

Article

Adaptive Reuse of Apartments as Heritage Assets in the Seoul Station Urban Regeneration Area

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Abstract: Apartments were crucial solutions to provide sufficient dwellings and to improve residential environment quality in the period after the Korean War. Thirty years after the first rush of apartment construction, many of those apartments have been demolished. However, several small-scale apartment complexes or single-building apartments without collective estates were not included in reconstruction efforts due to property, ownership, and reconstruction feasibility issues. Four such apartments remain in the Seoul Station Urban Regeneration Area. Although they are considered severely deteriorated, their architectural, historical, and cultural heritage values warrant inclusion in the Seoul Future Heritage list. From the perspective of urban regeneration, these apartments should be targeted for revitalization not only to preserve their originality but to improve the quality of sustainable building conditions and operations. In this study, we examine Choongjeong Apartment, Hoehyeon Civic Apartment, St. Joseph Apartment, and Seosomun Apartment in terms of balance among six heritage values and their improvement needs, as well as possible revitalization strategies that support sustainable urban regeneration in the area. We argue that their physical conditions can be brought up to applicable building codes, if financial support is forthcoming and numerous decision-makers allow. However, sustainable revitalization of apartments requires examination of factors affecting adaptive reuse. Through a literature and data collection review within an analysis framework, we analyze factors and issues for adaptive reuse of the four apartments. It is expected that the findings of this paper will provide insight into the role of various actors determining and taking actions for strategic physical interventions and change of uses.

Keywords: apartment; heritage; urban regeneration; adaptive reuse; actor; action

1. Introduction

1.1. Background and Purpose

Sustainable development means meeting the requirements of existing generations without compromising the ability of upcoming generations to meet their own requirements [1]. The concept assumes that society can plan for a more desirable future state through indigenizing policies and programs that minimize energy consumption, preserve biological diversity, reduce pollution, promote social unity, and encourage more efficient landscape design [2]. There are many challenges to enhancing sustainability, particularly in urban regeneration areas in Asia's historic cities [3], where redevelopment pressures are immense.

Sustainable urban regeneration is one of the most complex aspects of urban planning [1]. Urban regeneration must focus on the simultaneous adaptation of the physical texture, social structure, economic foundation, and environmental conditions of a region [4]. It needs a broad and combined vision and action to generate a long-term improvements in the economic, social, environmental [2,5,6],

and cultural dimensions of areas that have been subject to change. Urban regeneration efforts have primarily emphasized economic factors, causing a developmental imbalance [4]. Urban policy-makers in many countries have now recognize the inseparable links between environment and society. In addition, culture has been introduced as a fourth dimension as having an independent sustainability function [1].

Cities today focus on revitalizing their cultural heritage through architecture, adding values to urban regeneration, and supporting urban sustainability [1]. Urban problems have threatened people's quality of life and changed the nature of community, increasing the need for sustainable urban development [7]. However, sustainable development can be defined by an aggregate of characteristics, including economic security and growth, environmental quality and integrity, social cohesion and quality of life, and empowerment and governance [8]. Additionally, the term "heritage" may be described as something that can be passed from one generation to the next and following generations, and to which descendants of the original owners have rights deemed worthy of respect [9]. Sustainability prevents negative environmental effects through conservation or preservation and protects culture and traditions while promoting the local economy [5].

Underpinning this research is the assumption that heritage conservation is an integral part of civil society [10]. The concept of heritage has expanded considerably in the past three or four decades. Previously confined to architectural and artistic masterpieces, heritage has evolved to include landscapes, industrial and engineering works, vernacular constructions, urban and rural settlements, and intangible elements such as temporary art forms, skills, and ways of life [10]. This expansion reflects an increasing understanding that heritage and culture permeate societies and take on many forms and levels of importance and value.

Historical buildings as a form of cultural heritage is now recognized by urban planners [11]. Historical buildings have become significant actors in local industries and economies and many cities have funded and supported their renovations and reuses [11]. Heritage buildings symbolize, and give glimpses from past periods in time. They are evidence of people's lifestyles and the culture around it. Conserving heritage buildings and giving them new functions according to their location, size, and potential can help future generations understand where they are coming from [12].

