Elderly living space: preferences and needs of older persons in Bangkok metropolitan

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ABSTRACT

Like other countries' population worldwide, Thailand's population has also been aging continually. The research objective is to find what spaces, furniture, lighting, and decorating materials the older persons who live in Bangkok look for in their age-friendly unit. Results show that the interests and activities of the elderly are mostly home-based. The average needed areas are living area, bedding, and bathroom in the multipurpose studio type ECHO (Elder Cottage Housing Opportunity). Sufficient necessary items for new design of elder care room/space are 6 feet wide bed, wardrobe, air conditioner, fan, and sofa. Air conditioner is used only at night. Fan is preferred at daytime. Preferred floor finishing material is non-slip surface ceramic tiles. Daylight white fluorescent lamp is preferred in most rooms as it provides sufficient intensity and does not create shaded area in the rooms. Most needed equipment in the bathroom is the support rail at water closet and bath area. Bathing chair is also an interesting item to older persons. Affordable price is 10 times of household income.
Keywords: Older Person, Bangkok, Elderly living space, Living Environment, Age-friendly Space.

Introduction

In 1992, the UN International Conference on Ageing recommended to the UN General Assembly to declare 1999 as the International Year of Older Persons (Administration for Community Living, 2014). It was predicted that 2001-2100 would be a century of older persons. Now in most countries, the proportion of people aged over 60 years is growing faster than any other age group (Bloom et al., 2011). It is a result of both longer life expectancies from the success of public health and decreasing birth rates. Older persons are now the pressing concern in most countries (Pew Research Center, 2014). However, the definition of "older person" is uncertain. The United Nations (UN) agreed that the cutoff number to define "older or elderly person" is 60+ years (World Health Organization, 2002) for comparison purposes (Huber, 2005). Nonetheless, UN does not consider 60+ years as a standard numerical criterion because the acceptable chronological age to define elderly in most developed countries does not adapt well to developing countries due to biological and physical issues. Developed countries have accepted 65 years as a definition of "elderly" or "older person". Many countries, including Thailand (Office of the National Economic and Social Development Board, 2014), have associated "elderly person" with the age, 60 years old, a person begins to receive pension (World Health Organization 2002).

Global economy section in Financial Time (2014) reported that 13 countries will be super-aged countries by 2020, and 34 countries by 2030. However, Germany, Italy, and Japan have been super-aged countries since 2014 (O'Connor, 2014). Like many other countries in the world, Thailand's population has been aging continually. National Statistical Office, Ministry of Information and Communication Technology in

Thailand has started the survey of older persons in Thailand since 1994. The division-in-charge, Population Statistics Group, conducted five surveys in 1994, 2002, 2007, 2011, and 2014, and the statistics of older persons in the whole kingdom were 6.8, 9.4, 10.7, 12.2, and 14.9 respectively. In comparison to the whole kingdom, Bangkok Metropolitan statistics were 10.8, 10.4, 9.2, 9.9, and 9.4 respectively.

Thailand 2014 survey contained data from 83,880 households in all provinces, municipalities, and rural areas. The survey defined older persons at age 60 and over. The significant results from the 2014 survey of older persons to expound the research are listed as follows:

The northern region of Thailand has the highest rate of older persons compared to the population in the area at 18.4% while Bangkok has the lowest rate of older persons compared to the population in the area at 11.0%. However, the Index of Aging, IoA = (P 60+/ P15-) x 100, in the northern region of Thailand is 103.7% while Bangkok's Index of Aging is 83.7%, which is higher than the Index of Aging for the whole kingdom at 82.6%.

Older persons living alone rose to 8.7% and not living alone reduced to 91.3%. Most older persons at 82.2% lived in their own homes, in their children's houses at 9.8%, in their siblings' houses at 3.0%, in their parents' houses at 1.3%, in their in-law's houses at 0.8%, and in their grandson's/granddaughter's houses at 0.3%. In the whole kingdom, there are 8.35% of older persons who need caregivers to assist them of their daily activities. In Bangkok, 8.9% of older persons need caregivers to help them do their daily activities, and 5.71% cannot walk upstairs. However, in Bangkok, 56.49% of older persons have bedrooms on the second floor. Later in their mid-elderly and late-elderly stages, this will be a concern for all older persons (Pierce, 2012; Foundation for Older Persons' Development, 2015) since they tend to diminish on physical performance especially climbing up a staircase (Pierce, 2012; Population Statistics Group, 2014).

