

***DATA ANALYSIS FOR:***

# **HUNAN URBAN HOUSING SURVEYS, CHINA**

**90 Household Surveys of three typologies – 2013-15**

**Document drafted June 2016**

**Ali Cheshmehzangi, The University of Nottingham Ningbo China**

**As part of ELITH Project – Energy and Low-Income Tropical Housing**



UNITED KINGDOM • CHINA • MALAYSIA

**NOTE:** To use any of the collated data here, please contact the researchers who were involved in this data collection. Permission is required for any sort of use of this data.

**China contact: [Ali.Cheshmehzangi@nottingham.edu.cn](mailto:Ali.Cheshmehzangi@nottingham.edu.cn)**

# Typology One: Low-income Urban Housing (30 households)

## Demographic Characteristics

	Gender	Age	Education	Job	Homeownership	Family structure	INCOME
H1	Female	67	primary	Retired	rented	1	
H2	Female	60	primary	Unemployed	rented	3	
H3	Female	66	primary	Unemployed	owned	4	
H4	male	65	primary	Freelance	rented	4	
H5	Female	65	primary	Retired	rented	4	
H6	Female	58	primary	Freelance	rented	5	
H7	Female	57	primary	professional	owned	4	
H8	Female	70	primary	Unemployed	rented	4	
H9	Male	72	primary	Retired	rented	1	
H10	Male	66	primary	Freelance	owned	2	
H11	male	55	secondary	Freelance	owned	4	
H12	Female	48	secondary	Freelance	owned	3	
H13	Female	44	secondary	Unemployed	owned	4	
H14	Female	55	secondary	Unemployed	rented	5	
H15	male	55	primary	Freelance	rented	3	
H16	Female	56	primary	Freelance	rented	3	
H17	Female	58	primary	Unemployed	rented	4	
H18	Female	33	secondary	Freelance	rented	4	
H19	Female	42	secondary	Freelance	rented	5	
H20	Female	75	primary	Retired	rented	1	
H21	Female	36	primary	Unemployed	owned	2	
H22	Female	68	primary	Retired	owned	4	
H23	Female	66	primary	Retired	owned	3	
H24	Female	65	primary	Retired	owned	2	
H25	Female	61	primary	Unemployed	rented	2	
H26	Female	72	primary	Unemployed	rented	1	
H27	Female	55	primary	Unemployed	rented	2	
H28	Female	50	primary	Unemployed	owned	6	
H29	Female	42	secondary	professional	rented	3	
H30	Female	50	primary	Unemployed	rented	4	

Demographic characteristics of the subject households			
	Range	Number	Number (%)
Age	less 50 (33-48)	6	20%
	50-55	6	20%
	56-65	9	30%

	66-75	9	30%
	85-95	0	0%
Gender	Female	25	83%
	Male	5	17%
Income	Less 3000 RMB	16	53%
	Between 4000-5000 RMB	8	27%
	Between 5000-7000 RMB	1	3%
	More than 10000 RMB	0	0%
	N/A	5	17%
Ownership	Owned	11	37%
	Rented	13	43%
	Left by relatives	6	20%
Education level	Primary or less	23	77%
	Secondary	7	23%
Profession	Freelance	9	30%
	Professional	2	7%
	technical work	0	0%
	Retired	7	23%
	Unemployed	12	40%
Family Structure	1 Members	4	13%
	2 Members	5	17%
	3 Members	6	20%
	4 Members	11	37%
	5 Members	3	10%
	6 Members	1	3%

## **Dweller Physical Properties**

No.	Size(m2)	Orientation	Type	Age	Bedrooms	Bedroom	Living room
H1	45	S-N	Apartment		1	10-	15
H2	66	S-N	Apartment		2	20~30	20~30
H3	80	S-N	Apartment		3	20~30	20~30
H4	74	S-N	Apartment		3	20~30	20~30
H5	80	S-N	Apartment		3	20~30	20~30
H6	74	S-N	Apartment		3	10~20	15~20
H7	88	S-N	Apartment		3	20~30	20~30
H8	60	S-N	Apartment		2	10~20	15~20
H9	45	S-N	Apartment		1	10-	15
H10	60	S-N	Apartment		2	20~30	20~30

