Adaptive Reuse As Regenerative Practice In Heritage Coffee Spaces For Urban Sustainability Study Case: Heritage Coffee Shops In Bandung.

Mila Andria Savitri[1]*, Imam Santosa[2], Deny Willy Junaidy[2], Yuni Maharani[2]

[1]Doctoral Program of Art and Design, Faculty of Art and Design, Bandung Institute of Technology, Bandung, Indonesia.
[2]Research Group of Human-Interior Space, Faculty of Art and Design, Bandung Institute of Technology, Bandung, Indonesia

Abstract. Adaptive reuse is not conservation only phenomenon but moves beyond preservation toward the strategy of a regenerative urbanism in the context of dense urbanization and ecological degradation. This article discusses heritage buildings in the city of Bandung, Indonesia that embody coffee spaces that combine vibrant coffee culture and historical architecture. Two heritage coffee shops, Hands Full (Dago) and Jabarano (Braga), underwent in-depth analysis based on space observation, semi-structured interviews with stakeholders and document analysis through a qualitative multiple case study method. The object-based analysis examined architectural typology, spatial arrangement, material strategy, cultural narratives, and users practice in the light of the regenerative concept. The findings showed that adaptive reuse supports the transformation of heritage and the preservation process, maintaining the urban identity, cultural memory and community engagement. Two Hands Full encourage spatial openness, utilized upcycled material, and community-rooted identity. Jabarano instead prioritize aesthetics and tourism appeal. The study locates adaptive reuse as a regenerative activity congruent with Sustainable Development Goal 11 and provides recommendations for sustainable urban development planning and policy.
Keywords Adaptive Reuse, Coffee Shop, Interior, Heritage Building, Sustainable Design

INTRODUCTION

Regenerative design refers to a set of technologies and approaches grounded in a deep understanding of how ecosystems function, aiming to create solutions that restore and renew, rather than exhaust, the vital life-support systems and resources that sustain interconnected social and ecological systems. Adaptive use of heritage buildings offers a crucial opportunity to combine preservation and innovation in urban contexts where heritage is being eroded culturally and ecologically. Faithful preservation of architectural heritage has to do with the survival of historical identity, but these buildings must also be able to accommodate modern activities and values. A regenerative design approach provides an integrated framework for renovating these buildings—renewing not only their physical fabric but also the ways in which they

regenerate social, cultural, economic, and environmental value. Unlike mitigative practices that simply preserve the status quo, regenerative practices seek to create a regenerative place that nurtures natural and social cycles and supports robust economies.

This paper explores the integration of regenerative design principles in the adaptive reuse of heritage buildings, in the context of the reuse of heritage buildings as coffee shops that feature both commercial and public hybrid building functions. The research is conducted within this framework to see how heritage architecture can be conserved respectfully and sensitively, so this richness of heritage is displayed on many layers and levels. The goal is to distill extracts of what are essential qualities, approaches, and long-term values of taking a regenerative design approach to adaptive reuse that is not merely aesthetic rehab but delivers long-term urban value. This research is aligned to SDG's no 11, Sustainable Cities and Communities, which contributes to gaining value of built environment as part of city for using the existing structure as new function instead of building the new ones as a strategy to lower energy consuming development.

Background

An examination of adaptive-reuse of coffee spaces in Bandung is illustrated as a regenerative, reintegrative phenomenon, that brings human-place-and ecology- back together again. It discusses how heritage-based coffee spaces have transformed to more contemporary coffee places and determines the level of renovation that were transformed by using a reference of design precepts from an ecological-based design and regenerative value that are already held in other disciplines.

Problems associated with the urbanization of cities in South-East Asia include land scarcity and environmental degradation. The strategy for accommodating the movement of goods and vehicles to make it possible to fill the voids with something other than a wrecking ball: A strategy to adapt these voids which begins with the idea of adaptive reuse rather than demolition. It's led to some big changes in Bandung, Indonesia, not least turning colonial and post-industrial buildings into coffee shops. It's a trend that Birdwell says mirrors new urban behavior and new conceptions of urban space, in which coffee shops have swollen to serve as a type of cultural well, pooling interactions from throughout the city to fuel the social economy. On the contrary, the concept of regenerative design proposes comprehensive solution to the technical, structural and regulatory constraints encountered in cases of adaptive reuse.