A shift in heritage preservation attitudes is needed: the preservation of urban and architectural heritage, which in the post-communist space is often limited to strict regulations and development restrictions, should be seen not as a financial burden but as a driver of social, cultural and economic viability. Experiences in many countries demonstrate that heritage preservation programs and projects do not always require considerable financial investments; they can be beneficial for society, local communities, and the physical built environment from various points of view; they can generate additional household income and jobs, foster small businesses involved in restoration and maintenance of historic buildings and other directly and indirectly related economic activities; they can improve the image of the city and foster sustainable cultural tourism, strengthen local communities, provide affordable housing opportunities, encourage extensive sustainable renovation and repair of the built environment; and they can even contribute to the sustainable use of resources and the improvement of ecosystems [13].

National and city governments and nongovernmental agencies in many countries and cities have established their policies for integrated conservation management, employing value-driven planning methodologies that incorporate values more effectively in conservation decision-making [10]. National and municipal governments in many countries recognize the contribution that built cultural heritage makes to the social well-being of different groups living within increasingly cosmopolitan towns and cities.

Globally, adaptive reuse of historic buildings is increasingly recognized as a sustainable approach to conservation [3]. Adaptive reuse can help protect buildings from demolition; it is likewise beneficial in economic, environmental and social cases [11,14]. Future challenges in conservation will stem not only from heritage objects and sites themselves but from the contexts in which society embeds them.

These contexts—the values people draw from them, the functions heritage objects serve for society, the uses to which heritage is put—are the real source of the meaning of heritage, and the *raison d'être* for conservation. As society changes, so do the role of conservation and the opportunities for conservation to shape and support civil society [10].

It is now widely acknowledged that adaptive reuse of heritage buildings offers significant economic, cultural, and social benefits. Applying the broader definition of sustainability, the reuse and operation of existing buildings not only avoids or minimizes negative impacts on the environment through the conservation and efficient use of resources but also recognizes the role that building construction and the buildings themselves play in fostering regional and local culture and traditions; supporting community life and the economy; and contributing to the texture and humanity of the built environment [5]. The reuse of heritage buildings can boost local economies, attract investment, highlight local instincts, and add value to neighboring properties [15]. Buildings become recognized for their heritage value through conscious decisions and unspoken declarations of particular people and institutions—and for reasons that are strongly shaped by social contexts and processes [10]. Sustainably managed use, reuse, preservation, and maintenance of architectural heritage can have positive impacts on development and rehabilitation of historic urban environments [13].

Promoting sustainability in the built environment is a part of a wider revitalization strategy [16]. The consequences of heritage-led urban regeneration can be generally regarded as economic, social, cultural and environmental [1]. Success in reusing buildings in urban regeneration requires a set of different circumstances, and it is necessary to consider a balance between future economic viability and cultural heritage value [17]. In addition, success is only possible when social life and local identity are taken into account along with physical conditions [18]. Therefore, heritage can make a parallel and individual contribution to urban regeneration projects if in-depth attention is paid to it during sustainable planning.

Acknowledging the global interest in sustainable development and adaptive reuse of historical buildings, the Seoul Metropolitan Government has shifted its urban development policy focus from redevelopment to regeneration. The 2025 Seoul Urban Regeneration Strategic Plan which was announced on 5 July 2018, identified 27 urban regeneration activating areas, as shown in Figure 1. Various projects covering an area of approximately 1,725,000 square meters in the Seoul Station area were selected in the phase 1 initiative. The area has been the symbolic center as well as the gate of the modernized and industrialized capital city from early 20th century, when the train was introduced to Korea. The area has suffered from deteriorating infrastructure and decrepit settlements. Urban regeneration of the area has been accelerated with the advent of the Seoul Station Overpass renovation project, now called Seoulo 7017.

However, as Seoul Station was the heart of a modern city, as well as a driving force in centralized growth of industry and business, apartments that provided sufficient dwelling space and improved the quality of the residential environment in a short period after the Korean War were necessary additions. As the country underwent rapid modernization and urbanization, the International Style was popularized in a Korean way and the modern architectural style was applied belatedly [18] to residential buildings, which were called “Apartment”. Thirty years after the first rush of apartment construction, the deteriorated apartments were demolished and the properties targeted for reconstruction. Meanwhile several small-scale apartment complexes or single-building apartments without collective estates were omitted from reconstruction projects due to property, ownership and reconstruction feasibility issues. Four such apartments—Choongjeong Apartment, Hoehyeon Civic Apartment, St. Joseph Apartment, and Seosomun Apartment—remain in the Seoul Station Urban Regeneration Area. These four apartments were considered candidates for heritage designation in 2013; their historical and cultural values are deemed worthy of preservation by many scholars and planners, although their physical conditions are severely deteriorated. From the perspective of urban regeneration, these apartments should be revitalized to preserve their originality while acquiring the sustainable architectural and operating characteristics.

