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The Overview of Sustainable Development-Oriented Adaptive Reuses Implementation (Case Study: Changes in Buildings and Areas of L.L.R.E Martadinata Road Corridor Area, Bandung, Indonesia)

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Abstract. Jalan L.L.R.E Martadinata is one of the main roads in the city of Bandung, Indonesia which has undergone a change from a function as a residential area to a commercial. These changes have had an impact on changes to the buildings along the road. This research aims to analyze these changes by measuring the implementation of adaptive reuses which is oriented towards sustainable development principles. This research was conducted using descriptive qualitative methods, with data taken from the research location and equipped with data from the literature which was then analyzed by adaptive reuse theory. The results of the research indicate that the development and change in the building and areas character of the urban area in the corridor of Jalan L.L.R.E Martadinata which is indicated by changes in the function and appearance of the building has been oriented towards achieving the goals and principles of sustainable development. The criteria that get the highest score in almost all the samples of the buildings studied are the criteria for increasing the economic value of buildings and areas.

INTRODUCTION

Jalan L.L.R.E Martadinata has a length of 3 kilometers, and is located in the Citarum village, Bandung Wetan District. During the Dutch East Indies government, this road was known as Jalan Riowtraat which was an elite residential area and was known as the Garden City area [1]. When the colonial government changed to Japanese rule, this area also turned into a fortress and a Japanese army post. After the independence period, this area was changed again to be used as a residence and military office.

In colonial times, this road area was planned as green land and elite residence for Europeans. This can be seen from the presence of several plain (green fields) in several places, namely Oranjeplein (now Scout Park) and Tjitaroemplein (now Citarum Park). The presence of plain can also be identified with the school education complex. In 1931, luxury residential buildings began to be seen along Jalan L.L.R.E Martadinata [1].

The existence of old buildings that reflect the historical journey of the city of Bandung, until now many still survive, although many of them seem not well maintained. Through the Bandung City Regional Regulation no. 19 of 2009 concerning Management of Cultural Conservation Areas and Buildings, there are several buildings that have been designated as Class A Cultural Conservation buildings that must not be changed at all (1 building) and Class B,

namely buildings that are protected by allowing slight changes (8 buildings). While there are many other buildings, they have the criteria of a conserved building [1].

Over time, the economic development in the city of Bandung continues to increase. The increase was mainly due to the strengthening of commercial functions in the corridor area of Jalan L.L.R.E Martadinata, resulting in a change in the function of this area into a commercial area. Pembangunan Cipularang Toll Road in 2002 became one of the important factors that resulted in the increase in commercial tourism which made this area a destination for residents of Jakarta. Currently, the area of Jalan L.L.R.E. Martadinata is known as a place to shop for the community and is synonymous with the word FO or Factory Outlet, thus making it a fashion and culinary center. Many buildings have sprung up with functions as Factory Outlets, Hotels, Restaurants, and Cafes that fill this area. As a consequence, the existing old buildings have changed, although there are still many buildings that try to maintain the character of the original buildings.

The development of the area was then responded to and facilitated by the Bandung city government through the 2015 Bandung City Spatial Detail Plan (RDTR), where the L.L.R.E. Martadinata is planned as a commercial area and services, tourism, public services and defense and security. The changes that occur are feared to result in changes in the character of the L.L.R.E. Road Area. Martadinata as has happened in other downtown areas of Bandung [2].

RESEARCH PROBLEM, AIM, METHODOLOGY

Several buildings in the LLRE road corridor. Martadinata is a building that is included in the list of cultural heritage buildings, type A and B. While the development of the area which is currently more dominantly directed as a commercial, service and tourism area, has the potential to damage the appearance of the building because it is undergoing renovation as a consequence of changing its function from residential to commercial function. and services.

This research aims to analyze changes in the characteristics of buildings in the corridor of Jalan L.L.R.E Martadinata caused by changes in the function of the area, by measuring the implementation of adaptive reuses theory which is oriented towards sustainable development goals.

This research was conducted using descriptive qualitative methods, with data taken from the research location and equipped with data from the literature which was then analyzed by adaptive reuse theory.