The population of Thailand in 2014 has persons aged over 60 years at 14.9%. In the next 20 years, the aging population in Thailand is expected to reach 25% (The Government Public Relations Department, 2014). In 2003, Thailand passed Older Persons Act to protect, promote, and support the rights and benefits of older persons, including social welfare, medical services, education, occupation, or occupational training, and social activities (The Government Public Relations Department, 2014). WHO included home in the 2014 definition of the key environments to maintain health and well-being of older persons. Home for older persons is also one of the key issues in Thai Government Policy of long-term self-care for older persons. The elderly population in Thailand is forecasted to increase in the municipal and urban areas due to social movement (GHBank Housing Journal, 2013; Foundation for Older Persons' Development, 2015). However, public retirement homes in urban, municipal, and rural areas in most developing countries, especially Thailand, are not even well-concerned and well-designed to suit the elderly's daily lives (Buasri et al., 2005).

Older persons tend to diminish on physical performance sometime in their lives (Pierce 2012; Dahlberg and McKee 2016; Lai et al., 2016) and psychologically want to be close and talk to their children (Huber, 2005). Keeping in touch with their children is one of the top requirements (Economic Intelligence Center-Siam Commercial Bank, 2014; Population Statistics Group 2014). Thus, there is a need to change elderly's living environment to restore their capabilities, independence, and ease of their daily living. Since design entails creative problem solving (Pierce, 2012), addressing older persons' needs and age-friendly built environment is important to create functional and effective space for them. Many informative data have been collected in developed countries but not in Thailand. Big differences greatly exist between elderly's living place in Eastern and Western Societies (Hong, 2016) or even in Thailand Metropolitan and rural areas (Haque, 2016). In this research, older persons who can afford to change their living environment, live in Bangkok (Population Statistics Group, 2014). Therefore, the research objective is to find what spaces, furniture, lighting, and decorating materials the older persons who live in Bangkok look for in their age-friendly unit.

Materials and Methods

1. Secondary Materials. Literature reviews about definition of older persons in Thailand, ageing society in Thailand, and condition of houses owned by older persons in Bangkok are utilized in this study. Nowadays, Thai housing norm is the single-family detached house (National Statistical Office Thailand 2014); then, the hypothesis is set on this basis.

2. Hypothesis to Collect Primary Materials. From the definition of older persons in Thailand, at age 60+, the study focuses on Bangkok housing estate in the year 1980 onwards due to mortgage loan term. According to the Government Housing Bank, Thailand, the mortgage loan term is between 5 and-30 years. The maximum mortgage loan term is based on the age of the borrower and combined with the repayment years which should not exceed 65-70 years old. Therefore, the data should date back 35 years from 2015 when the study has begun. Thus, the study collects and summarizes house conditions in Bangkok from 1980 onwards.

3. Primary Materials. Collecting and summarizing house conditions in Bangkok Metropolitan is emphasized on housing estate due to the increasing number in Bangkok at the time (Government Housing Bank 1995). From the collected data, there are no suitable areas on the first floor to renovate or to improve the living environment for elderly. Besides, most bedrooms for older persons are on the second floor (Population Statistics Group 2014), which are not suitable for their physical condition. On the other hand, there is still available outdoor area in the existing housing estate to build age-friendly living space.

4. Face-to-Face Interview. A questionnaire was designed to collect information of older persons as follows:

4.1 Demographic Characteristics: age, gender, health status, income, occupation, and decision making in the household. The screening question is age of the respondent not below 55 years.

4.2 Housing Characteristics: housing type, and available outdoor area around the house (if any). This is to double check the size of available outdoor area found in 2.3.

4.3 Daily Activities:

- Where older persons do specific activities
- They do these activities alone, or with caregiver or family member
- Time spent in each space
- Select up to five most preferred activities.
- Select up to five most preferred functional spaces / rooms and time spent in those areas each day.

4.4 Need and Satisfaction: From most preferred functional spaces / rooms selected in 4.3, detailed information listed below was rated as to their level of importance and satisfaction; 5 is the highest and 1 is the lowest.

- Preferred furniture
- Electrical equipment
- Type of floor finishing materials
- Luminaire colour
- Luminaire intensity
- Natural lighting and ventilation
- Room/space colour
- Privacy level

This information would address older person specific needs of functional spaces/room, preferable materials both surface and colour tone for their preferred age-friendly space to allow them to self-care themselves as much as possible.