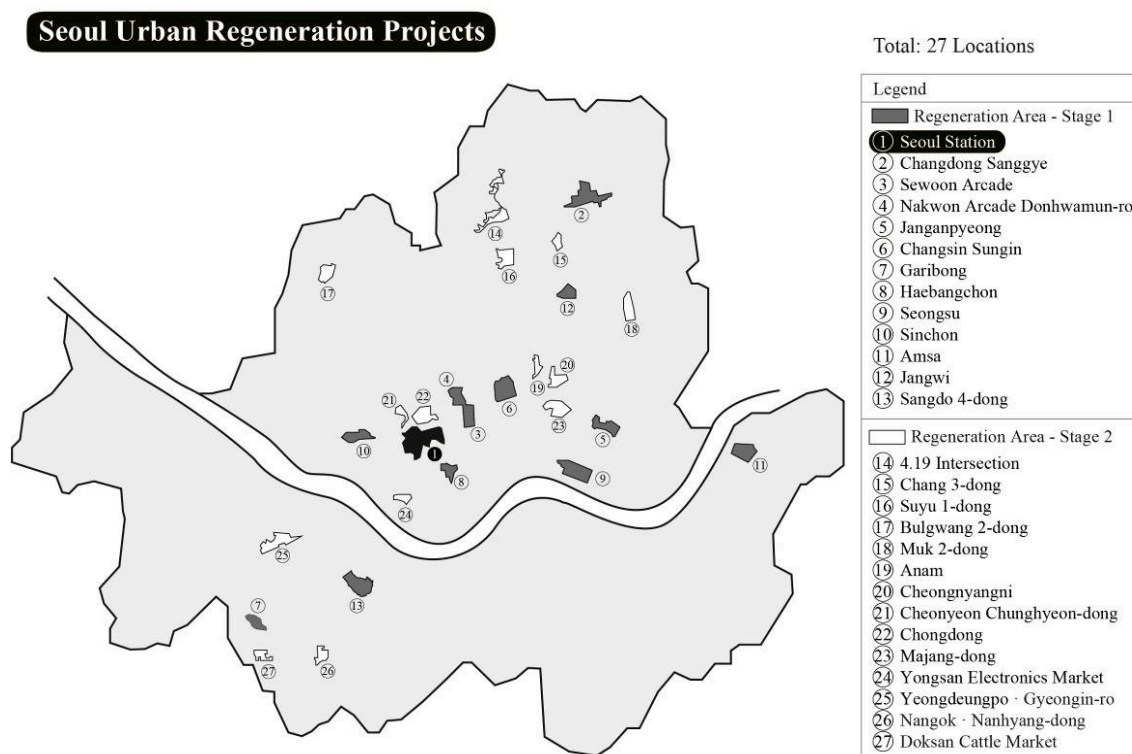


Figure 1. Urban regeneration projects in Seoul and the location of Seoul Station Area Urban Regeneration [19] (redrawn by: author).

We examined the four apartments, focusing on their architectural, economic, social, symbolic, historical, and cultural heritage values as unlisted, but publicly conceived city-level cultural assets and evaluated methods to adaptively reuse the apartments while balancing their cultural and architectural values against their improvement needs. This study diagnosed the requirements and issues for urban regeneration facing the city of Seoul along with adaptive reuse of historical apartments in the urban regeneration area and proposes a framework and factors to be considered for possible revitalization strategies that support the sustainable urban regeneration. The study was confined to the Seoul Station Urban Regeneration Area, as indicated in Figure 2. It aims to investigate and reveal the potential of apartments as architectural heritage assets by focusing on a specific typology that is generally forgotten in urban regeneration approaches or intentionally excluded due to complicated contradictions and conflicts. The results of the study are expected to clarify the limitations and challenges of revitalization in historical apartment buildings.

