

DATA ANALYSIS FOR:

NINGBO URBAN HOUSING SURVEYS, CHINA

90 Household Surveys of three typologies – 2013-15

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



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

Demographic Characteristics

Demographic characteristics of the subject households							
	Gender	Age	Education	Job	Homeownership	Family structure	INCOME
H1	Male	50	primary	Freelance	rented	3	
H2	Male	66	primary	Freelance	owned	3	
H3	Male	45	primary	Freelance	rented	1	
H4	Female	48	primary	Unemployed	owned	4	
H5	Female	65	primary	Unemployed	rented	4	
H6	Male	54	secondary	Freelance	rented	4	
H7	Female	55	primary	Freelance	rented	3	
H8	Male	55	primary	Freelance	rented	3	
H9	Male	48	secondary	Freelance	owned	4	
H10	Male	61	primary	Freelance	owned	4	
H11	Female	62	primary	Unemployed	owned	5	
H12	Female	53	primary	Unemployed	owned	4	
H13	Female	46	secondary	Freelance	owned	2	
H14	Female	59	secondary	Unemployed	rented	2	
H15	Female	70	primary	Retired	rented	5	
H16	Female	37	secondary	Unemployed	owned	4	
H17	Female	48	secondary	Unemployed	rented	2	
H18	Female	49	secondary	Unemployed	rented	3	
H19	male	62	primary	Retired	rented	2	
H20	male	60	primary	Retired	rented	4	
H21	Female	66	primary	Retired	rented	2	
H22	Female	61	primary	Unemployed	rented	2	
H23	Female	61	primary	Unemployed	owned	1	
H24	Female	55	primary	Unemployed	rented	4	
H25	Female	55	primary	Unemployed	owned	4	
H26	Female	71	primary	Retired	rented	2	
H27	Female	55	secondary	Freelance	rented	5	
H28	Female	58	primary	Freelance	owned	4	
H29	Female	61	primary	Unemployed	owned	5	
H30	Female	54	primary	Unemployed	owned	6	

	Range	Number	Number (%)
Age	less 50 (37-49)	7	23%
	50-55	9	30%
	56-65	10	33%
	66-75	4	13%
	85-95	0	0%
Gender	Female	21	70%
	Male	9	30%
Income	Less 3000 RMB	18	60%
	Between 4000-5000 RMB	7	23%
	Between 5000-7000 RMB	2	7%
	More than 10000 RMB	0	0%
	N/A	3	10%
Ownership	Owned	13	43%
	Rented	15	50%
	Left by relatives	2	7%
Education level	Primary or less	22	73%
	Secondary	8	27%
Profession	Freelance	11	37%
	Professional	0	0%
	techincal work	0	0%
	Retired	5	17%
	Unemployed	14	46%
Family Structure	1 Members	2	7%
	2 Members	7	23%
	3 Members	5	17%
	4 Members	11	37%
	5 Members	4	12%
	6 Members	1	3%

Dweller Physical Properties

Dweller Physical Properties												
No	Size(m2)	Orientation	Type	Age	Bedrooms	Bedroom	Living room	Building Physical Properties				
								Range	Number	Number (%)		
H1	74	S-N	Apartment		2	20~30	20~30	Building Age	1980	30	100%	
H2	74	S-N	Apartment		2	20~30	20~30					
H3	45	S-N	Apartment		1	10-	15					
H4	80	S-N	Apartment		3	20~30	20~30					
H5	60	S-N	Apartment		2	10~20	15~20					
H6	65	S-N	Apartment		2	10~20	15~20		Building Height (5 stories Bld)	1-3 stories	12	40%
H7	65	S-N	Apartment		2	10~20	15~20			4-6 stories	18	60%
H8	60	S-N	Apartment		2	10~20	15~20		Building Orientation	S-N	30	100%
H9	74	S-N	Apartment		2	10~20	15~20					
H10	80	S-N	Apartment		3	20~30	20~30		Building Layout	Apartment	30	100%
H11	74	S-N	Apartment		2	20~30	20~30					
H12	60	S-N	Apartment		2	10~20	15~20					
H13	65	S-N	Apartment		2	10~20	15~20					
H14	65	S-N	Apartment		2	10~20	15~20					
H15	80	S-N	Apartment		3	20~30	20~30		Deweller Size	45-55 m ²	4	13%
H16	64	S-N	Apartment		3	10~20	15~20			55-65 m2	13	43%
H17	45	S-N	Apartment		1	10-	15			65-75 m ²	6	20%
H18	74	S-N	Apartment		2	10~15	15			75-85 m ²	5	17%
H19	70	S-N	Apartment		2	10~20	15~20			85-95 m ²	2	7%
H20	65	S-N	Apartment		2	10~20	15~20			95-105m ²	0	0%
H21	65	S-N	Apartment		2	10~20	15~20			105 +	0	0%
H22	65	S-N	Apartment		2	10~20	15~20		Dweller room number	1	3	10%
H23	45	S-N	Apartment		1	10-	15			2	19	63%
H24	60	S-N	Apartment		2	10~20	15~20			3	8	27%
H25	60	S-N	Apartment		2	10~15	10~15			4	0	0%
H26	54	S-N	Apartment		2	10~15	10~15		Building Material	Steel-concrete	30	100%
H27	87	S-N	Apartment		3	20~30	20~30			Window layout	Single glazed metal frame	30
H28	94	S-N	Apartment		3	20~30	20~30					
H29	80	S-N	Apartment		3	20~30	20~30					
H30	80	S-N	Apartment		3	20~30	20~30					

