



Building Stock	<b>CY</b>	<b>Local</b>	Housing Stock of the Cyprus Land Development Corporation (CLDC)						Year	2015
Details	CUT Model from a Cyprus pilot building stock / Source: CUT investigation results									

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII				
Dataset	CY.LocalCaseStudy.2015.001.01	CY.LocalCaseStudy.2015.001.02	CY.LocalCaseStudy.2015.001.03	CY.LocalCaseStudy.2015.001.04	CY.LocalCaseStudy.2015.001.05	CY.LocalCaseStudy.2015.001.06				

**Thermal Envelope Average Building**

**Basic data** TABULA average buildings

<b>Floor area TABULA</b>	<b>132,0</b>	<b>132,0</b>	<b>127,4</b>	<b>127,4</b>	<b>105,7</b>	<b>105,7</b>					m <sup>2</sup>
Floor area national	132,0	132,0	127,4	127,4	105,7	105,7					m <sup>2</sup>
Number of dwellings	1,10	1,10	1,10	1,10	1,10	1,10					

**Thermal envelope areas (external dimensions)** TABULA average buildings

Roof	60,3	60,3	60,5	60,5	29,9	29,9					m <sup>2</sup>
Wall	174,8	174,8	114,4	105,3	83,5	83,5					m <sup>2</sup>
Window	24,1	24,1	23,3	23,3	13,6	13,6					m <sup>2</sup>
Floor	59,6	59,6	60,5	60,5	30,7	30,7					m <sup>2</sup>

**Original state / not refurbished fraction of the envelope area**

U-values of the original state Building stock model - state indicators

Roof	3,42	0,77	3,42	0,77	3,42	0,77					W/(m <sup>2</sup> K)
Wall	1,39	0,82	1,39	0,82	1,39	0,82					W/(m <sup>2</sup> K)
Window	5,78	2,35	5,77	2,35	6,10	2,30					W/(m <sup>2</sup> K)
Floor	0,91	0,91	1,00	1,00	2,12	2,12					W/(m <sup>2</sup> K)

**Refurbishments (averages)**

Refurbished fraction of envelope areas Building stock model - state indicators

Roof			41%								
Wall											
Window	41%		41%		91%						
Floor											
<i>Total (indicative)</i>	<i>3%</i>		<i>13%</i>		<i>8%</i>						

U-values of the refurbished fraction (averages) Building stock model - state indicators

Roof			0,79								W/(m <sup>2</sup> K)
Wall											W/(m <sup>2</sup> K)
Window	3,20		3,20		3,20						W/(m <sup>2</sup> K)
Floor											W/(m <sup>2</sup> K)

**Energy Need for Heating TABULA**

**Utilisation** TABULA standard calculation procedure

Utilisation dataset	EU.SUH	EU.SUH	EU.SUH	EU.SUH	EU.MUH	EU.MUH					
Internal temperature	20,0	20,0	20,0	20,0	20,0	20,0					°C
Reduction factor temp.	0,80	0,86	0,81	0,87	0,88	0,92					
Air exchange rate (use)	0,40	0,40	0,40	0,40	0,40	0,40					1/h
Internal heat sources	3,00	3,00	3,00	3,00	3,00	3,00					W/m <sup>2</sup>
Red. factor ext. shading	0,60	0,60	0,60	0,60	0,60	0,60					
Energy need for DHW	10,0	10,0	10,0	10,0	15,0	15,0					kWh/(m <sup>2</sup> a)

**Climate** TABULA standard calculation procedure

Climate dataset	National	National	National	National	National	National					
Base temperature	12,0	12,0	12,0	12,0	12,0	12,0					°C
Length of heating season	67	67	67	67	67	67					d/a
External temp. during HS	10,7	10,7	10,7	10,7	10,7	10,7					
Accum. temp. diff. ext. to int. temp.	623	623	623	623	623	623					Kd/a

**Envelope** TABULA standard calculation procedure

Heat transfer by transmission related to surface area	618	289	466	234	343	193					W/K
related to ref. floor area	1,94	0,91	1,80	0,94	2,17	1,22					W/(m <sup>2</sup> K)
	4,68	2,19	3,65	1,84	3,24	1,83					W/(m <sup>2</sup> K)

