
Wall											W/(m ² K)
Window											W/(m ² K)
Floor											W/(m ² K)

Energy Need for Heating TABULA

Utilisation

	EU.SUH	EU.SUH	EU.SUH	EU.MUH	EU.MUH	EU.MUH	TABULA standard calculation procedure				
Utilisation dataset	20.0	20.0	20.0	20.0	20.0	20.0					°C
Internal temperature	0.80	0.80	0.87	0.86	0.89	0.95					
Reduction factor temp.	0.40	0.40	0.40	0.40	0.40	0.40					1/h
Air exchange rate (use)	3.00	3.00	3.00	3.00	3.00	3.00					W/m ²
Internal heat sources	0.60	0.60	0.60	0.60	0.60	0.60					
Red. factor ext. shading	10.0	10.0	10.0	15.0	15.0	15.0					kWh/(m ² a)
Energy need for DHW											

Climate

	National	National	National	National	National	National	TABULA standard calculation procedure				
Climate dataset											
Base temperature	12.0	12.0	12.0	12.0	12.0	12.0					°C
Length of heating season	115	115	115	115	115	115					d/a
External temp. during HS	9.5	9.5	9.5	9.5	9.5	9.5					
Accum. temp. diff. ext. to int. temp.	1205	1205	1205	1205	1205	1205					Kd/a

Envelope

	1201	863	327	4606	2567	731	TABULA standard calculation procedure				
Heat transfer by transmission	2.73	1.68	0.75	2.83	1.77	0.80					W/K
related to surface area	7.48	4.72	1.77	3.61	2.88	0.97					W/(m ² K)
related to ref. floor area											W/(m ² K)

Annual energy balance building

	173.0	109.2	44.7	90.2	74.0	26.7	TABULA standard calculation procedure				
Transmission heat losses	11.8	11.8	10.7	12.7	13.1	11.7					kWh/(m ² a)
Ventilation heat losses	-9.7	-6.6	-5.5	-9.6	-7.9	-4.7					kWh/(m ² a)
Usable solar gains	-7.5	-7.5	-7.4	-7.3	-7.4	-7.5					kWh/(m ² a)
Usable internal gains	167.7	106.9	42.5	86.0	71.8	26.2					kWh/(m ² a)
Energy need for heating											kWh/(m ² a)
recovered by vent. system	167.7	106.9	42.5	86.0	71.8	26.2					kWh/(m ² a)
Net energy need for heating											kWh/(m ² a)



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Total Building Stock

	Building stock model - state indicators										Total	
Number of buildings	10 ⁰	432 083	409 919	232	31 001	75 437	149					948 821
Number of dwellings	10 ³	1 373	901	1	894	955	1					4 124
Floor area national	10 ⁶ m ²	117	126	0	58	99	0					400
Floor area TABULA	10 ⁶ m ²	69	75	0	39	67	0					251

Ventilation Systems with Heat Recovery

	Building stock model - state indicators									
Occurrences	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Heating Systems

Occurrences or Fractions of Produced Heat Building stock model - state indicators

1	Oil	B	C	48%	70%	38%	65%	74%	36%				
2	Gas	B	C	2%	1%	24%	14%	11%	29%				
3	EI	HP	D	4%	4%	38%	8%	4%	36%				
4	DH	TS	C	1%	0%		1%	1%					
5	EI	E	D	7%	3%		9%	6%					
6	Oil	Stove_L	D	15%	6%		2%	1%					
7	Bio_FV	OpenFire	D	22%	16%		2%	3%					
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
Sum				100%	100%	100%	100%	100%	100%				
thereof central				51%	71%	62%	79%	86%	64%				
decentral				49%	29%	38%	21%	14%	36%				
Other Systems					0%				0%				

DHW Systems

Occurrences or Fractions of Produced Heat Building stock model - state indicators

1	EI	E	D	80%	65%	38%	83%	67%	36%				
2	Oil	B	C	18%	35%	38%	11%	27%	36%				
3	Gas	B	C	1%	0%	24%	6%	6%	29%				
4	-	Solar	D										
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
Sum				100%	100%	100%	100%	100%	100%				
thereof central				20%	35%	62%	17%	33%	64%				
decentral				80%	65%	38%	83%	67%	36%				
Other Systems					0%				0%				



Average Buildings Delivered Energy for Space Heating

Building Stock **GR National** NOA model of the Greek residential building stock Year **2015**