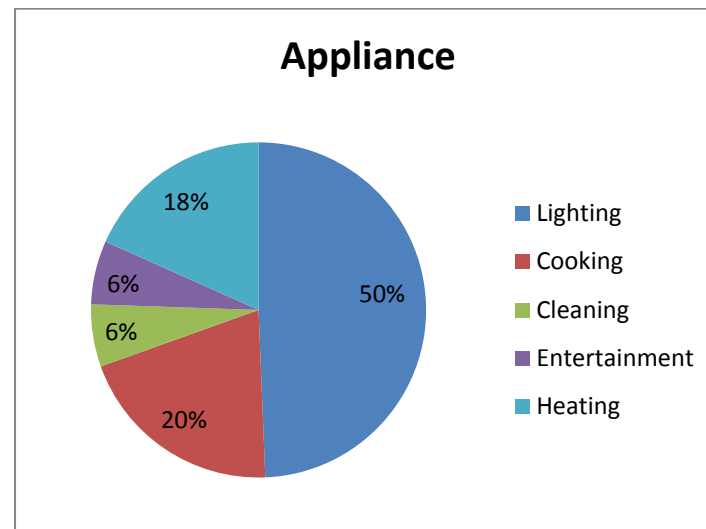
Household Appliances

		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					3	3	2		3				2	2	4	2		2					1	2									
	AP2																		2	2										2	3			
	AP3	11	11	11	9	11	7	8	11	8	10	11	12	15	12	8	7	9	8	11	10	10	11	9	10	11	9	11	14	11	14			
	AP4																																	
	Other																																	
	Total																																	
																																		345
Cooking	AP5	1	1	2	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2		
	AP6										1																			1	1			
	AP7															1														1				
	AP8	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		
	AP10	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		
	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					
	Total																																	
																																	141	
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	1		
	AP 14								1					1			1						1						1	1	1			
	Total																																	
																																	42	
Entertainment	PC										1																			1	1	1	1	
	AP16															1			1												1			
	TV			1	1			1		1	1		1	1	1	1	1	1	2		1	1	1	2	2	1	1	1	2	2	1			
	AP18																		1											1	1			
	AP19																																	
	Other																			1			1		1				1					
	Total																																	
																																	43	
Heating	AP20	1	2	2	3		1	1			3	2	2	1		1	2	2		2	2	1	1			1	1	3	3	2	3			
	AP21		1									2		1	1		2	1		1	1			1	1	1		1	1	2	2			
	AP22	1	1	2	2	1	1	2	2	3	2	2	1	2	2	2	3	1	1	2	1	2	1	1	1	1	1	3	2	3	1			
	AP23		1		1			1	1														1						1	1	1			
	AP24																																	
	AP25				1						1		1				1				1								1	1	1	1		
	Total																																	
																																	128	

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	345
Cooking	141
Cleaning	42
Entertainment	43
Heating	128



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												
												Total

Occupants' satisfaction					
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)	
			2		
			2		
		3			
		3			
			2		
			2		
				1	
			2		
		3			
		3			
			2		
	4				
		3			
				1	
			2		
				1	
				1	
		3			
			2		
		3			
			2		
				1	
	4				
		3			
		3			
				1	
		3			
			2		
	0	2	10	12	6
		7%	33%	40%	20%