**Annual energy balance building** TABULA standard calculation procedure

Transmission heat losses	56,0	28,2	44,4	24,0	42,5	25,2					kWh/(m <sup>2</sup> a)
Ventilation heat losses	5,1	5,5	5,2	5,5	5,6	5,9					kWh/(m <sup>2</sup> a)
Usable solar gains	-2,9	-2,9	-3,7	-3,6	-3,1	-3,0					kWh/(m <sup>2</sup> a)
Usable internal gains	-4,4	-4,3	-4,3	-4,2	-4,3	-4,3					kWh/(m <sup>2</sup> a)
Energy need for heating recovered by vent. system	53,8	26,5	41,5	21,7	40,6	23,7					kWh/(m <sup>2</sup> a)
Net energy need for heating	53,8	26,5	41,5	21,7	40,6	23,7					kWh/(m <sup>2</sup> a)



Building Stock **CY** **Local** Housing Stock of the Cyprus Land Development Corporation (CLDC) Year 2015

Details CUT Model from a Cyprus pilot building stock / Source: CUT investigation results

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII				

**Total Building Stock**

		Building stock model - state indicators										Total		
Number of buildings	10 <sup>0</sup>	19	12	896	122	908	301							2 258
Number of dwellings	10 <sup>0</sup>	21	13	986	134	999	331							2 484
Floor area national	10 <sup>3</sup> m <sup>2</sup>	3	2	114	16	96	32							262
Floor area TABULA	10 <sup>3</sup> m <sup>2</sup>	3	2	114	16	96	32							262

**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	El	E_Immersi	C	15%		15%		25%		
2	El	E_Immersi	C		3%		3%			
3	Oil	B_NC_CT	C					9%		
4	Gas	B_NC_CT	C		2%		2%			
5	El	E	D	1%		1%				
6	El	E_SH	D		30%		30%	15%		
7	El	E_Immersi	D	35%	24%	35%	24%	25%	51%	
8	Oil	Stove_L	D	4%	14%	4%	14%		18%	
9	Gas	Stove	D	18%		18%		27%		
10	Gas	G_SH	D		8%		8%		31%	
11	Bio_W	OpenFire	D	27%		27%				
12	Bio_W	OpenFire	D		19%		19%			
13										
14										
15										
16										
17										
18										
19										
20										
Sum				100%	100%	100%	100%	100%	100%	
thereof central				15%	5%	15%	5%	33%		
decentral				85%	95%	85%	95%	67%	100%	
Other Systems				0%		0%				

**DHW Systems**

**Occurrences or Fractions of Produced Heat**

	Building stock model - state indicators									
1	-	Solar	C	80%	80%	80%	80%	80%	80%	
2	El	E_Immersi	C	20%	20%	20%	20%	20%	20%	
3										
4										
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				100%	100%	100%	100%	100%	100%	
decentral										
Other Systems										



Building Stock **CY Local** Housing Stock of the Cyprus Land Development Corporation (CLDC) Year **2015**

Details CUT Model from a Cyprus pilot building stock / Source: CUT investigation results

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII				

## Heating Systems

Heat demand / heat generation		TABULA standard calculation procedure											
Energy need for heating		53,8	26,5	41,5	21,7	40,6	23,7						kWh/(m²a)
Net en. need for heating		53,8	26,5	41,5	21,7	40,6	23,7						kWh/(m²a)
Distribution + storage losses		TABULA system indicators											
Central systems	C	6,5	1,7	6,5	1,7	6,5	1,7						kWh/(m²a)
Decentral systems	D												kWh/(m²a)
Auxiliary energy		TABULA system indicators											
Ventil. systems (average)													kWh/(m²a)
Central systems	C	3,6	1,1	3,6	1,1	3,6	1,1						kWh/(m²a)
Decentral systems	D												kWh/(m²a)

