# ENVIRONMENTALLY SMART HOUSE SERVICES FOR THE CHILDREN IN THE CITY OF BEKASI, INDONESIA

Rivaldo Hermawan, Rahel Situmorang[*], Herika Muhamad Taki

Department of Urban and Regional Planning, Universitas Trisakti, Indonesia

## Abstract

The city of Bekasi was awarded as one of child-friendly cities in Indonesia, by the Ministry of Women's Empowerment and Child Protection in 2022. The city government is committed to fulfilling children's rights, included in a Bekasi City Regional Regulation Number 13 of 2017, concerning child friendly cities. To fulfill children's rights, the Bekasi City government built smart homes to improve child-friendly cities. Smart homes are a facility used for the children, which they use to learn, play and create things, without any charge. Currently, there are 7 smart houses built in Bekasi City, with another 5 being planned to be built in every sub district. The aim of this research was to identify the service coverage of 7 smart houses that serve Bekasi City, and to provide some recommendations for those to be built. This research used a mixed method, which involved an observation assessment, a score analysis and a spatial analysis. The results of the study showed that, of the 7 smart houses in Bekasi City located in several subdistricts, two were in good conditions (Pondok Gede and Bekasi Timur), three were in moderate conditions (Bekasi Selatan, Mustika Jaya, Rawa Lumbu), and the remaining two were in bad conditions (Medan Satria, Bekasi Utara). It can also be concluded that, based on the service coverage, the Pondok Gede covered another 5 districts, with a distance of 3100 m.

## Introduction

A child-friendly city is one committed to improving the lives of children by realising their rights, as stated in the UN Convention on the Rights of the Child (Unicef, 2004). A child-friendly city is an idea that shows that, the best urban environment, where the community is physically strong, has clear rules, and has educational facilities that let children explore their environment (Patilima, 2018).

Since 1990, Indonesia ratified the Convention on the Rights of the Child, which showed their seriousness in guaranteeing children's rights, stated in the concept of Child Friendly Cities. This concept requires the government to guarantee children's rights, which include the right to health, protection, care, education, no discrimination, awareness of the environment and culture, participate in city planning, and enjoy the freedom to play (Sari et al, 2017). Children need space to play, have recreation, be creative and work, so this space is very important for their process of growth and development as cognitive, affective and psychomotor, and also social, physical and emotional development (Hossain and Tasnim, 2020). Child Friendly City is a system in urban development, with the basic foundation of

children's rights by integrating commitments and all resources from relevant stakeholders, such as the government, community and the business world, which are planned in a comprehensive and sustainable manner in policies, programmes and activities to fulfil the children's rights (Peraturan Menteri Pemberdayaan Perempuan dan Perlindungan Anak Nomor 12 Tahun 2011 tentang Indikator Kabupaten/Kota Layak Anak).

Some cities have built various kinds of creative and recreational facilities. For example, City of Surakarta in Central Java built Smart Children's Park (Taman Anak Cerdas), City of Jakarta built Child-Friendly Integrated Public Space (RPTRA), and Smart House (Rumah Pintar) built by the City of Bekasi. These facilities have similar functions as a place used by children to play, get an education, develop talents, introduce technology using computers, obtain reading books in the library, and are supporting facilities for the development of a child-friendly city (Peraturan Walikota Bekasi Nomor 63 Tahun 2021 tentang Pengelolaan Rumah Pintar).

One of the child-friendly cities that has received the Child-Friendly City award by the Indonesian Ministry of Women's Empowerment and Child Protection in 2022, is Bekasi City. Their commitment to fulfilling children's rights is contained in Bekasi City Regional Regulation Number 13 of 2017, concerning Child-friendly Cities to realise Child Friendly Bekasi City. The indicators of child-friendly city concept (Peraturan Menteri Pemberdayaan Perempuan dan Perlindungan Anak Nomor 12 Tahun 2011) aim to fulfill five clusters, i.e: Civil rights and freedoms; Family environment and alternative care; Basic health and welfare; Education, Use of free time and Cultural activities; and Special protection. Hence, the use of free time and cultural activities has one indicator that measures this cluster, in the form of the availability of child-friendly creative and recreational facilities (Peraturan Menteri