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

	Demographic Characteristics								Demographic characteristics of the subject households			
	House	Gender	Age	Education	Job	Homeownership	Family structure	INCOME		Range	Number	Number (%)
H1	3-303	Male	56	secondary	Freelance	Removing & resettlement	2		Age	less 50 (38-48)	2	7%
H2	3-304	Female	54	primary	Retired	owned	2			50-55	8	27%
H3	4-207	Female	59	primary	Unemployed	owned	2			56-65	7	23%
H4	10-604	Female	52	primary	Retired	Removing & resettlement	2			65-75	9	30%
H5	12-303	Male	73	primary	Unemployed	owned	1			85-95	4	13%
H6	13-104	Female	72	primary	Retired	Removing & resettlement	1			Gender	Female	22
H7	13-202	Female	65	secondary	Retired	Removing & resettlement	5		Male		8	27%
H8	13-303	Male	52	secondary	Freelance	Removing & resettlement	3		Income	Less 3000 RMB	14	47%
H9	14-103	Male	65	primary	technical personnel	left by relatives	2			Between 4000-5000 RMB	7	23%
H10	11-205	Female	70	primary	Retired	owned	2			Between 5000-7000 RMB	4	13%
H11	14-504	Female	52	primary	Retired	Removing & resettlement	3			More than 10000 RMB	3	10%
H12	15-103	Female	66	primary	Retired	owned	2			N/A	2	7%
H13	17-107	Female	73	secondary	Retired	Removing & resettlement	2		Ownership	Owned	28	93%
H14	17-308	Female	54	primary	Retired	owned	3			Rented	1	3%
H15	18-302	Female	52	secondary	Unemployed	owned	2			Left by relatives	1	300%
H16	22-501	Female	58	primary	Retired	Removing & resettlement	6		Education level	Primary or less	24	80%
H17	24-201	Female	49	primary	Unemployed	Removing & resettlement	3			Secondary	6	20%
H18	25-506	Female	53	primary	Retired	Removing & resettlement	2		Profession	Freelance	2	7%
H19	26-105	Male	80	secondary	Retired	Removing & resettlement	2			Professional	1	3%
H20	27-101	Male	72	primary	Retired	Removing & resettlement	2					
H21	27-	Female	59	primary	technical	owned	2					

	101A				personnel			
H22	27-102A	Female	81	primary	Retired	Removing & resettlement	1	
H23	27-209	Female	66	primary	Retired	Removing & resettlement	3	
H24	39-201	Female	60	primary	Retired	owned	4	
H25	39-401	Female	38	primary	Unemployed	rented	4	
H26	45-102B	Female	73	secondary	Retired	owned	1	
H27	47-506	Male	48	secondary	technical personnel	owned	3	
H28	48-108	Female	68	primary	Retired	owned	2	
H29	53-101	Female	84	primary +	Unemployed	left by relatives	1	
H30	71-203	Male	80	primary	Retired	owned	2	

	techincal work	2	7%
	Retired	19	63%
	Unemployed	6	20%
Family Structure	1 Members	5	17%
	2 Members	15	50%
	3 Members	6	20%
	4 Members	2	7%
	5 Members	1	3%
	6 Members	1	3%

Dweller Physical Properties

Dweller Physical Properties									Building Physical Properties			
No	Household	Size(m2)	Orientation	Type	Age	Bedrooms	Bedroom	Living room	Building Physical Properties			
									Range	Number	Number (%)	
H1	3-303	83	S-N	Apartment		3	20~30	20~30	Building Age	2005	30	100%
H2	3-304	94	S-N	Apartment		2	10~15	20~30				
H3	4-207	65	S-N	Apartment		2	15~20	12				
H4	10-604	60	S-N	Apartment		2	10~20					
H5	12-303	45	S-N	Apartment		1	10-	15				
H6	13-104	42	S-N	Apartment		2	20~30	10~20	Building Height (5 stories Bld)	1-3 stories	24	80%
H7	13-202	105	S-N	Apartment		3	10~20	15~20				
H8	13-303	85	S-N	Apartment		2	20~30	20~30				
H9	14-103	73	S-N	Apartment		2	15~20	20~31	Building Orientation	S-N	30	100%
H10	11-205	80	S-N	Apartment		2	10~20					
H11	14-504	134	S-N	Apartment		3	20~30	20~30	Building Layout	Apartment	30	100%
H12	15-103	94	S-N	Apartment		2	20~30					
H13	17-107	70	S-N	Apartment		1	10~15	20~30				
H14	17-308	68	S-N	Apartment		3	0~10					
H15	18-302	94	S-N	Apartment		3	10~15					
H16	22-501	140	S-N	Apartment		4	10~20	20~30				
H17	24-201	66	S-N	Apartment		2	10~20	10~20				
H18	25-506	154	S-N	Apartment		2	10~15	15	Dweller Size	45-55 m ²	7	23%
H19	26-105	54	S-N	Apartment		2	10~20	20~30		55-65 m ²	6	20%
H20	27-101	60	S-N	Apartment		2	10~21	15~20		65-75 m ²	5	17%
H21	27-101A	60	S-N	Apartment		2	10~20	10~20		75-85 m ²	3	10%
H22	27-102A	44	S-N	Apartment		2	15~20			85-95 m ²	3	10%
H23	27-209	53	S-N	Apartment		2	10~15			95-105m ²	1	3%
H24	39-201	60	S-N	Apartment		3	10~15			105 +	5	17%
H25	39-401	117	S-N	Apartment		3	10~15		Dweller room number	1	4	13%
H26	45-102B	42	S-N	Apartment		1	10~15	10~15		2	18	60%
H27	47-506	165	S-N	Apartment	2 floor	2	15~20			3	7	23%
H28	48-108	67	S-N	Apartment		2	10~15			4	1	3%
H29	53-101	43	S-N	Apartment		1	15	15	Building Material	Steel-concrete	30	100%
H30	71-203	66	S-N	Apartment		2	10~15	10~15				
									Window layout	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				