This is returning to a conversation of regenerative design and social co-evolution with natural and social systems, a healing biophilia embedded in the everyday urban places. The paper contends that respectful and considered adaptation of heritage buildings can contribute to regenerative imperatives, in which sustainability advantages are broader than an environmental performance and encompass identity, community and urban resilience. Criterias and methodology for decide impactful adaptive reuse for sustainable development consist of economic, environmental, social, legislative and architecture (Mohamed & Alauddin, 2016).

Two Hands Full, and Jabarano Braga are the two case studies that research is built upon, and qualitative research approach is selected. The proposed evaluation is anticipated to utilize spatial visualization techniques, observational studies, and

interviews with stakeholders. This cross- disciplinary approach both stresses and contributes to the tangled point at which coffee culture, historic building reuse, and regenerative design theory intersect, proposing these interventions as potential models for future-responsive building reuse, and regenerative design theory intersect, proposing these interventions as potential models for future- responsive, place-scaled sustainability initiatives. Figure 1 shows the research framework, formed that regenerative strategy is conducted in qualitative methods that goes with field observation, interviews to designers, staff and users and spatial mapping. The scope of the discussion consists of urban design, architecture and interior context that include aspects of adaptive reuse process and values, environmental consideration and coffee culture related to spatial use.

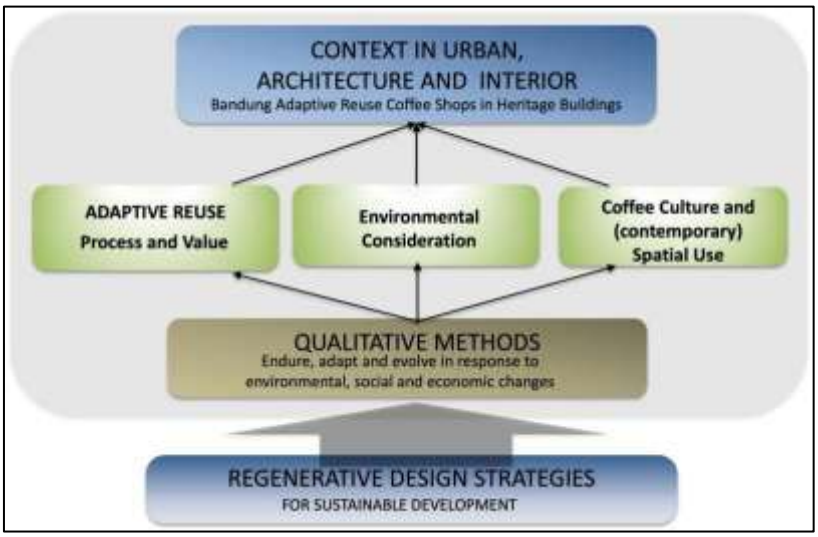

Figure 1. Research framework (source: researcher's analysis, 2025)

Research Problems

Although the issues raised on the regeneration could be helpful for coffee shop typology in Bandung, regenerative design was not thoroughly applied in the adaptive reuse of the coffee shop typology. Key challenges include:

1) In what ways do present adaptive reuse practices in Bandung coffee shops relate to or diverge from regenerative design principles?

2) How do structural, material, and regulatory constraints shape the success or failure of such interventions?

3) How can adaptive reuse contribute to broader ecological and cultural good beyond aesthetic reclamation and commercial fitness?

It is these questions that lead the inquiry into revealing not only the modes of space making at stake but the values and stakes involved in reimagining adaptive reuse as a regenerative act as well.

Research Objectives

The research has several objectives, they are: 1) A study of the process and product of conversion of historic buildings into coffee shops in Bandung; 2) Assess the extent to which adaptive reuse of buildings is compatible with regenerative design in space, in

material, in culture, and in ecology; 3) Explore obstacles and facilitators to adaptive reuse projects, including structural, regulatory, and socio-cultural obstacles.

It is difficult to understand the spatial, cultural and material constraints of adaptive-reuse projects. Recognition of strategies and approaches for the incorporation of regenerative principles within future adaptive reuse projects. With a view to respond to these questions, the purpose of this paper is to contribute to develop the understanding of adaptive reuse as regenerative solution. It is important information for planning administrators, architects, decision makers, and community groups or organizations which are involved in urban area conservation and revitalization.