H11	60	S-N	Apartment		2	20~30	20~30
H12	94	S-N	Apartment		4	20~30	20~30
H13	80	S-N	Apartment		3	20~30	20~30
H14	60	S-N	Apartment		2	10~20	15~20
H15	66	S-N	Apartment		2	20~30	20~30
H16	66	S-N	Apartment		2	10~20	15~20
H17	66	S-N	Apartment		2	10~15	15~20
H18	66	S-N	Apartment		2	10~15	15~20
H19	74	S-N	Apartment		3	10~20	15~20
H20	50	S-N	Apartment		1	10-	15
H21	60	S-N	Apartment		2	10~20	15~20
H22	94	S-N	Apartment		4	20~30	20~30
H23	66	S-N	Apartment		2	10~15	15~20
H24	54	S-N	Apartment		2	10~15	15
H25	66	S-N	Apartment		2	10~20	15~20
H26	74	S-N	Apartment		2	20~30	20~30
H27	74	S-N	Apartment		2	20~30	20~30
H28	105	S-N	Apartment		4	20~30	20~30
H29	74	S-N	Apartment		3	10~20	15~20
H30	60	S-N	Apartment		2	10~20	15~20

Building Physical Properties			
	Range	Number	Number (%)
<b>Building Age</b>	1975	30	100%
<b>Building Height (5 stories Bld)</b>	1-3 stories	4	13%
	4-8 stories	26	87%
<b>Building Orientation</b>	S-N	30	100%
<b>Building Layout</b>	Apartment	30	100%
<b>Dweller Size</b>	45-55 m <sup>2</sup>	4	13%
	55-65 m <sup>2</sup>	6	20%
	65-75 m <sup>2</sup>	13	43%
	75-85 m <sup>2</sup>	3	10%
	85-95 m <sup>2</sup>	3	10%
	95-105m <sup>2</sup>	1	3%
	105 +	0	0%
<b>Dweller room number</b>	1	3	10%

	2	16	53%
	3	8	27%
	4	3	10%
<b>Building Material</b>	Steel-concrete	30	100%
<b>Window layout</b>	Single glazed metal frame	30	100%

## Household Appliances

		Household Appliance																															
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24	H25	H26	H27	H28	H29	H30		
Function	Appliance																																
Lightning	AP1	2			1		2	2	2	3								2							2	2	1						
	AP2										1		1					2				2	2										
	AP3	5	7	12	8	9	8	10	9	6	9	9	12	10	10	9	9	6	10	10	9	10	11	11	11	9	6	10	16	12	10		
	AP4																																
	Other																																
	<b>Total</b>																																310
Cooking	AP5	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	2	1	1		
	AP6																	1		1			1						1	1			
	AP7												1										1							1			
	AP8								1		1	1	1	1				1					1			1			1		1		
	AP9		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	AP10		1	1	1	1	1					1	1	1	1	1		1	1			1	1	1				1	1	1	1		
	AP11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	
	Other													1															1				
<b>Total</b>																																132	
Cleaning	AP12			1				1					1	1								1	1	1	1	1	1		1	1			
	AP13		1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1			1					1	1	1	1		
	AP14													1										1					1				
	<b>Total</b>																															37	
Entertainment	PC																						1	1					1				
	AP16												1	1	1								1						1				
	TV	1	1	1	1	1	1	2	1	1	1	2	2	1	1	1	2	2	2	1	1	1	2	1	2	1	1	2	3	1	1		
	AP18																							1						1			
	AP19																																
	Other																							1		1	1			1			
<b>Total</b>																																55	
Heating	AP20		1	2	2	1	1	1	1		1	3	3	3	2	2	3	3	3	2	1	2	2	2	3	2		1	3	2	1		
	AP21		1									2		1	1		2	1		1	1			1	1	1		1	1	2	2		
	AP22	1	1	1	2	2	2	1	1	1	2	2	2	2	1	1	2	2	2	2	1	1	2	2	1	2	1	1	2	1	1		
	AP23		1		1			1	1														1					1	1	1			
	AP24																																
	AP25		1	1	1			1				1	1	1	1									1	1	1			1	1		138	