4.5 Future plan for age-friendly living space

- Preferred type of age-friendly living space and necessary area
- Affordable price

5. Sampling. For face-to-face interview on October 15 – November 5, 2015, respondents were randomly selected from various locations throughout Bangkok Metropolitan according to housing estate location collected in 2.3. Thus, sampling was taken from 19 housing estates in 15 districts. Age qualification of respondents was 55 years and over. The extra sampling was required to reach 60 samples if respondents were under 55 years of age for interview. Respondents could be caregivers of older persons whose physical and/or mental health was too poor to allow them to complete the interview or respond to the questions (e.g. Dahlberg, McKee 2016). There was a need to allow the caregiver to complete an interview because sometimes the caregiver provided prompter and more detailed information than the older person did (World Health Organization 2007).

6. Procedure. In order to ensure standardization of data collection procedure, the pilot interview prior to the actual fieldwork was conducted. It was done to make sure that the target sampler could easily understand the questionnaire. Experienced market research interviewers were selected and provided with few hours training (e.g. Dahlberg, McKee 2016) on the matter of research aims and architectural technical terms which they might not be familiar with. Show cards were also provided for respondents to ensure that they understood the questions and also their answers.

7. Data Processing and Analysis. The quality of field work is 10% randomly clarified with the interviewees by phone. Before coding in Surveycraft software, all data were verified. Coding was double checked for accuracy and the data were analysed by Surveycraft Software. The statistical tools utilised for data analysis were frequency, mean, and percentage.

Results

1. Collecting and Summarizing Housing Estate Conditions in Bangkok Metropolitan

From 1980 onwards, the housing estate paved way to the increasing number of houses in Bangkok Metropolitan at the time. Therefore, the data were collected from 19 housing estates constructed in 15 districts around Bangkok Metropolitan. Six typical house plans from 19 housing estates at that time are in different property area. Most houses situated in the land area range from 240, 315, 400, 480, 558, and 575 square meters. These houses have available outdoor areas of 66 (9.50x10.00), 93.50 (11.00x8.50), 130 (6.50x20.00), 96.32 (11.20x8.60), 306 (18.00x17.00), and 276 (12.00x23.00) square meters respectively. They have available outdoor area that is enough to build an Elder Cottage Housing Opportunity (ECHO), a small self-contained age-friendly living unit designed for build on the existing single-family home property (Pollak 2012).

The ECHO was developed from an Australian housing for older persons called “Granny flats” and was introduced in the United States in the early 1980s (Koebel et al. 2003). The purpose of this housing type arrangement is created efficient and convenient for the family and older person to provide and receive assistance while residing in the smaller ECHO house (Koebel et al. 2003). Most states in U.S.A., the ECHO unit “shall be self-contained, barrier-free, energy-efficient and capable of being moved to another site”. The ECHO in New Jersey require minimum land area of 1.0 acres and maximum size of the unit shall be 720 square feet

(West Amwell Township, New Jersey 2007). While another cities, states, and countries may have various requirement.

2 Older Persons' Information from Face-to-Face Interview

Each interview lasted for an average of 58.5 minutes with maximum of 60 minutes and minimum of 50 minutes. Eighty percent of the interviews were conducted with the elderly participants themselves, while the rest were carried out with the elderly participants accompanied usually by their caregivers.

2.1 Demographic Characteristics

The identified age range of respondents in this study is between 55-85 years. Age range of 55-65 years is 52% and age range of 66-85 years is 48%. As to the gender of respondents, 52% is male and 48% is female. Forty-seven respondents (78%) are in good health while 13 respondents (22%) rely on caregivers. One respondent uses a wheelchair and six respondents use walking aids. Forty-three percent of the respondents are still working; 22% are retirees with pension, and 35% are housewives.

Eighty-three percent of the respondents earn a monthly income of over 50,000 Baht per household, and only 17% of the respondents have a monthly income of lower than 50,000 Baht. Monthly income over 50,000 Baht per household is classified as follows: 50,000-54,999 Baht at 12%; 55,000-59,999 Baht at 13%; 60,000-64,999 Baht at 22%; 65,000-69,999 Baht at 5%; 70,000-74,999 Baht at 5%; and over 75,000 Baht at 26%. Those having full authority in the house for decision making are 37%, while 43% of the respondents have a lot of influence in decision making process, and 20% participate with less influence in decision making process.