The study focused on the potential for the adaptive reuse of listed buildings to coffee shops a part of an urban of Bandung City. It imagined what those spaces can be, not in heritage management terms, but in reshaping social, cultural value. The research was focusing upon how these spaces in urban area, when transformed, produce place and community as the improvement of Bandung's urban structure and social solidarity. Economic topics are also addressed in connection with adaptive reuse projects, and the role they can play in local economic development and tourism. It considers the idea that these reused coffee spaces could indeed become destinations in themselves, encouraging footfall and activity in their own right. It also examines the environmental benefits of adaptive reuse, such as less waste from demolition, and the embodied energy in existing buildings, as well as "green" design elements that can be introduced during renovation work. It seeks to examine how such initiatives might serve as models of sustainable urban development and what their potential influence may be on broader urban design and planning practices. With the discussion of heritage conservation, urban culture and sustainable goals, the paper introduces a holistic image of the adaptive reuse into the regenerative urban. The data is meant to support such policy-informing and designing future projects to foster more resilient, sustainable, and culturally rich urban places.

METHODOLOGY

This article uses a qualitative multiple case study to Two Hands Full and Jabarano Braga in Bandung as the case of adaptive reuse in Bandung. These cases are chosen to highlight architectural importance, popularity in a certain coffee-drinking urban culture, and a specific reuse strategy. Data were collected through some activities, they are: 1) Site visualization directly (spatial flow, patterns of flow, users' behavior, environmental indications); 2) Semi-structured interviews with architects/designers, shopkeepers or business owners, and patrons; 3) Visual documentation (photographs, annotated sketches); 4) Review of documents (statutory documentation, planning instruments, heritage codes, design briefs). Methods of analysis are thematic coding and spatial mapping, focusing on how materiality, spatial organization and symbolic expression enable or limit regenerative possibilities.

THEORETICAL FRAMEWORK

Grounding this study are the following theoretical foundations. The first theory is about Adaptive Reuse Theory (Plevoets & Van Cleempoel, 2011). The theory of adaptive reuse explains that architectural value for a new purpose is a reinterpretation but within the constraints of heritage controls [16]. Other theory used is Regenerative Design (Mang & Reed, 2020). Sees design as an iterative process that evolves the connection between on-the-ground systems (e.g., built areas) and their social-ecological constructs. Ultimately, they are about creating living systems that can add to biodiversity, community life, and resource loops [13]. Next theory is about Place Attachment and Urban Memory (Scannell & Gifford, 2010). The basis on which an emotional and symbolic union with 'place' is formed, making this other related project that tend to hold identity and preserve cultural continuity [17]. Next theory used is Social Construction of Space (Lefebvre, 1991), as a way of seeing space as a product of social practices, social ideologies, and social relationships, relevant as the coffee shop is not just an architectural but socially and culturally situated through use of reused heritage buildings. In doing so, both enable a multi- dimensional analysis across material, spatial, symbolic, ecological modalities of design practice [8]. Figure 2 shows the theories framework used in the research.

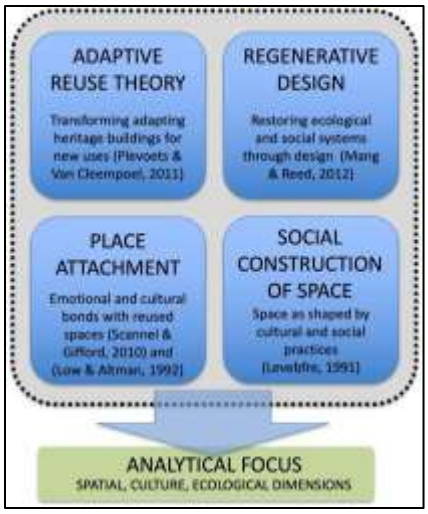

Figure 2. Theories framework of Regenerative Interior Design
(source: researcher's analysis, 2025)

Analysis

This section synthesizes the findings from the two case studies, Two Hands Full and Jabarano Braga, by examining their adaptive reuse strategies and the extent to which these align with regenerative design principles. The comparative analysis below integrates theoretical perspectives with empirical observations, emphasizing both spatial transformation and systemic challenges in the Bandung context. For the architectural heritage and building technology, there are some aspects to highlight, they are:

1) Typology and Architectural Heritage

Two Hands Full works in the shell of a former textile warehouse, so there are big spans, tall ceilings, and adaptable floor plates. This is in line with adaptive reuse theory (Plevoets & Van Cleempoel, 2011) which emphasizes the possibility of respiration in an industrial underutilized building [16]. Housed in a colonial shophouse, Jabarano Braga bears strong heritage value and confines in spaces; featuring its slender, compressed footprint and remaining façade. These contrasts reflect how structural typology constrains the potential for adaptive strategies.