House	3-303	3-304	4-207	10-604	12-303	13-104	13-202	13-303	14-103	14-205	14-504	15-103	17-107	17-308	18-302	22-501	24-201	25-506	26-105	27-101	27-101A	27-102A	27-209	39-201	39-401	45-102B	47-506	48-108	53-101	71-203	Total		
Function	Appliance																																
Lightning	AP1																							3									
	AP2									6											9												
	AP3	20	20	20	20	5	5	20	8	8		10	9	10	8	20	8	8	20		6		7	3	15	8	6	20	12	6	8		
	AP4																																
	Other																																
	Total																																
Cooking	AP5	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1			
	AP6										1											1			1	1			1				
	AP7	1											1									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		
	AP10	1	1	1	1		1	1	1		1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1		
	AP11	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Other													1														1					
Total																																	
Cleaning	AP12	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		
	AP13	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																				
	Total																																
Entertainment	PC	1						1	1	1		2		1		1	1							1	1	1		1					
	AP16															1									1								
	TV			2	1					1	2		2	2	3			2	1		3	2	2	2	2		1	1	3	1	2		
	AP18	4	3		2	1	1	3	3		1	3				3	3		2	2						1		1					
	AP19									2																							
	Other																		1			1		1				1					
Total																																	
Heating	AP20	4	3	1	2	1	1	3	3	3	2	3	1	2	2	3	4	2	3	2	2	2	2	1	3	3	1	3	1	1	1		
	AP21													1	3		2				1		1		1			2	1				
	AP22	2	1	2	4	2	1	3	3	5	3	3	3	2	5	3	5	1	6	3	4	3	3	2	2	2	3	4	3	2	3		
	AP23				1									1	1		1			1								1					
	AP24																																
	AP25			1				1	1			1				1	1		1								1	1	1				
Total																																	