Indoor Comfort												
	Winter						Summer					
	IC 1	IC 2	IC 3	IC 4	IC 5	IC 6	IC 1	IC 2	IC 3	IC 4	IC 5	
H1												
H2												
H3												
H4												
H5												
H6												
H7												
H8												
H9												
H10												
H11												
H12												
H13												
H14												
H15												
H16												
H17												
H18												
H19												
H20												
H21												
H22												
H23												
H24												
H25												
H26												
H27												
H28												
H29												
H30												
												<b>Total</b>

Occupants' satisfaction				
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)
		3		
		3		
	4			
			2	
			2	
			2	
		3		
			2	
	4			
	4			
				1
		3		
		3		
	4			
		3		
			2	
			2	
		3		
	4			
			2	
	4			
		3		
		3		
	4			
	4			
		3		
		3		
	4			
		3		
				1
<b>0</b>	<b>8</b>	<b>13</b>	<b>7</b>	<b>2</b>
	<b>27%</b>	<b>43%</b>	<b>23%</b>	<b>7%</b>

IC 1	A/C
IC 2	Electric Fan
IC 3	Electric Heater
IC 4	Floor Heating
IC 5	Natural Ventilation
IC 6	Others -wearing

# Typology Two: Low to Mid-income Urban Housing (30 households)

## Demographic Characteristics

	Gender	Age	Education	Job	Homeownership	Family structure	INCOME
H1	male	72	primary	Retired	rented	2	
H2	Female	66	primary	Retired	rented	1	
H3	Female	61	primary	Unemployed	owned	4	
H4	Female	50	secondary	Unemployed	owned	3	
H5	male	64	primary	Unemployed	rented	5	
H6	male	48	secondary	technical	owned	3	
H7	Female	55	primary	Unemployed	owned	3	
H8	Female	56	secondary	Freelance	rented	3	
H9	Female	65	secondary	Retired	rented	2	
H10	Female	58	primary	Freelance	owned	3	
H11	Female	75	primary	Unemployed	rented	3	
H12	Female	39	secondary	technical	rented	5	
H13	male	61	primary	professional	rented	4	
H14	Female	67	primary	Unemployed	rented	4	
H15	male	72	primary	Retired	rented	3	
H16	male	67	primary	Retired	rented	3	
H17	Female	68	primary	Unemployed	rented	3	
H18	Female	61	primary	Unemployed	owned	3	
H19	Female	50	primary	Unemployed	owned	4	
H20	Female	52	secondary	Unemployed	rented	2	
H21	Female	42	secondary	professional	owned	2	
H22	Female	69	primary	Retired	owned	5	
H23	Female	35	secondary	Unemployed	rented	2	
H24	male	55	primary	Freelance	rented	2	
H25	Female	70	primary	Retired	rented	1	
H26	male	68	primary	Freelance	owned	5	
H27	Female	69	primary	Unemployed	owned	3	
H28	Female	58	primary	Freelance	owned	2	
H29	Female	69	primary	Retired	owned	4	
H30	Female	68	primary	Retired	rented	4	

Demographic characteristics of the subject households			
	Range	Number	Number (%)
Age	less 50 (35-48)	4	13%
	50-55	5	17%