ADAPTIVE REUSE IN THE SUSTAINABLE DEVELOPMENT CONTEXT

Preservation of Cultural Conservation is a preservation option that must be within the framework of a cultural, economic and ecological balance paradigm [3]. Thus, the adaptive reuse approach is very appropriate to be used to analyze conservation activities as well as changes in function that occur in buildings that must be protected. Adaptive reuse is a form of sustainable urban renewal as it extends the life of a building. It is not only the process of transforming a building by recycling components that can be used for new uses, but also the methods and strategies that can be used to preserve cultural heritage [4,5]. Thus, it can be understood that adaptive reuse is a tool to measure the level of achievement of a building against the criterias of sustainable development [6]. In almost the same statement, mentioning that basically, saying that basically the adaptive and sustainable reuse of an historical building requires decisions that reflect the interconnections between environmental stewardship, cultural stewardship, and life cycle cost implications within the built environment [7].

The assumption that conservation aims at the preservation of the cultural meaning of a place important for both past, present and future generations [8]. Thus adaptive reuse is an alternative method that is considered appropriate because it can revive historic buildings/areas so that they remain in the midst of the times as an alternative to the concept of conservation [9]. Adaptive reuse is carried out as an alternative to protect and maintain historic buildings by shifting old functions into new functions that are beneficial to the surrounding community and the area itself [10].

In the context of sustainable development, the implementation of adaptive reuse in cultural heritage buildings is very useful to ensure the implementation of repairs or changes to cultural heritage buildings [5]. In the concept of sustainable development, every development activity, including changes in the function of cultural heritage buildings, the development must support three main pillars, namely environmental, socio-cultural, and economic [6].

SAMPLE SELECTION CRITERIA AND MEASUREMENT METHODS

This study aims to analyze changes in several buildings in the corridor of Jalan RE Martadinata. therefore, the buildings selected as the unit of analysis that meet the criteria as cultural heritage buildings. The criteria are [11,12]: the building is over 50 years old, and until now still survives with changes in the function of the building as a commercial function (factory outlets, restaurants and cafes, and hotels) and office service functions (banks). From these criteria, 10 buildings were selected spread along the corridor of Jalan L.L.R.E Martadinata (Fig. 1).

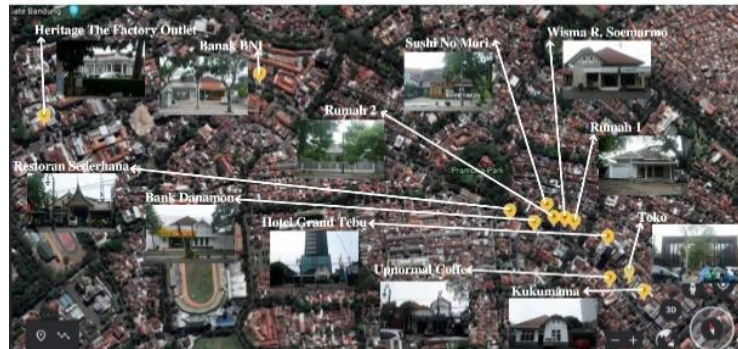


FIGURE 1. The buildings selected as samples in the study

Meanwhile, the method for measuring the level of implementation of the adaptive reuse theory refers to the results of Abdulamer's research [5], where the assessment of buildings along Jalan L.L.R.E Martadinata is carried out with seven criteria, namely: raise the environmental aspect, lift the architectural side, lifting the urban side, improving the social aspect, improving the economic aspect, cultural benefits, and political benefits.

RESULTS AND DISCUSSION

The research was conducted by observing 10 buildings that represent changes in the function of the building as a function of office services, hotels, restaurants, cafes, and shops (factory outlets).