Details Basic case - year 2015

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFH.01.Ge n	SFH.02- 03.Gen	SFH.04.Ge n	MFH.01.Ge n	MFH.02- 03.Gen	MFH.04.Ge n				

Heating Systems

Heat demand / heat generation							TABULA standard calculation procedure				
Energy need for heating	167.7	106.9	42.5	86.0	71.8	26.2					kWh/(m ² a)
Net en. need for heating	167.7	106.9	42.5	86.0	71.8	26.2					kWh/(m ² a)
Distribution + storage losses							TABULA system indicators				
Central systems	C	5.4	3.4	1.8	6.2	3.9	1.8				kWh/(m ² a)
Decentral systems	D										kWh/(m ² a)
Auxiliary energy							TABULA system indicators				
Ventil. systems (average)											kWh/(m ² a)
Central systems	C	5.5	1.4	1.7	5.5	1.4	1.7				kWh/(m ² a)
Decentral systems	D										kWh/(m ² a)

Energy expenditure factors (fuels: related to gross calorific value)							TABULA system indicators					
1	Oil	B	C	1.20	1.19	1.12	1.22	1.19	1.12			
2	Gas	B	C	1.13	1.13	1.13	1.13	1.13	1.13			
3	EI	HP	D	0.59	0.59	0.28	0.59	0.59	0.28			
4	DH	TS	C	1.14	1.14	1.14	1.14	1.14	1.14			
5	EI	E	D	1.02	1.02		1.02	1.02				
6	Oil	Stove L	D	1.15	1.15		1.15	1.15				
7	Bio FV	OpenFire	D	5.00	2.86		5.00	2.86				
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

Delivered Energy							TABULA standard calculation procedure					
1	Oil	B	C	207.3	130.8	49.8	112.4	90.2	31.5			kWh/(m ² a)
2	Gas	B	C	194.9	124.1	49.8	103.8	85.8	31.5			kWh/(m ² a)
3	EI	HP	D	98.6	62.9	11.8	50.6	42.2	7.3			kWh/(m ² a)
4	DH	TS	C	196.6	125.3	50.3	104.8	86.0	31.8			kWh/(m ² a)
5	EI	E	D	171.0	109.0		87.7	73.3				kWh/(m ² a)
6	Oil	Stove L	D	192.6	122.8		98.8	82.5				kWh/(m ² a)
7	Bio FV	OpenFire	D	838.3	305.4		430.1	205.2				kWh/(m ² a)
8												kWh/(m ² a)
9												kWh/(m ² a)
10												kWh/(m ² a)
11												kWh/(m ² a)
12												kWh/(m ² a)
13												kWh/(m ² a)
14												kWh/(m ² a)
15												kWh/(m ² a)
16												kWh/(m ² a)
17												kWh/(m ² a)
18												kWh/(m ² a)
19												kWh/(m ² a)
20												kWh/(m ² a)

Delivered Energy - weighted by frequencies							TABULA standard calculation procedure					
1	Oil	B	C	100.2	91.6	19.0	72.7	66.7	11.2			kWh/(m ² a)
2	Gas	B	C	3.8	0.8	11.7	14.4	9.3	9.1			kWh/(m ² a)
3	EI	HP	D	4.2	2.6	4.5	4.0	1.8	2.6			kWh/(m ² a)
4	DH	TS	C	1.4	0.0		0.6	0.9				kWh/(m ² a)
5	EI	E	D	12.4	3.6		7.7	4.1				kWh/(m ² a)
6	Oil	Stove L	D	28.9	7.2		1.9	0.8				kWh/(m ² a)
7	Bio FV	OpenFire	D	188.5	49.1		10.2	6.9				kWh/(m ² a)
8												kWh/(m ² a)
9												kWh/(m ² a)
10												kWh/(m ² a)
11												kWh/(m ² a)
12												kWh/(m ² a)
13												kWh/(m ² a)
14												kWh/(m ² a)
15												kWh/(m ² a)
16												kWh/(m ² a)
17												kWh/(m ² a)
18												kWh/(m ² a)
19												kWh/(m ² a)
20												kWh/(m ² a)

Electricity production by CHP							TABULA standard calculation procedure					
												kWh/(m ² a)
												kWh/(m ² a)
												kWh/(m ² a)
												kWh/(m ² a)



Building Stock	GR National	NOA model of the Greek residential building stock	Year	2015
Details	Basic case - year 2015			