	56-65	8	27%
	66-75	13	43%
	85-95	0	0%
Gender	Female	22	73%
	Male	8	27%
Income	Less 3000 RMB	6	20%
	Between 4000-5000 RMB	5	17%
	Between 5000-7000 RMB	8	27%
	More than 10000 RMB	4	13%
	N/A	7	23%
Ownership	Owned	13	43%
	Rented	12	40%
	Left by relatives	5	17%
Education level	Primary or less	22	73%
	Secondary	8	27%
Profession	Freelance	5	17%
	Professional	2	7%
	technical work	2	7%
	Retired	9	30%
	Unemployed	12	40%
Family Structure	1 Members	2	7%
	2 Members	7	23%
	3 Members	11	37%
	4 Members	6	20%
	5 Members	4	13%
	6 Members	0	0%

## Dweller Physical Properties

No.	Size(m2)	Orientation	Type	Age	Bedrooms	Bedroom	Living room
H1	74	S-N	Apartment		2	10~20	15~20
H2	45	S-N	Apartment		1	10-	15
H3	80	S-N	Apartment		4	20~30	20~30
H4	66	S-N	Apartment		3	10~20	15~20
H5	95	S-N	Apartment		4	20~30	20~30
H6	66	S-N	Apartment		3	10~20	15~20
H7	66	S-N	Apartment		3	10~20	15~20
H8	74	S-N	Apartment		2	10~20	15~20
H9	54	S-N	Apartment		2	10-	15

H10	66	S-N	Apartment		3	10~20	15~20
H11	66	S-N	Apartment		3	10~20	15~20
H12	66	S-N	Apartment		3	10~20	15~20
H13	88	S-N	Apartment		4	20~30	20~30
H14	74	S-N	Apartment		2	10~20	15~20
H15	60	S-N	Apartment		2	10~20	15~20
H16	55	S-N	Apartment		2	10~20	15~20
H17	66	S-N	Apartment		3	10~20	15~20
H18	66	S-N	Apartment		3	10~20	15~20
H19	80	S-N	Apartment		3	10~20	15~20
H20	74	S-N	Apartment		2	10~20	15~20
H21	45	S-N	Apartment		1	10-	15
H22	74	S-N	Apartment		2	10~20	15~20
H23	45	S-N	Apartment		1	10-	15
H24	74	S-N	Apartment		2	10~20	15~20
H25	45	S-N	Apartment		1	10-	15
H26	105	S-N	Apartment		4	20~30	20~30
H27	66	S-N	Apartment		3	10~20	15~20
H28	60	S-N	Apartment		2	10~20	15~20
H29	66	S-N	Apartment		3	10~20	15~20
H30	66	S-N	Apartment		3	10~20	15~20

Building Physical Properties			
	Range	Number	Number (%)
<b>Building Age</b>	1990s	30	100%
<b>Building Height (5 stories Bld)</b>	1-3 stories	0	0%
	4-8 stories	30	100%
<b>Building Orientation</b>	S-N	30	100%
<b>Building Layout</b>	Apartment	30	100%
<b>Deweller Size</b>	45-55 m <sup>2</sup>	6	20%
	55-65 m <sup>2</sup>	2	7%
	65-75 m <sup>2</sup>	17	57%
	75-85 m <sup>2</sup>	2	7%
	85-95 m <sup>2</sup>	2	7%
	95-105m <sup>2</sup>	1	3%
	105 +	0	0%

<b>Dweller room number</b>	1	4	13%
	2	10	33%
	3	12	40%
	4	4	13%
<b>Building Material</b>	Steel-concrete	30	100%
<b>Window layout</b>	Single glazed metal frame	30	100%