2) Spatial Formation and Interior Ecology

Recently, the concept of 'spatial production' by Lefebvre (1991) [8] offers the point of departure in thinking of Two Hands Full as enabling user-created spatial practices through an open plan, ambient lighting, and multi-use zoning. It encourages informal and collective use, allowing fun to stretch into lingering social use. Jabarano instead continues their practice of compartmentalized zoning, valuing aesthetic experience more than it does potential future adaptations, and inhibiting the space's regenerative potential in the process.

3) Material and Environmental Strategy

Two Hands Full utilizes reclaimed woods, exposed bricks, and minimal finishes—in keeping with regenerative design (Mang & Reed, 2012) [12], t foster materials cyclability and minimize energy use. The composition is also assisted by natural ventilation and daylighting, which also contributes to low-impact operation. Air conditioning and new fitting defeat the capacity for passive strategies, on the more conventional interior of Jabarano. The latter demonstrates a discrepancy between aesthetics and performance.

4) Cultural Narrative and Place Attachment

Both places exhibit high levels of place attachment (Scannell & Gifford, 2010) [17]. Two Hands Full has emerged as an icon of Bandung's creative community, representing youth-led cultural production. Jabarano relies on colonial nostalgia and touristic attraction as a source of urban remembrance but not so much in the innovation of the use of space. The contrasting stories underscore the conflict between preservation and reimagining in adaptive reuse.

5) User Social Function and Behavior

Two Hands Full allows for extended, free movement, even while working as a digital nomad or in groups. The spatial configuration creates comfort and autonomy, both fundamental qualities of place- based regenerative environments. Jabarano imagines shorter, tourism- guided visits, more a curated environment than a local kind of thing. This makes the point of diverging interpretations of public space and its social function.

6) Challenges and Systemic Constraints

The Bandung context presents particular constraints to regenerative design of adaptive reuse:

a. The regulations favor façade preservation over ecological integration.

b. There are economic imperatives and tourism-based fashions, which are weighted toward

c. visual heritage over material or ecological ethics.

d. Technical constraints on existing buildings (ventilation, drainage, load-bearing

capacities,
e. make regenerative retrofitting challenging.
The next figures show the layout and façade of the two coffee shops. Figure 3 shows Jabarano Coffee façade that represents Indische style.

Figure 3. Jabarano coffee on Braga as study case of adaptive coffee shop (source: researcher's documentation, 2024)
Figure 4 shows Two Hands Full façade that represent Streamline style.

Figure 4. Two Hands Full coffee on Dago as study case of adaptive coffee shop (source: researcher's documentation, 2024)
Jabarano Coffee consist of connected two masses, but only the front building used as coffee shop, meanwhile the back mass is still used as office as prior function of the building. While Two Hands Full which prior function was one of three twin houses, known as Drie Locomotief (three row houses) consist of other commercial function as

interior design shop, pizza corner and coffee shop on the second floor and back terrace. Nevertheless, the comparison shows that Two Hands Full comes relatively close to the regenerative ideals, if only in a vernacular way. Its power comes from its balance of spatial generosity, cultural honesty, and ecological moderation. Jabarano Coffee, while important for the continuation of tradition, reflects lost possibilities of more radical systemic renewal. The findings confirm then that Bandung adaptive reuse is potentially transformative, particularly under the practice of regenerative design frameworks. Only by enacting this potential can we turn away from symbolic reuse toward ecological literacy, co-evolutionary planning, and durable stewardship. Comparison of two study cases that by some criterias can be seen in Table 1.

Table 1. Comparison the two study cases, Two Hands Full Coffee and Jabarano Coffee, based on the analysis criterias.

No	Criteria	Two Hands Full	Jabarano Coffee
1	Building Type & Heritage Value	Former house, designed by influencing architect; significant architecture style with streamline façade facing to one of the oldest main street (Dago-street)	Colonial with indische styled shophouse on heritage street (Braga-street). The changing function of the building vary from shops, office and then back to shop/ commercial.