Energy expenditure factors (fuels: related to gross calorific value)		TABULA system indicators											
1	EI	E Immersi	C	1,00	1,00	1,00	1,00	1,00	1,00				
2	EI	E Immersi	C	1,00	1,00	1,00	1,00	1,00	1,00				
3	Oil	B NC CT	C	1,36	1,36	1,36	1,36	1,36	1,36				
4	Gas	B NC CT	C	1,13	1,13	1,13	1,13	1,13	1,13				
5	EI	E	D	1,02	1,02	1,02	1,02	1,02	1,02				
6	EI	E SH	D	0,37	0,37	0,37	0,37	0,37	0,37				
7	EI	E Immersi	D	1,00	1,00	1,00	1,00	1,00	1,00				
8	Oil	Stove L	D	2,06	2,06	2,06	2,06	2,06	2,06				
9	Gas	Stove	D	2,06	2,06	2,06	2,06	2,06	2,06				
10	Gas	G SH	D	1,03	1,03	1,03	1,03	1,03	1,03				
11	Bio W	OpenFire	D	2,44	2,44	2,44	2,44	2,44	2,44				
12	Bio W	OpenFire	D	1,67	1,67	1,67	1,67	1,67	1,67				
13													
14													
15													
16													
17													
18													
19													
20													

Delivered Energy		TABULA standard calculation procedure											
1	EI	E Immersi	C	60,3	28,2	48,0	23,4	47,1	25,4				kWh/(m²a)
2	EI	E Immersi	C	60,3	28,2	48,0	23,4	47,1	25,4				kWh/(m²a)
3	Oil	B NC CT	C	82,0	38,3	65,3	31,8	64,1	34,6				kWh/(m²a)
4	Gas	B NC CT	C	68,2	31,8	54,3	26,4	53,2	28,7				kWh/(m²a)
5	EI	E	D	54,9	27,0	42,4	22,1	41,4	24,2				kWh/(m²a)
6	EI	E SH	D	19,9	9,8	15,4	8,0	15,0	8,8				kWh/(m²a)
7	EI	E Immersi	D	53,8	26,5	41,5	21,7	40,6	23,7				kWh/(m²a)
8	Oil	Stove L	D	110,9	54,6	85,6	44,7	83,6	48,9				kWh/(m²a)
9	Gas	Stove	D	110,9	54,6	85,6	44,7	83,6	48,9				kWh/(m²a)
10	Gas	G SH	D	55,4	27,3	42,8	22,3	41,8	24,4				kWh/(m²a)
11	Bio W	OpenFire	D	131,3	64,6	101,4	52,9	99,1	57,9				kWh/(m²a)
12	Bio W	OpenFire	D	89,9	44,2	69,4	36,2	67,8	39,6				kWh/(m²a)
13													kWh/(m²a)
14													kWh/(m²a)
15													kWh/(m²a)
16													kWh/(m²a)
17													kWh/(m²a)
18													kWh/(m²a)
19													kWh/(m²a)
20													kWh/(m²a)

Delivered Energy - weighted by frequencies		TABULA standard calculation procedure											
1	EI	E Immersi	C	8,8		7,0		11,6					kWh/(m²a)
2	EI	E Immersi	C		0,8		0,6						kWh/(m²a)
3	Oil	B NC CT	C					5,5					kWh/(m²a)
4	Gas	B NC CT	C		0,6		0,5						kWh/(m²a)
5	EI	E	D	0,6		0,4							kWh/(m²a)
6	EI	E SH	D		2,9		2,4	2,2					kWh/(m²a)
7	EI	E Immersi	D	18,6	6,5	14,4	5,3	10,0	12,1				kWh/(m²a)
8	Oil	Stove L	D	4,9	7,5	3,8	6,1		8,7				kWh/(m²a)
9	Gas	Stove	D	20,0		15,4		22,9					kWh/(m²a)
10	Gas	G SH	D		2,3		1,9		7,7				kWh/(m²a)
11	Bio W	OpenFire	D	35,9		27,7							kWh/(m²a)
12	Bio W	OpenFire	D		8,4		6,9						kWh/(m²a)
13													kWh/(m²a)
14													kWh/(m²a)
15													kWh/(m²a)
16													kWh/(m²a)
17													kWh/(m²a)
18													kWh/(m²a)
19													kWh/(m²a)
20													kWh/(m²a)

Electricity production by CHP		TABULA standard calculation procedure											
													kWh/(m²a)
													kWh/(m²a)
													kWh/(m²a)
													kWh/(m²a)



Building Stock	<b>CY</b>	<b>Local</b>	Housing Stock of the Cyprus Land Development Corporation (CLDC)	Year	2015
Details	CUT Model from a Cyprus pilot building stock / Source: CUT investigation results				