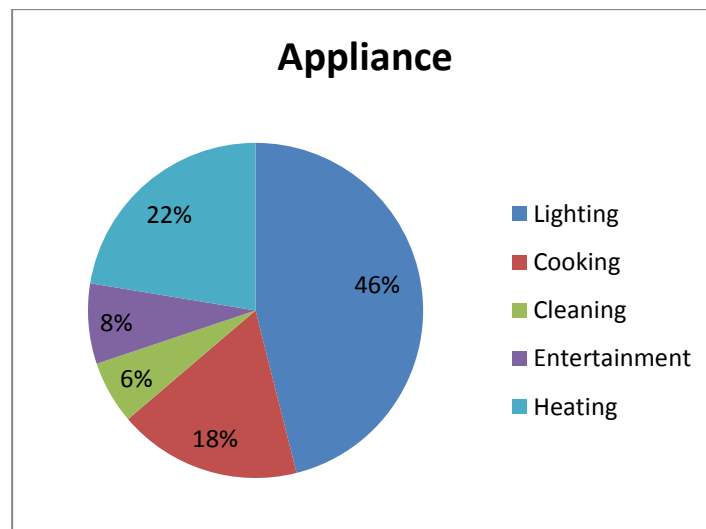
## Household Appliances

		Household Appliance																														
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24	H25	H26	H27	H28	H29	H30	
<b>Function</b>	<b>Appliance</b>																															
<b>Lightning</b>	AP1	1	2	1		1					2	1	2		2			1											1	1		
	AP2							1	1		1					2	1		1	1	1						1	1				
	AP3	8	6	7	8	15	12	12	11	9	7	12	6	12	12	12	11	11	11	11	9	10	9	8	12	10	12	10	11	11	12	
	AP4																															
	Other																															
	<b>Total</b>																															
<b>Cooking</b>	AP5	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	
	AP6																															1
	AP7					1									1																	1
	AP8				1	1								1	1						1	1	1	1	1	1	1	1				1
	AP9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	AP10				1	1	1	1						1	1	1	1	1	1	1	1				1		1			1	1	1
	AP11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other															1																1
<b>Total</b>																																128
<b>Cleaning</b>	AP12				1	1							1	1	1	1				1	1						1	1			1	
	AP13	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1	1	1	1	
	AP14					1								1	1						1								1		1	
	<b>Total</b>																															
<b>Entertainment</b>	PC												1	1	1					1							1				1	
	AP16					1								1	1	1					1		1		1						1	
	TV	1	1	1	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	
	AP18																				1							2				
	AP19					1								1	1																	
	Other						1																									
<b>Total</b>																																56
<b>Heating</b>	AP20	1	1	2	2	4	2	2	2	1	1	2	2	3	3	3	3	3	3	3	2	2	2	2	3	2	4	2	2	2	4	
	AP21	1			1	1		1			1	1	1	1	1	1				2			1				1			2	3	
	AP22	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	2	2	2	2	2	
	AP23		1		1				1	1													1					1	1	1		
	AP24																															
<b>Total</b>																																163

AP25	1		1	1	1	1	1		1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	1	1	1	1
<b>Total</b>																													

**Appliance in the house**

AP1	Traditional incandescent bulbs									AP13		Electric/Gas water heater																	
AP2	Compact fluorescent lamps									AP14		others																	
AP3	Flurescent/Energy saving lamps									AP15		Desktop computer																	
AP4	Halogen lamps									AP16		Laptop computer																	
AP5	Rice cooker									AP17		Cathode ray tube television																	
AP6	Water dispenser									AP18		LCD																	
AP7	Induction cooker									AP19		Plasma																	
AP8	Microwave									AP20		A/C																	
AP9	Range hood									AP21		Electric Blanket																	
AP10	Electric kettle									AP22		Electric Fan																	
AP11	Refrigerator									AP23		Electric Heater																	
AP12	Washing machine									AP24		Floor Heating																	
										Ap25		Bathroom Heat Lamp																	



Appliance	Number
Lighting	333
Cooking	128
Cleaning	44
Entertainment	56
Heating	162

**Energy Consumption**

N/A

**Thermal Comfort Perception**

Indoor Comfort												
	Winter						Summer					
	IC 1	IC 2	IC 3	IC 4	IC 5	IC 6	IC 1	IC 2	IC 3	IC 4	IC 5	
H1												
H2												
H3												
H4												
H5												
H6												
H7												
H8												
H9												
H10												
H11												
H12												
H13												
H14												
H15												
H16												
H17												
H18												
H19												
H20												
H21												
H22												
H23												
H24												
H25												
H26												
H27												
H28												
H29												
H30												
												<b>Total</b>