First, this paper has the general objective of determining the role of revitalization of apartment buildings in promoting urban regeneration in Seoul. Second, the aim is to identify the effects of adaptively reusing historical buildings in terms of enhancing feasible and sustainable options to protect them from demolition. Third, the specific objective is to define the principles by which sustainability is integrated into the revitalization of historical apartment buildings and is used to enhance cultural heritage during urban regeneration. Protecting the built heritage and conserving cultural values of apartment buildings for future generations present a real challenge for developers, architects, and professional education programs.

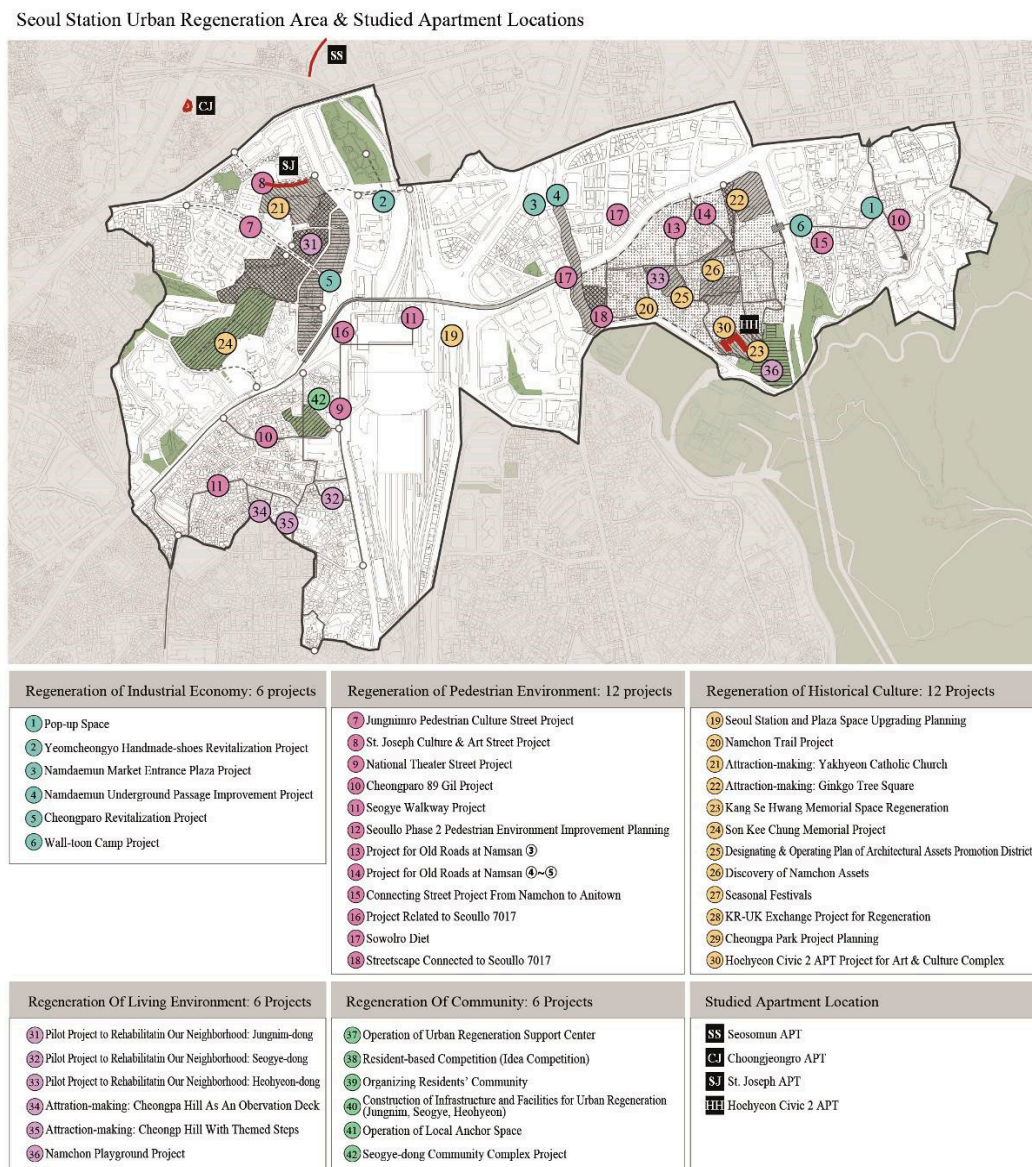


Figure 2. Seoul Station Urban Regeneration Area and its planned projects with studied four apartment locations [20] (redrawn by: author).