2	Spatial Configuration	Second level, on the back of the building, has open layout, have inner court on the back, flexible seating, active airflow as it has many openings facing outdoor area, abundant natural light.	Open layout, formed by two-part buildings in the front and back of the site; Preserved façade, interior adapted as changing function from office of PLN to commercial as coffee shop.
3	Material Reuse & Environmental Strategies	High reuse of materials (wood, metal); low energy interior; biophilic elements	Limited reuse; air-conditioning; conventional interior materials.
4	Cultural Narrative & Urban Identity	Associated with creative youth, local identity, co-working culture, consist of some retail vary from meal place and interior shops.	Emphasis on nostalgic and historic aesthetic;tourism-oriented, social space for large range ages and gender.
5	User Behavior & Social Function	Long visits, collaborative work, casual meetups, sensory comfort, have cozy outdoor spaces with some benches.	Short and long visits; formal and casual meetups; focus on visual appreciation and social or group user.
6	Alignment with Regenerative Design Principles	Moderate to high – engages reuse, passive design, community engagement.	Low to moderate – emphasis on heritage over ecology or circularity.
		Quite large external greenery; lack of formal regenerative metrics,	Regulatory limitations; tourism branding; Restricts ecological adaptation

RESULT AND DISCUSSION

The discussion of Two Hands Full and Jabarano Braga emphasizes the importance of adaptive re-use as an architectural method of making a meaningful urban sustainability contribution through design. However, the contribution to reuse practices really depends on: if reuse strategies are informed by regeneration principles rather than being constrained to the aesthetic or economic. The spatial rationale of Two Hands Full—characterized by openness, flexibility, and material integrity— illustrates how the principle of adaptive reuse can structure more than just environmental management, but also social bonding and psychological well-being. Daylight, touchable materials, and an organic flow inspire long-term occupancy and informal collaboration.

In unity with nature, Jabarano, on the other hand, has its focus on historical storytelling and visual preservation, which all in all gives us a different and considerably less

ecologically intertwined experience. Its secret is the enhancement of the heritage and symbolic perpetuation. This duality demonstrates that regenerative design is not just preservation or reuse–it's a new way of considering space and how it should interact with the natural environment and the larger community. Tea and coffee drinking and the rituals of meetings, talking story, and pondering offer a powerful medium for cultivating sustainability practices as well. From the observation there are some elements in both adaptive reuse coffee shops that still represent the identity of architecture style, or materials that resonates the era of when it came from. Unity of those elements embraces the nostalgia ambience for consumers. Meanwhile, functionally some preserved elements of architecture and interior represent architects and designers' effort to lower the energy use in terms of sustainability. Figure 5 and 6 show architecture and interior elements of Jabarano Coffee on Braga street as heritage buildings that transform into contemporary coffee shops with local brand that support West Java coffee culture.

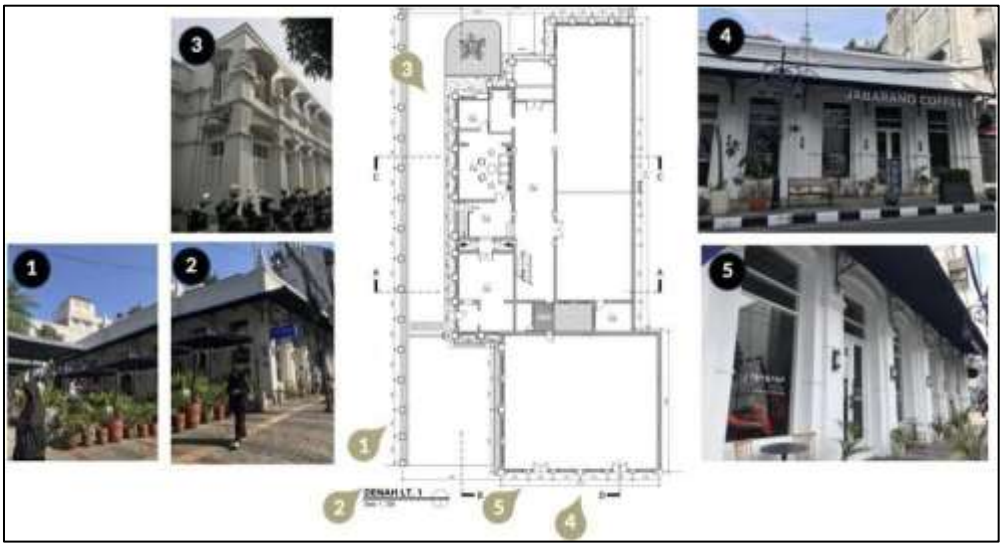

Figure 5. Study cases of adaptive reuse coffee shop architecture on Jabarano Braga (source: researcher's documentation, 2024-2025)