Occupants' satisfaction					
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)	
	4				
			2		
			2		
		3			
	4				
		3			
		3			
		3			
	4				
	4				
		3			
			2		
			2		
		3			
		3			
		3			
			2		
			2		
		3			
		3			
	4				
	4				
	4				
				1	
		3			
		3			
	4				
	4				
	<b>0</b>	<b>10</b>	<b>13</b>	<b>6</b>	<b>1</b>
		<b>33%</b>	<b>43%</b>	<b>20%</b>	<b>3%</b>

IC 1	A/C
IC 2	Electric Fan
IC 3	Electric Heater
IC 4	Floor Heating
IC 5	Natural Ventilation
IC 6	Others -wearing

# Typology Three: Mid-income Urban Housing (30 households)

## Demographic Characteristics

Demographic characteristics of the subject households							
	Gender	Age	Education	Job	Homeownership	Family structure	INCOME
H1	Female	60	primary	Unemployed	rented	3	
H2	male	56	primary	Freelance	owned	3	
H3	Female	55	primary	Unemployed	owned	3	
H4	Female	55	secondary	Freelance	owned	4	
H5	male	68	primary	Retired	rented	2	
H6	male	60	primary	Freelance	owned	4	
H7	Female	45	secondary	technical	rented	3	
H8	Female	44	secondary	technical	owned	3	
H9	Female	49	secondary	professional	owned	3	
H10	Female	52	secondary	Unemployed	owned	3	
H11	Female	38	secondary	Unemployed	owned	4	
H12	Female	34	secondary	Freelance	owned	4	
H13	Female	66	primary	Freelance	rented	2	
H14	Female	51	secondary	Freelance	rented	2	
H15	Female	66	primary	Unemployed	rented	3	
H16	Female	53	secondary	technical	rented	2	
H17	Female	70	primary	Unemployed	owned	3	
H18	male	76	primary	Retired	owned	3	
H19	male	59	primary	Unemployed	rented	3	
H20	Female	40	secondary	Freelance	owned	4	
H21	Female	47	primary	Freelance	owned	4	
H22	Female	32	secondary	professional	rented	4	
H23	male	46	secondary	professional	rented	3	
H24	Female	67	primary	Retired	rented	2	
H25	Female	66	primary	Unemployed	rented	1	
H26	Female	65	primary	Unemployed	rented	1	
H27	Female	66	primary	Unemployed	owned	3	
H28	male	44	secondary	professional	owned	3	
H29	Female	59	primary	Unemployed	owned	2	
H30	Female	60	primary	Unemployed	owned	3	

	Range	Number	Number (%)
Age	less 50 (32-49)	10	33%
	50-55	5	17%
	56-65	7	23%
	66-75	7	23%
	76-95	1	3%
Gender	Female	23	77%
	Male	7	23%
Income	Less 3000 RMB	4	13%
	Between 4000-5000 RMB	7	23%
	Between 5000-7000 RMB	7	23%
	More than 10000 RMB	7	23%
	N/A	5	17%
Ownership	Owned	16	53%
	Rented	14	47%
	Left by relatives	0	0%
Education level	Primary or less	17	57%
	Secondary or more	13	43%
Profession	Freelance	8	27%
	Professional	4	13%
	technical work	3	10%
	Retired	3	10%
	Unemployed	12	40%
Family Structure	1 Members	2	7%
	2 Members	6	20%
	3 Members	15	50%
	4 Members	7	23%
	5 Members	0	0%
	6 Members	0	0%