1	N. Household	N. A/C	Rate%
	2	4	7%
	10	3	33%
	9	2	30%
	9	1	30%
2	N. Household	N. E/Fan	Rate%

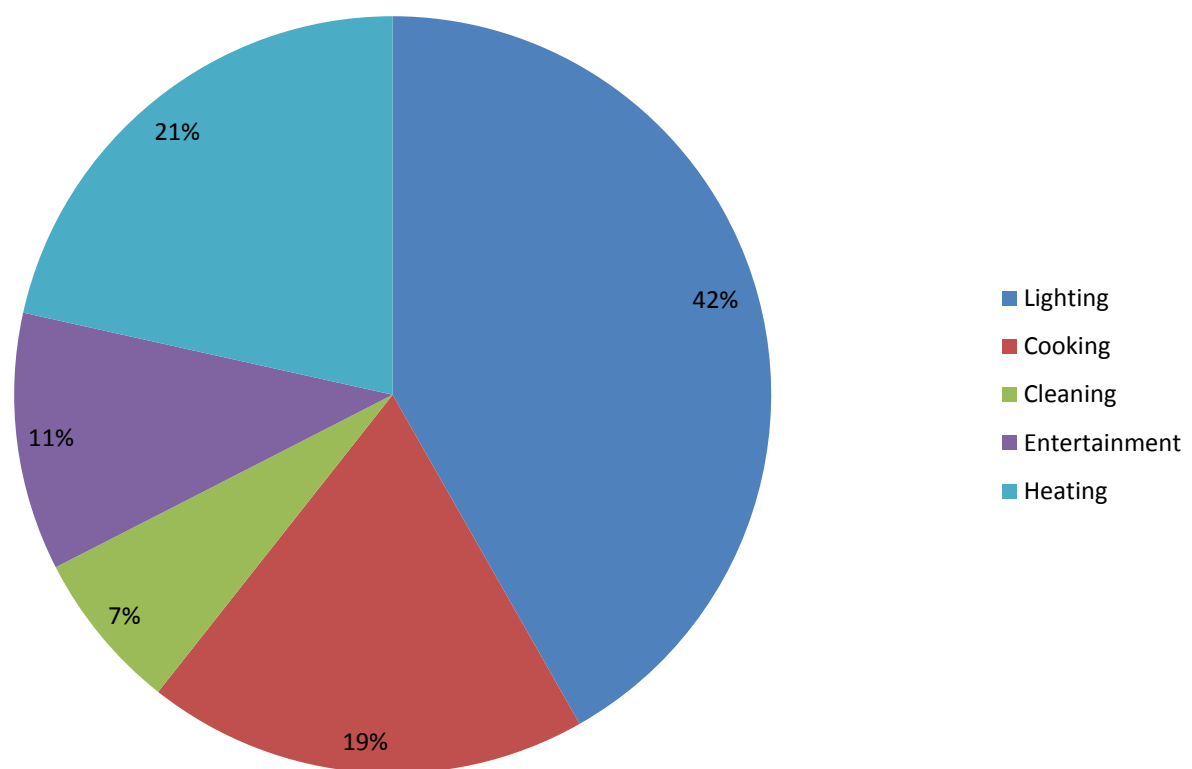
	3	1	10%
	8	2	27%
	12	3	40%
	3	4	10%
	3	5	10%
	1	6	3%
3	N. Household	E/Heater	Rate%
	6	1	20%
4	N. Household	Floor Heater	Rate%
5	N. Household	E/Blanket	Rate%
	1	3	3%
	2	2	7%
	5	1	17%
6	N. Household	B/Heat Lamp	Rate%
	10	1	33%

Appliance in the house

AP1	Traditional incandescent bulbs				AP13	Electric/Gas water heater			
AP2	Compact fluorescent lamps				AP14	others			
AP3	Fluorescent/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			
					Ap2	Bathroom Heat Lamp			
					5				

Appliance	Number
Lighting	330
Cooking	149
Cleaning	54
Entertainment	87
Heating	170

Appliance



Energy Consumption

ENERGY CONSUMPTION																				
		Electricity						Water						Gas						TOTAL
Household Members		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	
H1	3-303		80						30						30					140
H2	3-304		60						25						50					135
H3	4-207		60						20						60					140
H4	10-604		85						40						100					225
H5	12-303	40						20						30						90
H6	13-104	30						10						20						60
H7	13-202					100						100						100		300
H8	13-303			40						25						25				90

H9	14-103		80						60						100						240
H10	11-205		50						20						70						140
H11	14-504			110						35						55					200
H12	15-103		60						20						60						140
H13	17-107		45						13						40						98
H14	17-308			75						50						60					185
H15	18-302		100						30						50						180
H16	22-501						100						55						65		220
H17	24-201			50						30						30					110
H18	25-506		50						25						20						95
H19	26-105		55						20						30						105
H20	27-101		80						60						80						220
H21	27-101A		60						50						70						180
H22	27-102A	40						20						30							90
H23	27-209			55						15						15					85
H24	39-201				100						50						40				190
H25	39-401				70						30						40				140
H26	45-102B	50						20						4							74
H27	47-506			80						25						50					155
H28	48-108		70						15						20						105
H29	53-101	20							5						2						27
H30	71-203		50						20						50						120
		36	65	68	85	100	100	15	30	30	40	100	55	17	55	39	40	100	65		

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	3-303											
H2	3-304											
H3	4-207											
H4	10-604											
H5	12-303											
H6	13-104											
H7	13-202											
H8	13-303											
H9	14-103											
H10	11-205											
H11	14-504											

Occupants' satisfaction				
1				
Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)
	4			
	4			
	4			
	4			
		3		
		3		
		3		
	4			
		3		
		3		
	4			