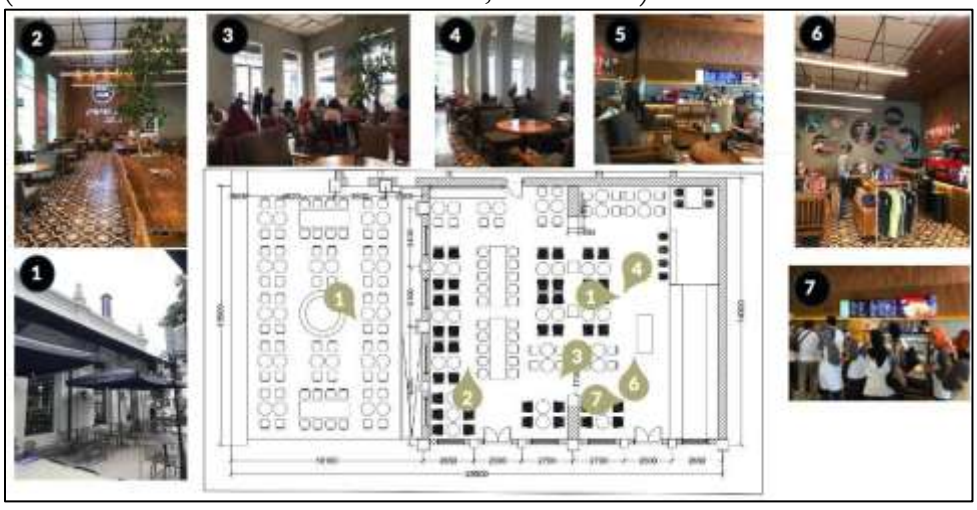

Figure 6. Study cases of adaptive reuse coffee shop interior on Jabarano Braga (source: researcher's documentation, 2024-2025)

Restoration started in 2020, the building has been functioning as Jabarano Coffee since October 2023 as second branch location of the brand, the original being in Cikutra area. Constructed in the Indische style, the architecture is a combination of two main building sections, a front mass as the older building and back mass. The front part is a leased section owned by Jabarano and is operated by a PLN (Perusahaan Listrik Negara/National Electricity Company) subsidiary, and the back part is a support building including the multifunctional space, prayer room (musholla), restrooms, and PLN offices. For the interior of coffee shop, the design consists of two main dining locations, one directly adjacent to the main entrance, and one encircled by a cashier and coffee bar area. The venue has a seating capacity for about 100-120 guests.
Weekday observations from 09:00 until 12:00 resulted consumers as female, solo or with a number, were most numerous. Some areas of seating were mostly occupied by females, indicating some behaviours and spatial preferences. The cashier and coffee bar are consolidated as one operational zone at the right side, right after entering entrance. Beside coffee and non-coffee beverages, consumers can select light food offerings like pastries, cakes, and sandwiches to choose from. There are two different types of consumer engagement approaches: 1) Wait in line at the cashier choosing menu items, paying and then in the dining room; or 2) Upon first arrival, they should take an immediate seat and order through a QR link displayed at each of the tables before making the payment digitally.

Figure 7 and 8 show architecture and interior elements of Two Hands Full Coffee on Dago street as heritage buildings that used to function as one of three row houses that transform into contemporary coffee shops. The coffee shop is blending with other commercial function, they are Montclar as interior service and store at the main building on first floor and also Pizza Place as pizza restaurant at the pavilion.

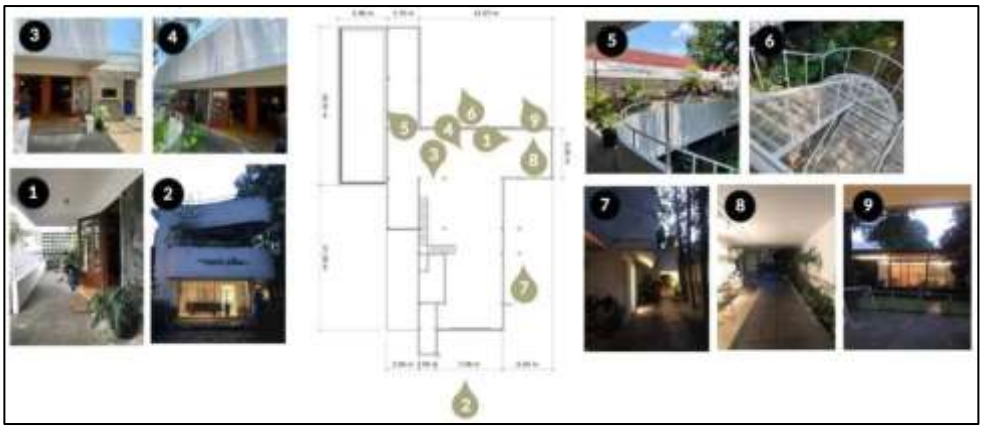

Figure 7. Study cases of adaptive reuse coffee shop architecture on Two Hands Full Dago
(source: researcher's documentation, 2024-2025)