## Dweller Physical Properties

Dweller Physical Properties							
No.	Size(m2)	Orientation	Type	Age	Bedrooms	Bedroom	Living room
H1	66	S-N	Apartment		3	10~20	15~20
H2	66	S-N	Apartment		3	10~20	15~20
H3	60	S-N	Apartment		2	10~20	15~20
H4	74	S-N	Apartment		3	10~20	15~20
H5	74	S-N	Apartment		3	10~20	15~20
H6	88	S-N	Apartment		4	10~20	15~20
H7	74	S-N	Apartment		3	10~20	15~20
H8	74	S-N	Apartment		3	10~20	15~20
H9	66	S-N	Apartment		3	10~21	15~21
H10	80	S-N	Apartment		4	20~30	20~30
H11	105	S-N	Apartment		4	20~30	20~30
H12	66	S-N	Apartment		3	10~20	15~20
H13	66	S-N	Apartment		3	10~20	15~20
H14	54	S-N	Apartment		2	10~20	15~20
H15	60	S-N	Apartment		2	10~20	15~20
H16	54	S-N	Apartment		2	10~20	15~20
H17	94	S-N	Apartment		4	20~30	20~30
H18	88	S-N	Apartment		4	20~30	20~30
H19	66	S-N	Apartment		3	10~20	15~20
H20	105	S-N	Apartment		4	20~30	20~30
H21	66	S-N	Apartment		3	10~20	15~20
H22	66	S-N	Apartment		3	10~20	15~20
H23	74	S-N	Apartment		3	10~20	15~20
H24	80	S-N	Apartment		3	20~30	20~30
H25	45	S-N	Apartment		1	10-	15
H26	45	S-N	Apartment		1	10-	15
H27	77	S-N	Apartment		3	10~20	15~20
H28	77	S-N	Apartment		3	10~20	15~20
H29	60	S-N	Apartment		2	10~20	15~20
H30	74	S-N	Apartment		3	10~20	15~20

Building Physical Properties			
	Range	Number	Number (%)
<b>Building Age</b>	2000s	30	100%
<b>Building Height (5 stories Bld)</b>	1-3 stories	0	0%
	4-8 stories	0	0%
	9+ stories	30	100%
<b>Building Orientation</b>	S-N	30	100%
<b>Building Layout</b>	Apartment	30	100%
<b>Deweller Size</b>	45-55 m <sup>2</sup>	4	13%
	55-65 m <sup>2</sup>	3	10%
	65-75 m <sup>2</sup>	15	50%
	75-85 m <sup>2</sup>	4	13%
	85-95 m <sup>2</sup>	2	7%
	95-105m <sup>2</sup>	2	7%
	105 +	0	0%
<b>Dweller room number</b>	1	2	7%
	2	5	17%
	3	17	57%
	4	6	20%
<b>Building Material</b>	Steel-concrete	30	100%
<b>Window layout</b>	Single glazed metal frame	30	100%

# Household Appliances

		Household Appliance																														
		H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19	H20	H21	H22	H23	H24	H25	H26	H27	H28	H29	H30	
Function	Appliance																															
Lightning	AP1		2	1					1	1					2										2	2	2	2			1	
	AP2		1									1											1									
	AP3	11	10	11	11	12	21	12	14	12	18	18	17	13	10	11	12	19	17	15	22	12	12	11	11	12	10	9	12	11	11	
	AP4																					1										
	Other																															
	<b>Total</b>																															417
Cooking	AP5	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1		
	AP6										1	1					1	1	1	1												
	AP7					1	1	1				1							1		1											
	AP8						1	1	1	1	1	1	1			1		1	1	1	1	1			1				1	1		
	AP9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	AP10		1	1	1	1	1					1	1	1			1		1	1	1	1		1					1	1		
	AP11	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	
	Other						1											1			1	1										
	<b>Total</b>																															143
Cleaning	AP12						1	1			1	1						1	1	1	1	1	1					1		1	1	
	AP13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	AP14						1			1	1	1						1	1		1											
	<b>Total</b>																															50
Entertainment	PC						1				1	1						1	1	1	1			1				1				
	TV					1	1			1	1	1		1		1		1	1		2	1	1						1	1		
	AP17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	AP18										1							1	1		2											
	Other						2				1	1						1			1											
	<b>Total</b>																															65
Heating	AP20	2	3	3	3	3	3	3	3	2	4	4	2	2	2	4	3	4	4	3	4	4	2	3	3	2	2	4	3	3	3	
	AP21		2	1	1		1					1			1	1					1	1	1					1				
	AP22	2	1	1	1	1	2	1	1	1	3	2	1	1	1	1	1	1	1	2	3	1	1	1	1	1	1	1	1	1	1	
	AP23				1		1					1	1	1				1	1	1		1								1		
	AP24																															
	AP25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	<b>Total</b>																															180