H12	15-103											
H13	17-107											
H14	17-308											
H15	18-302											
H16	22-501											
H17	24-201											
H18	25-506											
H19	26-105											
H20	27-101											
H21	27-101A											
H22	27-102A											
H23	27-209											
H24	39-201											
H25	39-401											
H26	45-102B											
H27	47-506											
H28	48-108											
H29	53-101											
H30	71-203											
Total												

					3		
5							
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
	4						
					3		
	4						
	4						
					3		
	4						
	1	21	8				
	3%	70%	27%				

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 Household											
No.	Household	Orientation	Size	Dweller Room N.	Gender	Age	Education	Profession	Homeownership	H. Structure	Income/ Month (RMB)
H1	G1-201	E-S	95-100	3	M	53	Secondary	Freelance	Owned	3	10000
H2	G1-1402	S-N	85-95	2	F	50	Primary	Retired	rented	3	10000
H3	G1-1405	S-N	95-100	3	F	34	Bachelor	nurse	owned	3	10000
H4	G1-1906	S-N	75-85	2	F	36	Vocational	Freelance	rented	2	10000
H5	G2-303	S-N	85-95	2	F	63	Primary	Retired	Owned	3	7000
H6	G2-305	S-N-E-W	95-105	3	F	65	Primary	Retired	Owned	2	4000
H7	G2-406	W-N	65-75	2	F	62	Primary	Retired	Owned	5	10000
H8	G2-2205	S-N	95-105	2	F	56	Primary	Retired	Owned	5	10000
H9	G2-2406	E-W	65-75	2	F	60	Primary	Retired	Owned	4	10000
H10	G2-2706	E-W	85-95	2	F	70	Primary	Retired	Owned	5	10000
H11	G3-305	S-N	95-105	3	F	65	Primary	Retired	Owned	3	10000
H12	G3-406	W-N	75-85	2	M	56	Primary	Security	Owned	5	7000
H13	G3-502	W-N	95-105	2	M	35	Bachelor	Freelance	Owned	6	10000
H14	G3-602	E-S	75-85	2	F	55	Primary	Retired	Owned	4	7000
H15	G3-1202	E-S	85-95	2	F	54	Primary	Retired	Owned	3	7000
H16	G3-1704	S-N	85-95	3	F	58	Primary	Retired	Owned	4	8000
H17	G5-1502	S-N	85-95	3	F	63	Secondary	Retired	Owned	5	10000
H18	G5-1803	S-N	85-95	2	F	56	Secondary	Retired	Owned	2	10000
H19	G5-1904	S-N	95-105	2	F	52	Secondary	Retired	Owned	2	10000
H20	G5-2001	S-N	105 +	3	F	65	Secondary	Retired	Owned	4	8000
H21	G5-2703	S-N	85-95	2	F	48	Bachelor	Freelance	Owned	2	10000
H22	G6-1001	S-N	95-105	3	F	33	Bachelor	Freelance	Owned	3	8000
H23	G6-1003	S-N	85-95	2	F	50	Primary	Retired	Owned	3	10000
H24	G6-1004	S-W-N	105 +	2	F	35	Secondary	Freelance	Owned	3	10000
H25	G6-1902		85-95	2	F	30	Bachelor	Professional	Owned	5	10000
H26	G8-206	E-W	85-95	2	F	59	Bachelor	Retired	Owned	3	8000
H27	G8-603	S-N	95-105	3	F	57	Secondary	Retired	Owned	3	10000
H28	G8-2404	W-S	95-105	2	F	65	Vocational	Retired	Owned	4	10000
H29	G8-2405	W-S	95-105	3	F	67	Primary	Retired	Owned	5	10000
H30	D-1218	E-W	45-55	1	F	64	Primary	Retired	Owned	1	5000

Demographic characteristics of the subject households			
	Range	Number	Number (%)
Age	19-30 years	1	3%
	31-45 years	5	17%
	46-55 years	6	20%
	Over 56 years	18	60%
Gender	Female	27	90%
	Male	3	10%
Income	Between 4000 -6000	2	7%
	Between 7000 -9000	8	27%
	More than 10000 RMB	20	67%
Ownership	Owned	28	93%
	Rented	2	7%
Education level	Primary or less	15	50%
	Secondary	7	23%
	Vocational	2	7%
	College/ University	6	20%
Profession	Freelance	6	20%
	government functionary	0	0%
	Professional and technical personnel	2	7%
	Retired	21	70%
	Others security	1	3%
Family Structure	1 Member	1	3%
	2 Member	5	17%
	3 Member	11	37%
	4 Member	5	17%
	5 Member	8	27%