Pemberdayaan Perempuan dan Perlindungan Anak Nomor 12 Tahun 2011). Smart homes in Bekasi City (Peraturan Walikota Bekasi Nomor 63 Tahun 2021) provide public open parks, infrastructure and facilities for creativity and child development centre, infrastructure and facilities for government and community partnerships in fulfilling children's rights, being part of child-friendly urban infrastructure and facilities, green open spaces and places for groundwater absorption, community infrastructure and social activities, and family information and consultation centres. A smart home itself has the meaning of being a place and/or house for children's education and creativity, which has many functions to increase interests and talents, and develop intelligence potential and introduction of technology through learning to integrate the Child Friendly Cities programme. Smart homes, which are intended to be located in each of the 12 sub-districts, are crucial for children to have their activities that would aid in their growth and development (Novita and Rahmadany, 2019), but as of right now, there are only 7 of these homes available. All youngsters in Bekasi City are unable to access these services due to a lack of creative and recreational spaces (Elizabeth and Hidayat, 2016). Thus, the aim of this research was to identify the service coverage of 7 smart homes that serve Bekasi City, and to give some recommendations for another 5 that will be built.

## Research Methodology

This research used a mixed method to approach the problem, and it included observation assessment, score analysis and spatial analysis. In the first step, an observation assessment was made by the researcher to classify the conditions of the smart homes. The second step used a score analysis method to obtain the distance travelled by child visitors to the smart houses. Data obtained from Monday to Sunday, 07.00 AM to 10.00 PM local time, following Smart House operating hours. Using direct interviews

with a total of 105 respondents by Lemeshow formula (15 respondents from each of the 7 smart houses, aged between 5 to 17 years). Questionnaires were distributed during a visit to each of the smart houses. In-person interviews were conducted during this visit. The data obtained was converted into percentages in each category and processed, using descriptive analysis to make it easy for readers to understand.

The third step used a spatial analysis which will show a phenomenon through a spatial perspective. This is shown in the form of a map as supporting data for a basic overview of the area (Taki, 2022). It was carried out using the help of ArcGIS 10.8 and buffering tools, to show the range of services taken by children to smart houses in Bekasi City. This analysis used the farthest coverage radius from the results of the frequency distribution of distance travelled by smart houses visitors in Bekasi City.

## Result and Discussion

Based on the Civil Registry Service Office of the Bekasi City, the total population of children aged 0-17 years in Bekasi City is 711,346 or 28.61% of the total population.
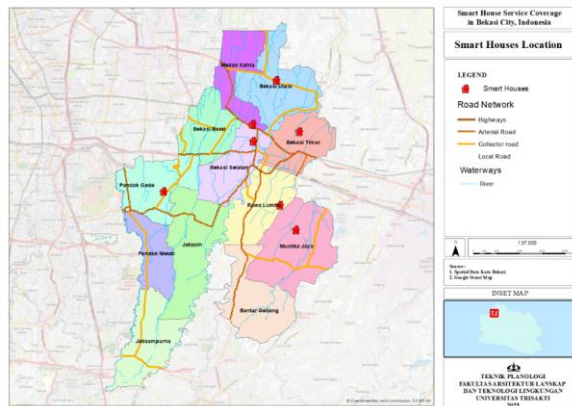


**Figure 1.** Smart houses location.

There are seven sub districts in Bekasi City, and the largest number of children population can be found in Bekasi Utara, Bekasi Timur, Bekasi Barat, Jati Asih, Mustika Jaya, Pondok Gede, Rawa Lumbu, Bekasi Selatan, Medan Satria, Bantar Gebang, Pondok Melati and Jati Sampurna (Figure 1).