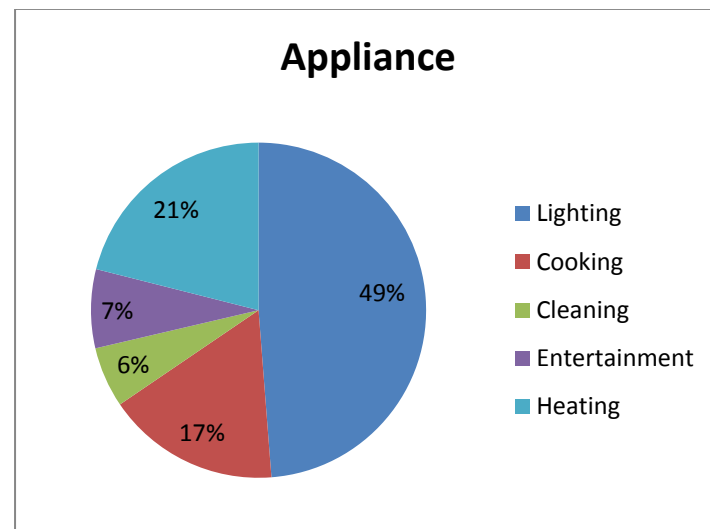
### Appliance in the house

AP1	Traditional incandescent bulbs		AP13	Electric/Gas water heater
AP2	Compact fluorescent lamps		AP14	others
AP3	Flurescent/Energy saving		AP15	Desktop computer



	lamps								
AP4	Halogen lamps					AP16		Laptop computer	
AP5	Rice cooker					AP17		Cathode ray tube television	
AP6	Water dispenser					AP18		LCD	
AP7	Induction cooker					AP19		Plasma	
AP8	Microwave					AP20		A/C	
AP9	Range hood					AP21		Electric Blanket	
AP10	Electric kettle					AP22		Electric Fan	
AP11	Refrigerator					AP23		Electric Heater	
AP12	Washing machine					AP24		Floor Heating	
						Ap25		Bathroom Heat Lamp	

Appliance	Number
Lighting	417
Cooking	143
Cleaning	50
Entertainment	65
Heating	180



## Energy Consumption

N/A

## Thermal Comfort Perception

Indoor Comfort												
	Winter						Summer					
	IC 1	IC 2	IC 3	IC 4	IC 5	IC 6	IC 1	IC 2	IC 3	IC 4	IC 5	
H1												
H2												
H3												
H4												
H5												
H6												
H7												
H8												
H9												
H10												
H11												
H12												
H13												
H14												
H15												
H16												
H17												
H18												
H19												
H20												
H21												
H22												
H23												
H24												
H25												
H26												
H27												
H28												
H29												
H30												
												<b>Total</b>

Occupants' satisfaction					
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)	
		3			
		3			
5					
	4				
	4				
	4				
		3			
				1	
				1	
			2		
5		3			
		3			
		3			
			2		
		3			
		3			
		3			
	4				
				1	
			2		
		3			
	4				
	4				
	4				
	4				
		3			
		3			
	4				
			2		
<b>Total</b>	2	9	12	4	3
	7%	30%	40%	13%	10%

IC 1	A/C
IC 2	Electric Fan
IC 3	Electric Heater
IC 4	Floor Heating
IC 5	Natural Ventilation
IC 6	Others -wearing