Dweller Physical Properties

Dweller Physical Properties					Building Physical Properties					
No.	Household	Orientation	Size	Dweller Room Number		Range	Number	Number (%)		
H1	G1-201	E-S	95-100	3	Building Age	2009	30	100%		
H2	G1-1402	S-N	85-95	2						
H3	G1-1405	S-N	95-100	3						
H4	G1-1906	S-N	75-85	2		Building Height		8 ↑	25%	
H5	G2-303	S-N	85-95	2				23 ↓	74%	
H6	G2-305	S-N-E-W	95-105	3						
H7	G2-406	W-N	65-75	2		Building Orientation	South-Norht	17	57%	
H8	G2-2205	S-N	95-105	2				East-West	4	13%
H9	G2-2406	E-W	65-75	2				West-north	3	10%
H10	G2-2706	E-W	85-95	2				East-South	3	10%
H11	G3-305	S-N	95-105	3				West-South	2	7%
H12	G3-406	W-N	75-85	2		Building Layout	Apartment	30	100%	
H13	G3-502	W-N	95-105	2						
H14	G3-602	E-S	75-85	2						
H15	G3-1202	E-S	85-95	2		Dweller Size	45 m ²	1	3%	
H16	G3-1704	S-N	85-95	3				65-75 m ²	2	7%
H17	G5-1502	S-N	85-95	3				75-85 m ²	3	10%
H18	G5-1803	S-N	85-95	2				85-95 m ²	12	40%
H19	G5-1904	S-N	95-105	2				95-105 m ²	12	40%
H20	G5-2001	S-N	105 +	3			Dweller room number	1	1	3%
H21	G5-2703	S-N	85-95	2				2	19	63%
H22	G6-1001	S-N	95-105	3				3	10	33%
H23	G6-1003	S-N	85-95	2		Building Material	Steel-concrete composite	30	100%	
H24	G6-1004	S-W-N	105 +	2						
H25	G6-1902		85-95	2						
H26	G8-206	E-W	85-95	2		Window layout	Single glazed metal frame	30	100%	
H27	G8-603	S-N	95-105	3						
H28	G8-2404	W-S	95-105	2						
H29	G8-2405	W-S	95-105	3						
H30	D-1218	E-W	45-55	1						

Household Appliances

Household Appliances																																	
No .	Household	Orientation	Size	Cooking										Total	Cleansing					Total	Heating & Cooling							Total	Light		TOTAL		
				AP 1	AP 2	AP 3	AP 4	AP 5	AP 6	AP 7	AP 8	AP 9	AP1 0		AP1 1	AP1 2	AP1 3	AP1 4	AP1 5		AP1 6	AP1 7	AP1 8	AP1 9	AP2 0	AP2 1	AP2 2		AP2 3	AP2 4		AP2 5	
H1	G1-201	E-S	95-100	1	1		1	1	1	1			6	1	1			2	1	3	1		5	4	1	1			6	31	9		
H2	G1-1402	S-N	85-95	1	1	1	1	1	1	1			6	1	1			2	1	2			3	4				4	8	6			
H3	G1-1405	S-N	95-100	2	1		1	1		1	1		7	1	1			2	2	2	1		5	*2	2	1	2		7	8	7		
H4	G1-1906	S-N	75-85	1		1	1			1	1		5	1	1			2	2	1			3	3		1		4		5			
H5	G2-303	S-N	85-95	1		1	1	1	1	1			6	1	1	1		3	3	1			4	4		1	1		6	15	5	MQR	
H6	G2-305	S-N-E-W	95-105	2			1	1	1	1			6	1	1			2	3		1		4	4		3		1		8			
H7	G2-406	W-N	65-75	1			1	1	1	1			5	1	1			2	1	1			2	2		2		4	3	6			
H8	G2-2205	S-N	95-105	1			1	1	1	1			5	1	1			2	3	2	1		6	3		3	1		7	4	6		
H9	G2-2406		65-75	1	1	1	1	1		1			6	1	1			2	1	2			3	2		2			1	4		23	MQR
H10	G2-2706	E-W	85-95	1				1	1	1			4	1	1			2	2		1		3	3	2	1	1		7	20	8	MQR	
H11	G3-305	S-N	95-105	1			1	1	1	1			5	1	1			2	2	1	2		5	4	3	1	2		10				
H12	G3-406	W-N	75-85	1			1	1	1	1			5	1	1			2	1		1		2	1	1	1		3		20			
H13	G3-502	W-N	95-105	2			1	1	1				5	1	1			2	1	3			4	3		1		4		15	MQR		
H14	G3-602	E-S	75-85	1			1	1	1	1			5	1	1			2		1			1	4		3		7	2	8	MQR		
H15	G3-1202	E-S	85-95	1	1		1	1		1			5	1	1			2	2				2	3		1		4			MQR		
H16	G3-1704	S-N	85-95	1	1		1	1	1	1	1	1	8	1	1			2	2		2	3	7	4	1	3	2		10	2	6		
H17	G5-1502	S-N	85-95	2	1	1	1	1	1	1			8	1	1			2	3	1	1	1	6	3	1	3		7	4	6			
H18	G5-1803	S-N	85-95		1			1		1			3	1	1			2	1	1			2			1		1	5	4			
H19	G5-1904	S-N	95-105	2			1	2	2	1		1	9	1	1	1	1	4	3	2	1	1	7	4		3	1		8	20	9		
H20	G5-2001	S-N	105+	3	1		1	1	1	3			10	1	1			2	3	1			4	3		2	1		6	10	10		
H2	G5-2703	S-N	85-95	1			1	1	1	1			5	1	1			2	1	1	1	1	4	2		1	1		4	0	6		