Annotations to this sheet

	1	2	3	4	5	6	7	8	9	10
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII				

**DHW Systems**

<b>Heat demand / heat generation</b>											TABULA standard calculation procedure
Energy need for DHW	10,0	10,0	10,0	10,0	15,0	15,0					kWh/(m <sup>2</sup> a)
Distribution + storage losses											TABULA system indicators
Central systems	C	5,2	5,2	5,2	5,2	5,2					kWh/(m <sup>2</sup> a)
Decentral systems	D										kWh/(m <sup>2</sup> a)
Auxiliary energy											TABULA system indicators
Central systems	C	0,3	0,1	0,3	0,1	0,3	0,1				kWh/(m <sup>2</sup> a)
Decentral systems	D										kWh/(m <sup>2</sup> a)

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

1	-	Solar	C									
2	EI	E Immersi	C	1,03	1,03	1,03	1,03	1,03	1,03			
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

**Delivered Energy** TABULA standard calculation procedure

1	-	Solar	C									kWh/(m <sup>2</sup> a)
2	EI	E Immersi	C	15,7	15,7	15,7	15,7	20,8	20,8			kWh/(m <sup>2</sup> a)
3												kWh/(m <sup>2</sup> a)
4												kWh/(m <sup>2</sup> a)
5												kWh/(m <sup>2</sup> a)
6												kWh/(m <sup>2</sup> a)
7												kWh/(m <sup>2</sup> a)
8												kWh/(m <sup>2</sup> a)
9												kWh/(m <sup>2</sup> a)
10												kWh/(m <sup>2</sup> a)
11												kWh/(m <sup>2</sup> a)
12												kWh/(m <sup>2</sup> a)
13												kWh/(m <sup>2</sup> a)
14												kWh/(m <sup>2</sup> a)
15												kWh/(m <sup>2</sup> a)
16												kWh/(m <sup>2</sup> a)
17												kWh/(m <sup>2</sup> a)
18												kWh/(m <sup>2</sup> a)
19												kWh/(m <sup>2</sup> a)
20												kWh/(m <sup>2</sup> a)

**Delivered Energy - weighted by frequencies** TABULA standard calculation procedure

1	-	Solar	C									kWh/(m <sup>2</sup> a)
2	EI	E Immersi	C	3,1	3,1	3,1	3,1	4,2	4,2			kWh/(m <sup>2</sup> a)
3												kWh/(m <sup>2</sup> a)
4												kWh/(m <sup>2</sup> a)
5												kWh/(m <sup>2</sup> a)
6												kWh/(m <sup>2</sup> a)
7												kWh/(m <sup>2</sup> a)
8												kWh/(m <sup>2</sup> a)
9												kWh/(m <sup>2</sup> a)
10												kWh/(m <sup>2</sup> a)
11												kWh/(m <sup>2</sup> a)
12												kWh/(m <sup>2</sup> a)
13												kWh/(m <sup>2</sup> a)
14												kWh/(m <sup>2</sup> a)
15												kWh/(m <sup>2</sup> a)
16												kWh/(m <sup>2</sup> a)
17												kWh/(m <sup>2</sup> a)
18												kWh/(m <sup>2</sup> a)
19												kWh/(m <sup>2</sup> a)
20												kWh/(m <sup>2</sup> a)

**Electricity production by CHP** TABULA standard calculation procedure

												kWh/(m <sup>2</sup> a)
												kWh/(m <sup>2</sup> a)
												kWh/(m <sup>2</sup> a)
												kWh/(m <sup>2</sup> a)



Building Stock **CY** **Local** Housing Stock of the Cyprus Land Development Corporation (CLDC) Year 2015

Details CUT Model from a Cyprus pilot building stock / Source: CUT investigation results

Annotations to this sheet

**Total Building Stock**

	1	2	3	4	5	6	7	8	9	10	Total	
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII						
Floor area TABULA	10 <sup>3</sup> m <sup>2</sup>	3	2	114	16	96	32	0	0	0	0	262

All energy quantities in **MWh/a**

**Heating Systems**

Heat Demand for Heating		TABULA standard calculation procedure / projection to building stock										Total
Energy need for heating		136	41	4 743	337	3 897	755					9 909
Net en. need for heating		136	41	4 743	337	3 897	755					9 909
Produced heat		138	41	4 851	338	4 104	755					10 227