1.2. Methods

This research involved three steps: (1) review the Seoul Station urban regeneration plans and studied apartments; (2) collect and review the progress and indicators for heritage recognition and adaptive reuse of each apartment; and (3) analyze the factors and framework that can lead to successful adaptive reuse of each apartment as a city-level heritage asset.

Qualitative analysis of the cases in relation to their connection with urban regeneration and the city heritage programs can be obtained through a mixed methodology, using notices, newspapers, reports, and data from an information portal managed by the Korean and Seoul governments. This study began with a comprehensive literature survey and data review to understand the progress and comprehensiveness of the Seoul Station urban regeneration plans and the significance of the cultural, and historical values of the four candidate apartments for inclusion on the Seoul Future Heritage list. The data were collected from various available sources to review values, interests, planning and management, interventions by various authorities in charge and relevant groups, including city government, owners, tenants, neighbors, and the general public. Information on the failure to designate

apartments as Seoul Future Heritage sites and any current plan and reuse processes of apartments not described in any open documents was gathered by interviewing the planners and experts working on the Hoehyeon Civic Apartment Plan, the government official in charge of Seoul Future Heritage designations and the advisory committee member responsible for determining apartment development policy and heritage designation of apartments for the Seoul Metropolitan Government.

To gain insights on urban regeneration projects in Seoul and Seoul Station area regeneration projects, documents and reports [19,20] dated between 2017 and 2019 were collected. Building ledgers were collected from the Building Data Open System as of 2019. To determine the impact on apartment property transactions, prices and land ownership information including ownership types, reasons for ownership change, and change dates were acquired from the Ministry of Land, Infrastructure and Transport Open Information Portal and National Spatial Data Infrastructure Portal. To track the transformation and reuse of the four apartments and understand the social interests, official documents and news articles from the Seoul Information Open Portal were searched and sorted. To clarify group interests, news articles from the Naver News Search Portal associated with keywords of apartment names were investigated. Documents and articles that mention redevelopment, regeneration, reuse, and heritage were extracted.

To record and assess the existing physical conditions and historical values of the apartments, architectural drawings and 3D models were made with reference to collected literature and field studies. Apartments were assessed for their architectural merits and adaptive reuse strategies.

The foremost concern of this research is the need to examine the historical significance of apartments in the context of Korean architectural history, regionality, and sustainability. We summarized the meaning of apartments as a city heritage asset and examined their relationship with sustainable urban regeneration.

To analyze how the apartments can be adaptively renewed, we examine each revitalization strategies case by case, focusing on their specific issues and architectural interventions. We concentrated on adaptive reuse as a result of local urban regeneration in Seoul and heritage building conservation in Korea. Planning and implementation of sustainable heritage building reuse is challenging in urban regeneration projects. This study focuses on the extent to which sustainability and revitalization are influencing urban regeneration with heritage buildings, highlighting the role of stakeholders and decision-makers, including owners, tenants, the city government, neighbors, and the public, in adequate planning and management. We focused on the growing awareness of vernacular heritage revitalization and how it is expected to promote holistic engagement of the economy, environment, society, and culture. The paper concludes with a brief discussion of the shortcomings of existing approaches to urban regeneration and apartment heritage management and suggests how these might be overcome.

2. Review of Studied Urban Regeneration Plan and Apartments

2.1. Seoul Station Area Urban Regeneration Plan

City renewal projects are underway in Korea with national support. Each city's declining original center was chosen as an urban renewal area [21]. Similarly, the Seoul Station area was chosen for strategic urban regeneration. However, the outdated buildings erected in the modernizing period from the early 20th century to 1970s present a challenge [18] to urban regeneration planning and management due to conflicts between the need for higher economic rewards from redevelopment and social and cultural demands to conserve the historical and architectural assets.