	14	1	46%
	6	2	20%
	7	3	23%
	1	4	3%
3	N. Household	E/Heater	Rate%
	3	2	10%
	11	1	37%
4	N. Household	Floor Heater	Rate%
	1	1	3%
5	N. Household	E/Blanket	Rate%
	4	1	13%
	2	2	6%
	1	3	3%
6	N. Household	B/Heat Lamp	Rate%
	1	1	3%

Energy Consumption

Energy Consumption																						
Household Members		Electricity						Water						Gas						Total	Total Average	
		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
H1	G1-201			200						30								100			330	253
H2	G1-1402			200						60								20			280	
H3	G1-1405			75						30								20			125	
H4	G1-1906		200							70								20			290	187
H5	G2-303			60						30								50			140	
H6	G2-305		30							20								20			70	
H7	G2-406					150						150							150		450	368
H8	G2-2205					150						150							100		400	
H9	G2-2406				150						100							50			300	344
H10	G2-2706					150						100							150		400	
H11	G3-305			200							100								100		400	
H12	G3-406					70						100							10		180	
H13	G3-502						500						100							175	775	775
H14	G3-602				200						40								100		340	
H15	G3-1202				75							62							100		237	
H16	G3-1704					250						120							150		520	
H17	G5-1502					200							50						50		300	
H18	G5-1803		40								20								5		65	
H19	G5-1904		100								100								100		300	

H20	G5-2001				100						50					50					200		
H21	G5-2703		100						60						50							210	
H22	G6-1001			70						100						75						245	
H23	G6-1003			50						40						60						150	
H24	G6-1004			100						50						150						300	
H25	G6-1902					200						150					100					450	
H26	G8-206			150						65						70						285	
H27	G8-603			100						100						100						300	
H28	G8-2404				160						100						100					360	
H29	G8-2405					200						100						100				400	
H30	D-1218	120							10							0						130	130
Total		120	94	116	142	160	500		10	54	63	78	114	100	0	39	74	100	94	175			

Thermal Comfort Perception

		Thermal Comfort Perception											Occupants' satisfaction										
		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	1					Very Good (5)	Good (4)	Fair (3)	Poor (2)	Very bad (1)	
H1	G1-201																						
H2	G1-1402																						
H3	G1-1405																						
H4	G1-1906																						
H5	G2-303																						
H6	G2-305																						
H7	G2-406																						
H8	G2-2205																						
H9	G2-2406																						
H10	G2-2706																						
H11	G3-305																						
H12	G3-406																						
H13	G3-502																						
H14	G3-602																						
H15	G3-1202																						
H16	G3-1704																						
H17	G5-1502																						
H18	G5-1803																						
H19	G5-1904																						
H20	G5-2001																						
H21	G5-2703																						
H22	G6-1001																						

H23	G6-1003																		4						
H24	G6-1004																				3				
H25	G6-1902																					3			
H26	G8-206																					3			
H27	G8-603																					4			
H28	G8-2404																						4		
H29	G8-2405																							4	
H30	D-1218																						3		
																							4	15	11
		IC 1	A/C																				13%	50%	36%
		IC 2	Electric Fan																						
		IC 3	Electric Heater																						
		IC 4	Floor Heating																						
		IC 5	Natural Ventilation																						
		IC 6	Others -wearing																						