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFH.01.Gen	SFH.02-03.Gen	SFH.04.Gen	MFH.01.Gen	MFH.02-03.Gen	MFH.04.Gen				

DHW Systems

Heat demand / heat generation										TABULA standard calculation procedure	
Energy need for DHW	10.0	10.0	10.0	15.0	15.0	15.0					kWh/(m ² a)
Distribution + storage losses										TABULA system indicators	
Central systems	C	3.5	3.5	3.5	3.9	3.9	3.9				kWh/(m ² a)
Decentral systems	D	3.7	3.7	3.7	3.7	3.7	3.7				kWh/(m ² a)
Auxiliary energy										TABULA system indicators	
Central systems	C	0.2	0.2	0.2	0.2	0.2	0.2				kWh/(m ² a)
Decentral systems	D										kWh/(m ² a)

Energy expenditure factors (fuels: related to gross calorific value) TABULA system indicators

1	El	E	D	1.05	1.03	1.03	1.05	1.03	1.03			
2	Oil	B	C	1.20	1.19	1.12	1.22	1.19	1.12			
3	Gas	B	C	1.13	1.13	1.13	1.13	1.13	1.13			
4	-	Solar	D									
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

Delivered Energy TABULA standard calculation procedure

1	El	E	D	14.4	14.1	14.1	19.7	19.3	19.3				kWh/(m ² a)
2	Oil	B	C	16.2	16.0	15.2	23.0	22.5	21.2				kWh/(m ² a)
3	Gas	B	C	15.2	15.2	15.2	21.3	21.4	21.3				kWh/(m ² a)
4	-	Solar	D										kWh/(m ² a)
5													kWh/(m ² a)
6													kWh/(m ² a)
7													kWh/(m ² a)
8													kWh/(m ² a)
9													kWh/(m ² a)
10													kWh/(m ² a)
11													kWh/(m ² a)
12													kWh/(m ² a)
13													kWh/(m ² a)
14													kWh/(m ² a)
15													kWh/(m ² a)
16													kWh/(m ² a)
17													kWh/(m ² a)
18													kWh/(m ² a)
19													kWh/(m ² a)
20													kWh/(m ² a)

Delivered Energy - weighted by frequencies TABULA standard calculation procedure

1	El	E	D	11.6	9.1	5.4	16.4	12.9	6.9				kWh/(m ² a)
2	Oil	B	C	3.0	5.6	5.8	2.6	6.1	7.6				kWh/(m ² a)
3	Gas	B	C	0.2	0.0	3.6	1.2	1.3	6.1				kWh/(m ² a)
4	-	Solar	D										kWh/(m ² a)
5													kWh/(m ² a)
6													kWh/(m ² a)
7													kWh/(m ² a)
8													kWh/(m ² a)
9													kWh/(m ² a)
10													kWh/(m ² a)
11													kWh/(m ² a)
12													kWh/(m ² a)
13													kWh/(m ² a)
14													kWh/(m ² a)
15													kWh/(m ² a)
16													kWh/(m ² a)
17													kWh/(m ² a)
18													kWh/(m ² a)
19													kWh/(m ² a)
20													kWh/(m ² a)

Electricity production by CHP TABULA standard calculation procedure

													kWh/(m ² a)
													kWh/(m ² a)
													kWh/(m ² a)
													kWh/(m ² a)



Average Buildings Simplified Building Stock Projection

Building Stock	GR National	NOA model of the Greek residential building stock	Year	2015
Details	Basic case - year 2015			

Annotations to this sheet

Total Building Stock

	1	2	3	4	5	6	7	8	9	10	Total
Building type	SFH.01.Gen	SFH.02-03.Gen	SFH.04.Gen	MFH.01.Gen	MFH.02-03.Gen	MFH.04.Gen					
Floor area TABULA	10 ⁶ m ²	69	75	0	39	67	0	0	0	0	251

All energy quantities in **GWh/a**

Heating Systems

Heat Demand for Heating		TABULA standard calculation procedure / projection to building stock										Total
Energy need for heating		11 638	8 008	2	3 398	4 822	3					27 871
Net en. need for heating		11 638	8 008	2	3 398	4 822	3					27 871
Produced heat		11 830	8 188	2	3 592	5 047	3					28 661