Delivered Energy TABULA		TABULA standard calculation procedure / projection to building stock										Sum
1	El	E_Immersi	C	22	0	798	0	1 115	0			1 934
2	El	E_Immersi	C	0	1	0	10	0	0			11
3	Oil	B_NC_CT	C	0	0	0	0	524	0			524
4	Gas	B_NC_CT	C	0	1	0	8	0	0			9
5	El	E	D	1	0	49	0	0	0			50
6	El	E_SH	D	0	5	0	37	214	0			255
7	El	E_Immersi	D	47	10	1 641	82	961	384			3 125
8	Oil	Stove_L	D	12	12	433	95	0	276			828
9	Gas	Stove	D	50	0	1 764	0	2 197	0			4 011
10	Gas	G_SH	D	0	4	0	29	0	244			277
11	Bio_W	OpenFire	D	91	0	3 168	0	0	0			3 259
12	Bio_W	OpenFire	D	0	13	0	107	0	0			120
13												
14												
15												
16												
17												
18												
19												
20												
Not specified systems				0	0	0	0	0	0			0
Auxiliary energy				1	0	60	1	115	0			177
CHP electr. production												0

**DHW Systems**

Heat Demand for DHW		TABULA standard calculation procedure / projection to building stock										Total
Energy need for DHW		25	16	1 142	155	1 440	477					3 255
Produced heat		38	24	1 736	236	1 939	643					4 615

Delivered Energy TABULA		TABULA standard calculation procedure / projection to building stock										Total
1	-	Solar	C	0	0	0	0	0	0			0
2	El	E_Immersi	C	8	5	358	49	399	132			951
3												
4												
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				1	0	34	2	29	3			69
CHP electr. production												0



Building Stock **CY Local** Housing Stock of the Cyprus Land Development Corporation (CLDC) Year **2015**

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Annotations to this sheet

Total Building Stock	1	2	3	4	5	6	7	8	9	10	Total	
Building type	SFHI	SFHII	THI	THII	MFHI	MFHII						
Floor area TABULA	10 <sup>3</sup> m <sup>2</sup>	3	2	114	16	96	32	0	0	0	0	262

## Total Heat Need and Final Energy All energy quantities in **MWh/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 <sup>2</sup>
Net heat need	161	57	5 885	492	5 338	1 232						13 163	50
Produced heat	176	65	6 586	574	6 044	1 397						14 842	57
Gas	50	4	1 764	37	2 197	244						4 296	16
Oil	12	12	433	95	524	276						1 352	5
Coal	0	0	0	0	0	0						0	0
Bio	91	13	3 168	107	0	0						3 379	13
DH	0	0	0	0	0	0						0	0
EI (incl. aux. en.)	80	21	2 939	180	2 832	519						6 571	25
Other / not specified	0	0	0	0	0	0						0	0
Sum final energy	234	50	8 304	419	5 553	1 039	0	0	0	0	0	15 599	60
CHP electr. production	0	0	0	0	0	0						0	0

## Separate individual model

### or total metered consumption

	fuels related to gross calorific value (TABULA standard)							Individual building stock model				Total	per m <sup>2</sup>
Net heat need	130	45	5 186	423	2 637	713						9 135	35
Produced heat	142	51	5 687	484	3 214	834						10 412	40
Gas	1,00	30	1 084	12	498	20						1 645	6
Oil	1,00	7	266	30	102	23						433	2
Coal	1,00	0	0	0	0	0						0	0
Bio	1,00	54	1 948	34	0	0						2 040	8
DH		0	0	0	0	0						0	0
EI		53	2 033	119	964	191						3 372	13
Other / not specified		0	0	0	0	0						0	0
Sum final energy		144	22	5 331	195	1 565	233	0	0	0	0	7 490	29
CHP electr. production		0	0	0	0	0						0	0

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

	Ratio										Total
Net heat need	81%	79%	88%	86%	49%	58%					69%
Produced heat	80%	79%	86%	84%	53%	60%					70%
Gas	59%	32%	61%	31%	23%	8%					38%
Oil	59%	33%	61%	32%	20%	8%					32%
Coal											
Bio	59%	33%	61%	32%							60%
DH											
EI	66%	62%	69%	66%	34%	37%					51%
Other	0%		0%								0%
Sum final energy	62%	45%	64%	46%	28%	22%					48%
CHP electr. production											