In the first step, an observation assessment was made by the researcher. The classification of smart houses (very bad, bad, neutral, good, and very good) in Bekasi City should fulfil the criteria for a suitable place for children, in term of safety, health, comfort, convenience, security, beauty (Baskara, 2011) and complete facilities. Accessibility and safety issues for disabilities children are also crucial to take into account (Rahmawati and Kusuma, 2020). The classification of smart houses in Bekasi City uses a scoring assessment of the smart houses, and the results can be seen in Table 1.

Based on the results of the analysis in the field, using 7 variables with 18 indicators, applying the scoring method (Table 1), the weights used were: very bad, bad, neutral, good, and very good. The interval calculation to determine the quality of smart houses, were obtained by finding the difference between the highest and lowest values, then dividing by 3 categorised as: Good (87 – 92 points), Moderate (81 – 86 points), and Bad (75-80 points). Smart houses that have a good category are in sub districts, Pondok Gede and Bekasi Timur, those in moderate categories are in Bekasi Selatan, Mustika Jaya, Rawa Lumbu, while those in the bad categories are in Medan Satria and Bekasi Utara.

The second step was using direct interviews, conducted among a total of 105 respondents (15 respondents from each of the 7 smart houses, aged between 5 to 17 years, data collected from Monday to Sunday, 07.00 AM to 10.00 PM local time. Questionnaires were distributed during a visit to each of the smart houses. In-person interviews were conducted, and the results are as seen in Table 2.

**Table 1.** Scoring assessment for smart houses location.

| Variables | Indicators | Smart house locations and scores | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Bekasi Selatan | Medan Satria | Mustika Jaya | Bekasi Utara | Bekasi Timur | Rawa Lumbu | Pondok Gede |
| Safety | Located on a neighborhood road with a low traffic density | 5 | 1 | 2 | 5 | 5 | 5 | 5 |
| | The site has fences that children cannot climb | 5 | 5 | 5 | 1 | 5 | 1 | 5 |
| Health | The site is away from air, water, sound and smell pollutions | 4 | 5 | 5 | 3 | 5 | 5 | 5 |
| Comfort | Facilities (toilets, garden seats, trash bins, security post) | 4 | 3 | 4 | 3 | 4 | 4 | 5 |
| | Shaded by vegetation | 5 | 2 | 5 | 5 | 5 | 5 | 5 |
| | Site not disturbed by surrounding activities (noise from offices and vehicles) | 5 | 2 | 5 | 4 | 4 | 5 | 5 |
| Ease of accessibility | Near public transportation. | 4 | 1 | 2 | 4 | 5 | 4 | 4 |
| | Signage location and the entrance gate are easy to see and recognize | 4 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Easy circulation for all children | 4 | 4 | 4 | 4 | 5 | 1 | 4 |
| | Parking | 5 | 5 | 3 | 3 | 5 | 3 | 5 |
| | Pedestrian path | 1 | 5 | 5 | 1 | 1 | 5 | 5 |
| | Safe distance from traffic | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Security | Inside activities can be seen from outside | 3 | 4 | 5 | 4 | 5 | 5 | 5 |
| | Distance from settlements | 5 | 4 | 4 | 4 | 5 | 5 | 5 |
| | Distance from places where there is potential for activities | 5 | 5 | 5 | 5 | 5 | 5 | 4 |
| Beauty | Color | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Vegetation diversity | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Playgrounds add to the beauty of the surrounding environment, so that visitors get visual comforts | 4 | 4 | 5 | 5 | 5 | 5 | 5 |
| Facilities | Stage, Playground and PAUD, Multimedia, Books, Crafts, Assembly point, Centre for Nutrition and Health, and Sports | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| | Total | 83 | 75 | 84 | 76 | 89 | 83 | 92 |