FIGURE 2. Residential building that has been functional changed into a bank office

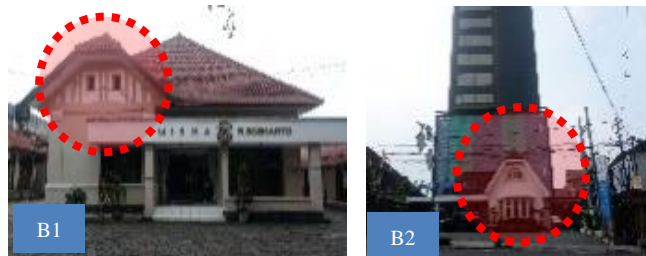


FIGURE 3. Residential building that has been converted into a hotel

- a. Office function, there are two sample buildings, namely bank Danamon (A1) and bank BNI (A2) (Fig. 2)
The form of the old building, namely the house, is still maintained. does not change the shape and structure of the roof. In the A1 building, the iconic Indische architecture is still preserved. Changes that occur with the addition of a second skin combined with the building's nameplate. The window openings were also changed to be bigger on one side of the building, while the other side retained the old window shape.
- b. The function of the hotel, there are two samples of buildings, namely Wisma Sugiyono (B1) and Grand Hotel Tebu (B2) (Fig. 3)
Both buildings (B1 and B2) still maintain the old shape of the building. The appearance of the old building that functions as a residence with the Indische architectural style is still maintained. The shape and structure of the roof without being changed. A different appearance is found in the B2 building, because on the land behind the residence, a tower was built specifically designed as a hotel, although it still maintains the original building that functioned as a lobby and reception room.

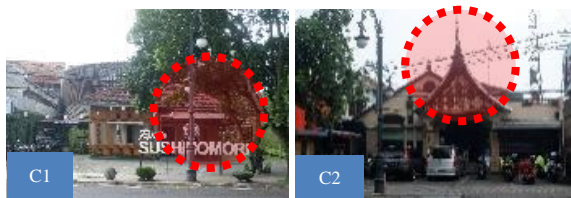


FIGURE 4. Residential building that has been converted into a restaurant



FIGURE 5. Residential building that has been converted into a cafe

- c. Restaurant Functions, there are two samples of Sushinomori restaurant buildings (C1) and Sederhana restaurants (C2) (Fig. 4)
Both buildings still maintain the shape of the old building that functions as a residence. Additions and at the same time changes are made to the facade by adding decorative elements to symbolize the uniqueness of the area of origin of the food served at the restaurant, such as the Minangkabau gadang roof at the Sederhana Restaurant (C2) and the typical Japanese facade combined with the nameplate on the Sushinomori restaurant building (C1)
- d. Cafe function, there are two samples of the Nusantara Bawas Coffee café building (D1) and the Upnormal Coffee Roaster cafe (D2) (Fig. 5)
Both buildings retain the shape and facade of the old building. Changes that occur in the form of additions to the facade by adding secondary skin in the form of glass walls to create a modern impression on the Kopi Nusantara Buwas (D1) building. In the Upnormal Coffee Roaster (D2) building, there is the addition of a massive wall at the front and the facade of the old building is combined with a new facade to display the image as a typical café building. The existence of the building with the new function is reinforced by the addition of a nameplate.



FIGURE 6. Residential building that has been converted into a shop (factory outlet)

Source: <http://bhinnekashuttle.com/article/ini-dia5-factory-outlet-terbaik-di-bandung-yang-wajib-kamu-kunjungi/>

- e. The function of the store (factory outlet/FO), there are two sample buildings, namely FO Heritage (E1) and FO The Summit (E2) (Fig. 6)
Both buildings retain the shape and facade of the old building. Even in the FO Heritage (E1) building, the appearance of the building and facade does not change the old building at all. Meanwhile, in the FO The

Summit (E2) building, there was only a change in the facade by covering the face of the old building which was replaced with a massive wall as the background for the shop name.

In general, the characteristics of the area on Jalan L.L.R.E Martadinata which are shaped by the appearance and presence of the building, are still felt to be similar when compared to the appearance and shape of the original building which can be seen in past photographs in the literature. The roof has not been changed at all. The colonial-style windows are still maintained, although some have been changed due to the changing typology of the building. The building also retains its characteristic by exposing the columns. The distance from the building to the highway is quite far because it has a large front yard. The exterior of the building is still in the neo-classical style, which is the hallmark of the building/house in the colonial era.