Figure 8. Study cases of adaptive reuse coffee shop interior on Two Hands Full Dago (source: researcher's documentation, 2024-2025)

Two Hands Full Coffee has been running since 2019. The Drie Locomotief building of the site, the design by A.F. Aalbers in 1936 with streamline and art deco architecture style. It consist two partition, consisting of the main structure plus an additional extension to the rear area. Two Hands Full Coffee is located on the second floor, facing to the back of the building with big open terraces and have two access, one is with internal stairs and the other is outdoor circular stairs facing to the open spaces. Two Hands Full Coffee dining area consist of an indoor and outdoor joint. The indoor part is mostly a coffee bar on the left, and there are central seating area with tables and chairs designed for two to four people.

Outdoor seating is located on the second-floor side, and front and rear terraces with a bench and individual seating without overhead covering. There are approximately 30 to 50 chairs in total. Upon entering Two Hands Full from the rear of the second floor, the customers find the coffee bar to their left. There is an external staircase leading from the rear terrace, or an internal staircase in the building. As such, the coffee bar constitutes a linear station for beverage preparation, and food being prepared in another area, in the building. This arrangement permits patrons sitting over the bar counter to watch the process of making drinks in view from their dining location.
From these two study cases, adaptive reuse of coffee spaces allows for opportunities to culturally inscribe ecologically literate practices. Such spaces should not just be considered revenue-producing assets for policymakers, designers, and entrepreneur, instead they could be seen as platforms for regenerating urban culture and ecological awareness instead.

CONCLUSION AND FURTHER RESEARCH SUGGESTION

Conclusion

This study demonstrates that adaptive reuse with regenerative design approaches can successfully transform under-utilized heritage buildings into livable and sustainable public places. This research highlights how adaptive reuse informed by regenerative

design can regenerate heritage buildings into urban coffee spaces with cultural and ecological values. From the comparison between Two Hands Full and Jabarano Coffee in Bandung, some findings are obtained:

1. Adaptation of Space and Material.

Adaptive reuse sustains architectural lineage while allowing environmental benefits using material reuse, passive measures, and flexible spacings. This is illustrated in Two Hands Full, with it being a stronger case of regenerative alignment, while Jabarano used heritage aesthetics with a lesser amount of ecological integration.

2. Cultural and Social Value

There has been value added in both cases, albeit in two different directions: Bandung's coffee culture and heritage identity (youth-driven community participation in Two Hands Full; nostalgic tourism appeal in Jabarano). This ambivalence appears to be a product of the varying success of adaptive reuse of place and in the definition of urban identity.

3. Challenges and Prospects

There was still excessive emphasis on façade conservation in the regulatory system, and not much attention was paid to the organic performance and bioclimatic design. Political interests control design, resulting in a prioritization of visual history over regenerative morality.

4. Urban Sustainability Contribution

Sustainable adaptive reuse with SDG 11 (Sustainable Cities and Communities) impact, optimizing energy use, reducing construction waste, and building social resilience in heritage areas.

Although this research provides qualitative data on adaptive reuse in Bandung, it has its limitations: only two case studies were conducted, and it does not include a quantification of performance such as energy saving or life cycle analysis. Inter-city comparisons, quantitative sustainability indicators, and policy evaluation. The scope of future venue research should be broadened by cross-city comparison, representative sustainability indicators, and policy assessment.