**Table 2.** Range of smart houses services.

| Variables | Indicators | Smart house locations and scores | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Bekasi Selatan | Medan Satria | Mustika Jaya | Bekasi Utara | Bekasi Timur | Rawa Lumbu | Pondok Gede |
| Service Coverage | Average (m) | 582 | 158 | 642 | 780 | 375 | 202 | 793 |
| | Farthest (m) | 830 | 260 | 1100 | 900 | 500 | 300 | 3100 |
| | Longest (min) | 10 | 7 | 10 | 10 | 4 | 5 | 15 |
| Frequency of visiting smart houses | Day | everyday | everyday | everyday | 2 - 4 times /week | 2 - 4 times/ week | everyday | everyday |
| | Time | 3 PM and 7.30 PM | 4 PM and 7 PM | 8 AM and 10 AM | 4 PM | 7 PM | 4 PM | 4 PM |
| Friends for visiting smart houses | | friends | friends | relatives | friends | friends | friend and relatives | friends |
| Mode of Transport | | walk | walk and bicycle | Motor cycle | walk | walk | walk and bicycle | walk and motor cycle |

| Variables | Indicators | Smart house locations and scores | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Bekasi Selatan** | **Medan Satria** | **Mustika Jaya** | **Bekasi Utara** | **Bekasi Timur** | **Rawa Lumbu** | **Pondok Gede** |
| Reason to visit | | meet and play with friends | meet and play with friends | learn | meet and play with friends | meet and play with friends | meet, play, and have sports with friends | meet and play with friends |
| Activities carried out | | playing ball and playing chasing with friend | playing ball and bicycle | meeting friends and learning | playing ball and hanging out | playing ball | playing and futsal practice | playing ball and hanging out |
| Facilities used | | playing field, play ground, mosques | playing field | playing field, play ground | playing field | playing field, play ground | playing field, play ground | playing field, play ground |

The Pondok Gede Smart House has the highest level of service among all smart houses, with the longest distance of 3,100 meters and the highest average is 793 meters, with a travel time of 15 minutes. This result is consistent with those in earlier studies, which found that a park's attractiveness is exactly related to how far the radius is from the centre (Mafra et al, 2018). Most of them visit smart homes every day at around 03.00 PM - 04.00 PM local time, with their friends and family by walk, bicycle or motorcycle. The Mustika Jaya Smart House also serves as a kindergarten, a place to learn and play, as the primary reason that children visit it, as stated in a previous study (Prakoso and Dewi, 2018). The nearby land use can affect the range of smart house, such as in Medan Satria, since its location is in the office area. Playgrounds can produce noise (screaming and laughing), so it will need proper buffer zone constructed in an office space, near smart homes (Pawlikowska-Piechotka, 2010). This is further corroborated by the fact that, Bekasi City's subdistricts have less residents overall, compared with other subdistricts, and that, the poor quality of the smart homes makes it even less appealing for kids to live there. The characteristics of the nearby land use have an impact on the playground's function as well (Dewi, 2012). The Pondok Gede smart house is located in a residential area, without any disturbing activities, the quality is quite good and the population is large enough to make children willing to travel quite a distance to be able to do activities in this smart house.

The availability and distribution of child-friendly facilities, such as smart houses, can create a child-friendly city. Although the number and quality are still lacking, but at least children already have space for expression, play and social interaction (Prihantini and Kurniawati, 2019). The range of services for the distribution of smart houses is important, so that all children in Bekasi City can enjoy facilities to meet their needs for creativity and recreation. For the future development, Bekasi Barat and Jati Asih subdistricts need smart houses, since there is a high number of children, who have not been fully served by the available smart houses. Subdistrict Bantar Gebang also needs a smart house, since the distance to the available smart house is quite far. Jatisampurna and Pondok Melati have a relatively small population, compared to other subdistricts and are located quite close to other smart homes. Thus, they can be served by the Jati Asih smart home, which will be built.

## Conclusions

The results of the smart house classification in Bekasi City show that the quality is diverse from one another. The range of smart houses services is greatly influenced

by the land use around the smart houses, the quality of the smart houses, and the number of children in the area. Based on the results of this study, it is recommended for other smart houses to be provided in sub-districts of Jatiasih, Bekasi Barat and Bantar Gebang. Further research is needed regarding the locations of smart houses in districts that have not yet been built, so that creative and recreational facilities are made available for the children.

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