Most of the building's facade retains its colonial style. However, not a few buildings have the addition of a modern-style facade because it adapts to the times and changes in the function of the building. For example the addition of a facade that has elements of an area in a building that has the characteristics of the area, the addition of a secondary skin combined with a building name sign, the addition of a canopy on the front of the building, there is even the addition of a facade that wraps around the building.

The change in the function of a residential building into a building with the new function, if measured by the adaptive reuse theory, produces different score values as shown in table 1.

TABLE 1. Results of adaptive reuse benefits that achieve the sustainability of cultural heritage buildings on changes in building functions in the L.L.R.E Martadinata road corridor

Measurement of Benefits of adaptive reuse		Buildings									
		A1	A2	B1	B2	C1	C2	D1	D2	E1	E2
Raise the environmental aspect	Reuse of heritage buildings improves infrastructure network	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	Preserving the "stored potential" of the original building	1	0,5	1	1	1	1	0,5	0,5	1	1
	Adaptive reuse contributes to limiting urbanization	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Lift the architectural side	Adaptive reuse contributes to restoring the architectural form of buildings to life and getting rid of damaged parts of the building by restoring them	1	0,5	1	0,5	0,5	0,5	0,5	0,5	1	0,5
	Adaptive reuse maintains the functional value of the building	0	0	0,5	0	0,5	0,5	0	0	0,5	0,5
	Adaptive reuse maintains important buildings	1	1	1	1	1	0,5	0,5	0,5	1	1
Lifting the urban side	Preserving the urban landscape	1	1	1	0	0,5	0,5	0,5	0,5	1	1
	Adaptive reuse maintains open space around the site	1	1	1	0,5	1	1	1	1	1	1
Improving the social aspect	Adaptive reuse contributes to job creation for the population	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	Adaptive reuse contributes to the recognition of pluralism	0,5	0,5	1	1	1	1	1	1	1	1
	masyarakat Adaptive reuse contributes to the development of community participation	0	0	0	0	0,5	0,5	0,5	0,5	0,5	0,5
	Adaptive reuse contributes to increased social cohesion	0,5	0,5	0,5	0,5	1	1	0,5	0,5	1	1
Improving the Economic aspect	Adaptive reuse results in lower building maintenance costs	0,5	0,5	0,5	0	0,5	0,5	0,5	0,5	0,5	0,5
	Changes in the function of the building add to the selling value of the building	1	1	1	1	1	1	1	1	1	1
Cultural benefits	Maintaining the cultural importance of preserved structures struktur	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Political benefits	Adaptive reuse contributes to preparing proposals for new uses	1	1	1	1	1	1	1	1	1	1
TOTAL SCORE		9,5	9,5	11,5	9,5	11,5	11	9,5	9,5	12,5	12

Description: 0 = no contribution 0.5 = little contribution 1 = much contribution

Referring to table 1, it can be observed that the E1 building, which is a Heritage building that has been converted into a shop, has the highest score. Thus, in the context of the implementation of adaptive reuse theory, which contributes to sustainable development, it can be said that the E1 building has met the criteria for implementing adaptive reuse that contributes to the implementation of sustainable development.

All buildings that were used as research samples showed a relatively high score. Thus, it can be interpreted that the development and change in the character of the urban area in the corridor of Jalan L.L.R.E Martadinata which is indicated by changes in the function and appearance of the building have applied the principle of adaptive reuse and has been oriented towards achieving the goals and principles of sustainable development.

CONCLUSION

The change in the function of the area from a residential function to a service and commercial function in the corridor area of Jalan L.L.R.E Martadinata, is basically a reflection of the economic progress of the city of Bandung.

The criteria that get the highest score in almost all the samples of the buildings studied are the criteria for increasing the economic value of buildings and areas. Meanwhile, the lowest criteria for all buildings are the criteria for the possibility of involving the surrounding community in the process of building and operating the building in carrying out its new functions.

In general, changes in the function of the area can still be controlled and still apply the principle of sustainable development, the city government must continue to control the physical changes of buildings and open spaces so that these changes remain oriented towards the achievement of the community, in this case the residents of the city of Bandung.

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