2.2 Housing Characteristics

Forty-seven percent of the respondents live in single detached houses; 31% in townhouses, 8% in condominiums, and 11% in shophouses. Therefore, 50% of the respondents do not have available outdoor area. Based on the interview of the respondents living in 30 single detached houses, the land areas range from 160, 200, 240, 320, and 400 up to 816 square meters. These houses have available outdoor area ranging from 12, 20, 25, 30, 32, 40, 45, 50, 60, 64, 80, 120, and 400 square meters. The available outdoor area has an average of 48 square meters, 4 meters wide and 12 meters long.

2.3 Daily Activities

This study found that most of the older persons while at home preferred indoor activities more than outdoor activities. Activities and spaces where respondents do their activities, and average time spent every day in those areas are shown in Table 1.

Table 1. Percentage of each activity performed in each space, average number of activities performed in each space, and average time spent every day in those areas

Spaces	Living Area	Terrace or Veranda	Bedroom	Kitchen	Garden	Bathroom	Dining Area	Office Area
Average Time Spent / day (minutes)	**186**	**97.5**	**86.6**	**45.6**	**84**	**32.5**	**48.8**	**35**
Activities	**Percentage of Each Activity Performed in Each Space**							
Art and Craft	100%	50%	-	-	-	-	-	-
Chatting/ playing with Children	100%	38%	-	-	13%	-	-	-
Internet Surfing	100%	22%	33%	-	-	-	-	11%
Watching Movies or Television Shows	97%	5%	13%	2%	-	-	-	-
Listening to Music or Radio Program	90%	40%	13%	7%	10%	-	-	-
Napping/Sleeping	83%	31%	36%	-	-	-	-	-
Reading	81%	27%	19%	-	8%	4%	4%	-
Walking	52%	68%	-	-	48%	-	-	-
Ironing	38%	38%	-	25%	-	-	-	-
Laundering	13%	38%	-	38%	-	-	-	-
Pet Caring	7%	73%	-	-	53%	-	-	-
Cooking/Baking	-	-	-	96%	-	-	-	-
Planting	-	36%	-	-	82%	-	-	-
Number of Respondents (persons)	**60**	**40**	**35**	**27**	**25**	**12**	**8**	**6**
Average Activities/space	**4**	**2**	**1**	**2**	**2**	**1**	**1**	**1**

Respondents in good health can do their daily activities alone, while respondents who have caregivers do their activities with caregivers or family members. However, they do some activities with others such as planting trees, chatting/playing with children, or being with pets as shown in Table 2.

Table 2. Percentage of each activity performed in each space of respondents who have caregivers

Activities	Number of Respondents (persons)	Percentage of Activities Performed			
		Indoor	Outdoor	Alone	with Caregiver, Family Member
Art and Craft	4	5%	2%	75%	39%
Chatting/ playing with children	24	38%	8%	4%	35%
Internet Surfing	9	15%	3%	89%	38%
Watching Movies or Television Shows	60	100%	3%	43%	12%
Listening to music or Radio Program	30	48%	8%	73%	27%
Napping/Sleeping	42	68%	10%	93%	96%
Reading	26	43%	5%	85%	77%
Walking	31	30%	35%	48%	25%
House Chores	24	40%	8%	75%	5%
Ironing	8	12%	—	63%	38%
Laundering	8	13%	—	63%	25%
Pet Caring	15	12%	22%	20%	34%
Cooking/Baking	23	38%	—	57%	23%
Planting	28	10%	47%	50%	73%

Favorite Indoor activities

Favorite Outdoor activities

Respondents do an average of 6 indoor activities, and an average of 2 outdoor activities per day. The three popular indoor activities for older persons are watching movies or television shows, napping/sleeping, and listening to music or radio program, whereas the popular outdoor activities are walking and planting. Respondents' preferred areas in their homes are living area, terrace or veranda, garden, and bedroom. These areas are correlated with the average number of activities performed in each area including the average time spent in each area as shown in Table 3.