Resilient interior design emerges from the integration of three domain, they are adaptive reuse, sustainable interior strategies and regenerative design. Adaptive reuse ensures building conservation and spatial transformation for contemporary use, while sustainable design focus on material reuse and energy efficiency and user well-being. Regenerative design emphasizes ecological impact, social value and sense of place. Figure 9 shows that together these domains inform principles that include thoughtful material selection, environmental consideration, passive lighting and airflow and zero-waste approaches to guide design creation that are not only functional and culturally meaningful, but also ecologically restorative and future oriented. Adaptive reuse is not just a development tool, but as we have seen, a tool of regeneration, one that contributes to ecological sensitivity, cultural continuity, and urban resilience. By integrating regenerative design into heritage reuse, coffee spaces—and urban places more broadly—have the potential to become sites for a more sustainable and inclusive future. Within the framework of sustainable design, resilience emphasize long term viability,

ensuring spaces can withstand disruption minimize waste and remain functional and culturally meaningful across generation. When applied through adaptive reuse, resilience becomes a critically strategy for heritage preservation and conservation. Adaptice reuse harness the existing energy, material integrity and cultural memory embedded within historical structures, reducing need of new contruction and limiting environmental impact. The regenerative design includes flexible space planning, reversible and minimal internvention, material stewardship and environmental responsiveness.

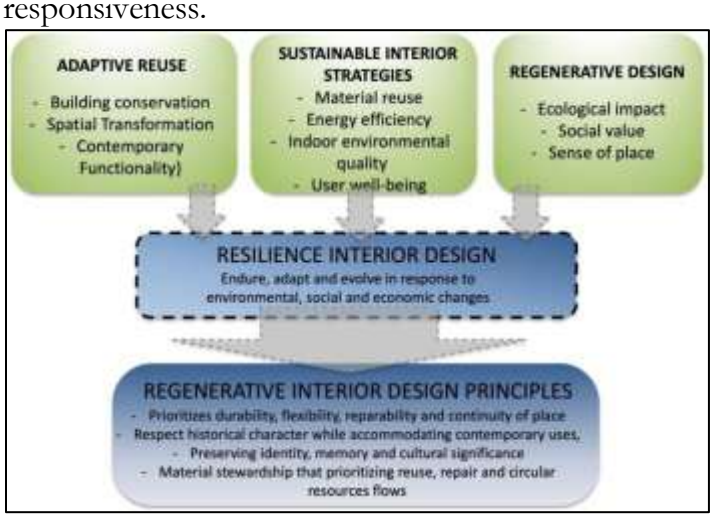

Figure 7. Regenerative Interior Design Principles framework
(source: researcher's analysis, 2025)

Ultimately resilience interior design acknowledges that sustainable design is not merely about reducing harm but about creating interiors capable of adaptive, absorbing, change and regenerative value including environmentally-socially-culturally within the urban ecosystem. Through adaptive reuse resiliences becomes a bridge between heritage preservation and future-oriented sustainability, positioning interior designers as key agents in maintaining continuity of place while preparing built environments for resilient future.

While such coffee shops cases both demonstrate the significance of reuse in sustaining identity and placemaking in terms of social and cultural aspects, partial embedding in natural/ecological systems and in resource circularity is observed. Enter regenerative design, a means of proceeding forward that seeks beyond mere sustenance to maintenance, in fact, turning up the potential for transformation itself a notch in the service of resilience. Henceforth, urban interventions must address the symbiotic association between spatial aesthetics, cultural praxis, and environmental ethics. By reframing the space of coffee culture through the lenses of regeneration, architects and planners can help design cities that are more inclusive, reflexive, and ecologically attuned. Both cases respect historical character while accommodating contemporary uses which enable spaces to serve evolving urban needs without erasing their past.

However, they all will not be effective if there is no regulation focused on the issue.

Existing regulations are still primarily focused on façade preservation and have yet to accommodate ecological enhancement design strategies. There also is lack of policy mechanisms to support regenerative reuse practices. Sustainability indicators are also rarely integrated in planning and approval process of adaptive reuse project.

Further research suggestion

Future research on urban adaptive reuse should explore several key directions, including comparative studies across Indonesian or Southeast Asian cities to understand regional practices and success factors, as well as quantitative analysis on energy use and material efficiency to establish measurable sustainability indicators. Longitudinal and best practice studies can highlight areas of improvement, while user perception research focused on comfort, sustainability awareness and identity, can inform design strategies that alight with community needs. Additionally, policy analysis is crucial to evaluate the effectiveness of current regulations and propose improvement. Recommended policy directions include introducing specific articles on regenerative adaptive reuse in mayoral regulations (Perwal), integrating sustainability indicators (energy-water-material) into evaluation frameworks for heritage buildings and offering legal and fiscal incentives, such as tax relief and permit facilitation. Researchers play a vital role in shaping policy orientation by addressing political, regulatory and urban development contexts. A successful regenerative reuse strategy will require cross sector collaboration involving local communities, architects and designers, and academics to ensure alignment with co-evolutionary planning principles for sustainable and culturally responsive urban transformation.

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