Delivered Energy TABULA		TABULA standard calculation procedure / projection to building stock										Sum	
1	Oil	B	C	6 955	6 860	1	2 870	4 478	1				21 165
2	Gas	B	C	263	59	1	571	626	1				1 520
3	El	HP	D	292	196	0	156	119	0				765
4	DH	TS	C	96	0	0	24	60	0				179
5	El	E	D	860	268	0	303	275	0				1 706
6	Oil	Stove_L	D	2 009	536	0	75	56	0				2 676
7	Bio_FV	OpenFire	D	13 086	3 682	0	403	462	0				17 633
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
	Not specified systems			0	0	0	0	0	0				0
	Auxiliary energy			195	74	0	172	81	0				521
	CHP electr. production												0

DHW Systems

Heat Demand for DHW		TABULA standard calculation procedure / projection to building stock										Total
Energy need for DHW		694	749	0	592	1 007	2					3 045
Produced heat		948	1 021	1	740	1 260	2					3 972

Delivered Energy TABULA		TABULA standard calculation procedure / projection to building stock										Total	
1	El	E	D	803	684	0	646	869	1				3 003
2	Oil	B	C	206	422	0	103	407	1				1 139
3	Gas	B	C	15	2	0	47	85	1				150
4	-	Solar	D	0	0	0	0	0	0				0
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
	Not specified systems			0	0	0	0	0	0				0
	Auxiliary energy			3	6	0	1	5	0				15
	CHP electr. production												0

Building Stock **GR National** NOA model of the Greek residential building stock Year **2015**

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Annotations to this sheet

Total Building Stoc	1	2	3	4	5	6	7	8	9	10	Total
Building type	SFH.01.Gen	SFH.02-03.Gen	SFH.04.Gen	MFH.01.Gen	MFH.02-03.Gen	MFH.04.Gen					
Floor area TABULA	10 ⁶ m ²	69	75	0	39	67	0	0	0	0	251

Total Heat Need and Final Energy

All energy quantities in **GWh/a** Heating + DHW

Simplified TABULA projection	fuels related to gross calorific value (TABULA standard)						TABULA standard calculation procedure projection to building stock					Total	per m ²
Net heat need	12 333	8 757	2	3 990	5 829	5						30 916	123
Produced heat	12 778	9 209	2	4 332	6 307	5						32 633	130
Gas	278	61	1	617	712	2						1 670	7
Oil	9 170	7 818	1	3 048	4 940	2						24 980	99
Coal	0	0	0	0	0	0						0	0
Bio	13 086	3 682	0	403	462	0						17 633	70
DH	96	0	0	24	60	0						179	1
El (incl. aux. en.)	2 153	1 228	0	1 280	1 348	1						6 011	24
Other / not specified	0	0	0	0	0	0						0	0
Sum final energy	24 783	12 788	2	5 372	7 522	5	0	0	0	0	0	50 473	201
per m ²	357	171	51	136	112	45							
CHP electr. production	0	0	0	0	0	0						0	0

Separate individual model or total metered consumption

Separate individual model or total metered consumption	fuels related to gross calorific value factors for conversion to gross calorific value (TABULA standard)						Individual building stock model					Total	per m ²
Net heat need	17 792	14 156	3	5 717	8 433	6						46 107	184
Produced heat	20 997	16 994	3	6 771	10 025	6						54 796	218
Gas	1.00 185	56	0	541	633	0						1 415	6
Oil	1.00 6 858	8 030	1	2 254	4 126	1						21 269	85
Coal	1.00 0	0	0	0	0	0						0	0
Bio	1.00 9 154	3 079	0	278	425	0						12 936	52
DH	122	0	0	13	74	0						210	1
El	1 275	792	0	730	855	0						3 652	15
Other / not specified	0	0	0	0	0	0						0	0
Sum final energy	17 594	11 957	1	3 816	6 113	1	0	0	0	0	0	39 483	157
per m ²	253	160	26	97	91	12							
CHP electr. production	0	0	0	0	0	0						0	0

Ratio of individual model or total metered consumption to simplified TABULA projection (TABULA balance calibration factors)

											Total
Net heat need	144%	162%	125%	143%	145%	124%					149%
Produced heat	164%	185%	128%	156%	159%	123%					168%
Gas	67%	93%	58%	88%	89%	28%					85%
Oil	75%	103%	48%	74%	84%	29%					85%
Coal											
Bio	70%	84%		69%	92%						73%
DH	127%	233%		56%	124%						117%
El	59%	64%	47%	57%	63%	25%					61%
Other		0%			0%						0%
Sum final energy	71%	94%	51%	71%	81%	28%					78%
CHP electr. production											