Table 3. The average number of activities performed in each area including the average time spent in each area

	Living Area	Terrace or Veranda	Garden	Bedroom
Preference Order of Spaces	1	2	3	4
Average Activities / day	4	2	2	1
Average Time Spent / day (minutes)	186	97.5	84	86.6

2.4 Need and Satisfaction

Preferred indoor areas, living area and bedroom including bathroom as basic function for all living spaces are identified in details by respondents as shown in Table 4. In the living area, the necessary furniture for older persons includes sofa, television cabinet, and table. The most common electrical appliances in the living area are television and fan. As to some degree of importance between furniture and electrical appliances, this study found that electrical appliances are more important than furniture. Most respondents (81%) do not use air conditioner in the living room. Nine percent use air conditioner all day and 10% use it during the very hot day. The colour used in the living area must produce spacious appearance, " Bright look and not compressed". The popular colours are soft tone colour and white.

In the bedroom, the necessary furniture for older persons is bed and wardrobe. The most common electrical appliances in the bedroom are fan and air conditioner. Bedrooms with fans are in the highest proportion of 93%, while 65% have air conditioners. Bedrooms with both fan and air conditioner are 58%, and 55% of the bedrooms have televisions. The most important furniture and electrical appliances in the bedroom are bed and air conditioner. Thirty percent of the respondents do not use air conditioner; 58% use air conditioner at some nights, and 12% use it every night. Eighty percent of the respondents have a bedroom on the second floor and their satisfaction level on privacy is high.

The most common electrical appliance in the bathroom is water boiler. Sixty percent of the respondents have water boilers; 32% have support rails at water closet and 22% have support rails at bath area. However, the importance level of support rail at bath area is the highest at 92%, and support rail at water closet is 79%. The important level of water boiler is only 33%. Ventilation in the bathroom is preferred more than the natural light.

Table 4. Percentage and mean of high important level; percentage and mean of high satisfaction level of design issues in living area, bedroom, and bathroom; and detailed descriptions of each issue at the respondents' existing houses

	High Satisfaction Level (Mean, %)	**Detailed Descriptions in Existing houses**	**High Importance level** (Mean, %)
Issues		**LIVING AREA**	
Luminaire Intensity	4.47 93%	Fluorescent Lamp 55% No shaded Area 67%	4.62 93%
Type of Floor Finishing Material	4.32 93%	Ceramic Tiles 60%- White 22%, Soft Tone 41% Wood parquet 17% - Light Brown 15% Non-slip 32% Easy to Clean 32% Good Appearance 15%	4.50 98%
Natural Lighting and Ventilation	4.20 90%	—	4.50 97%
Luminaire Colour	4.40 97%	White 42%	4.32 92%
Room/Space Colour	4.37 97%	Soft Tone / white 100%	4.30 97%
Issues		**BEDROOM**	
Luminaire Intensity	4.48 95%	Fluorescent Lamp 50% No Shaded Area 22%	4.52 92%
Type of Floor Finishing Material	4.32 97%	Ceramic Tiles 50%- White 15%, Soft Tone 45% Wood Parquet 23% - Light Brown 17% Non-slip 38% Easy to Clean 23% Good Appearance 12%	4.47 98%
Natural lighting and Ventilation	4.03 87%	—	4.42 95%
Privacy	4.35 88%	Bedroom on Second Floor 80%	4.38 90%
Luminaire Colour	4.40 92%	White 50%	4.37 88%
Room/Space Colour	4.08 95%	Soft Tone / White 100%	4.10 90%
Issues		**BATHROOM**	

	High Satisfaction Level (Mean, %)	**Detailed Descriptions in Existing houses**	**High Importance level** (Mean, %)
Type of Floor Finishing Material	4.43 94%	Ceramic tiles 90% White 17%, Soft tone 57% Non-slip 50% Easy to clean 25%	4.75 96%
Luminaire intensity	4.38 94%	Fluorescent lamp 53% No shaded area 27%	4.58 92%
Luminaire colour	4.32 88%	White 42%	4.50 93%
Natural Lighting and Ventilation	4.12 90%	Natural Light 13% Natural Ventilation 60% Mechanical Ventilation 20%	4.48 95%
Room/Space Colour	4.23 97%	Soft Tone / white 98%	4.22 92%

2.5 Future Plan for Age-friendly Living Space

Out of 60 respondents, there are 10 respondents (17%) who plan to have an elder care room while 50 respondents (83%) do not plan to have an elder care room. All of the 10 respondents who want to have an elder care room live in single detached houses that have an average available outdoor area of 54 square meters, average of 6 meters wide and 9 meters long, which is about 12.5% bigger than the average available outdoor area of all houses in this study, 48 square meters.

Nine respondents plan to add an Elder Cottage Housing Opportunity (ECHO) type, in the empty area of their existing homes. One respondent plans to renovate the existing room on the ground floor to be an elder care room. The desirable elder care unit is a multipurpose studio type, which consists of living area, bedding area, bathroom, and balcony to support daily activities and number of activities perform in the area. However, the most average needed areas are living area, bedding area, and bathroom. Over half of the respondents (67%) can afford ECHO which is less than 500,000 Baht. Price between 500,000 - 800,000 Baht is 27%; 800,000 1,000,000 Baht is 5%, and higher than 1,000,000 Bath is only 2%.

Conclusions

The average needed areas for ECHO type in Bangkok Metropolitan are living area, bathroom, and bedding area. The hierarchy of importance of design issues in each room/space is shown in Table 5. Sufficient necessary items identified by older persons are bed, wardrobe, air conditioner, fan, and sofa. Air conditioner is used only at night (Bedtime), and at daytime fan is preferred. Bathroom with support rails at water closet and bath area including bathing chair is also necessary for older persons. Preferred floor finishing material in most area is ceramic tiles in soft colour tone with non-slip surface, or laminated wood or engineer wood. Daylight white fluorescent lamp is preferred in most rooms as it provides sufficient intensity and does not create shaded area in the rooms. Big difference of ECHO for older person in Bangkok from Australian “Granny flats”, ECHO in U.S.A., and other countries is the studio type and no kitchen requirement.

Table 5. Average importance level of each room/space: 5 is the highest and 1 is the lowest; and hierarchy of importance of each design issue

	Bathroom	Living area	Bedroom
Average Importance Level	4.51	4.45	4.38
Issues	**Hierarchy of Importance**		
Luminaire Intensity	2	1	1
Type of Floor Finishing Material	1	2	2
Natural lighting and Ventilation	4	2	3
Luminaire Colour	3	4	5
Room/Space colour	5	5	6
Privacy	—	—	4

Recommendation

From the average available outdoor area of the respondents' single detached house with an area of 48-54 square meters, and equipped with sufficient necessary items identified by older persons such as 6 feet wide bed, wardrobe, air conditioner, fan, and sofa, the new design of multipurpose studio type ECHO must have a minimum size of 8.30 x 3.20 meters. Minimum of 1.80 meters wide outdoor area must also be provided as the elderly prefer to stay outdoor for planting. The example of new design of multipurpose studio type ECHO, according to the available land area and affordable price, is shown in Fig. 1. The minimum size recommended in this paper can accommodate one older person using wheelchair with caregiver's assist but inconveniently move without any assistant.

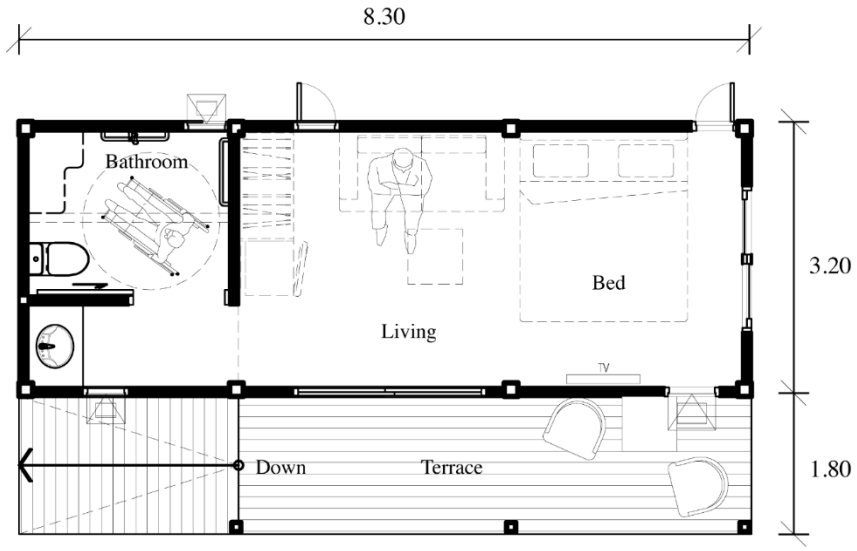

Fig. 1. Example of minimum size multipurpose studio type ECHO

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