Nevertheless, the goal of urban regeneration is to release the constraints that have prevented revitalization of historic inner-city areas by detailing relevant approaches, instruments, and procedures for urban revitalization and adaptive reuse and rehabilitation of buildings with architectural, historical, and cultural heritage values. In addition, urban regeneration seeks viable partnerships for financing and policy-making [22]. Viable strategies include construction and rehabilitation of relevant infrastructure

and measures for improving of the physical environment, upgrading slum tenements, adaptive rehabilitation of existing buildings, construction of new commercial and housing complexes where appropriate, a support facility for small and medium-sized enterprises, and the enhancement of institutional capacity to manage revitalization initiatives that inevitably involve both public and private entities [22].

The Seoul Station area has been targeted for the urban regeneration by Seoullo 7017, an infrastructure rehabilitation project for buildings scheduled for demolition and the catalyst for a revitalization initiative with a bottom-up approach to public-private partnerships. The initiative was established with the participation of various disciplines, including the humanities and industry, along with place-marketing of local assets to enhance economic value. This approach helped prepare for strategies that link the local pedestrian network for culture and tourism to Seoullo 7017. The Seoul Station Area Urban Regeneration Plan is organized into five strategies involving industry and economy, the pedestrian environment, history and culture, the living environment, and community.

Four apartments and their relevant urban projects led by the Seoul Metropolitan Government were examined. Choongjeong Apartment is included in Mapo 5-2 Redevelopment Projects, which is run by the Department of City Vitalization, and focuses mainly on district redevelopment; a requirement to preserve Choongjeong Apartment was recently added to its mandate. Hoehyeon Civic Apartment has the most in common with other urban projects among the four apartments. It is related to the Art and Culture Complex Project in Hoehyeon Civic 2 Apartment, Namchon Trail Project, Namchon Playground Project, and the Project for Old Roads at Namchon, all of which are included in the Seoul Station Urban Regeneration Project. The Department of Apartment Houses and Department of Cultural Facilities are in charge of the Art and Culture Complex Project, which is responsible for transforming deteriorated spaces into artists' residences, while the other three projects are led by the Department of Public Regeneration to connect tourist sites, memorial spaces, Namchon Playground and Hoehyeon Civic 2 Apartments with circulation paths. St. Joseph Apartment is relevant to the St. Joseph Culture and Art Street Project in addition to Urban Regeneration Anchor Facilities in Junggrim-dong, both of which are part of Seoul Station Urban Regeneration. In addition, the Department of Public Regeneration has been tasked with creating pedestrian-friendly streetscapes and reusing storage facilities in front of St. Joseph Apartment. Seosomun Apartment is located near the Memorial Space Project at Seosomun Historical Park, but neither the apartment nor the project are included in the Seoul Station Urban Regeneration Project. Two studied apartments are included in strategic projects: (1) remodeling of Hoehyeon Civic Apartment as an art and culture complex for regeneration of history and culture; and (2) St. Joseph Culture and Art Street Project for regeneration of pedestrian environment. Although the other two apartments—Choongjeong Apartment and Seosomun Apartment—are not directly tied to urban regeneration projects, they are also drawing attention thanks to the influence of Seoul Station Area Urban Regeneration. As housing is one of the most important public priorities affecting urban development and apartments [12] in Seoul, and the apartment is a significant housing option in Korea, the fate of the apartments will have a significant impact on sustainable urban regeneration of the area.

2.2. Overview of Four Apartments in the Seoul Station Area and Their Six Heritage Values

To understand the values, distinctive features and reuse potentialities of Choongjeong, Hoehyeon Civic, St. Joseph, and Seosomun apartments [23–26], it is necessary to outline the general information of their year of construction, plot ownership, unit ownership, and mix of unit areas and shops. All of them are apartments in a form of a single building, which is not currently typical in Korea. Choongjeong Apartment was built in 1930s, while the other three were built in 1970, 1971, and 1972. As all of apartments are located in the central Seoul Station area and, they have high accessibility, with convenient connections to the subway and buses. While the plots for Choongjeong and St. Joseph apartments are owned by private unions, plots for Hoehyeon and Seosomun apartments are owned by the city. Except for Hoehyeon Apartment, which was leased as public rental housing, units of other apartments are owned by private individuals and the ground floor is occupied by shops. The sizes,

floor numbers, unit areas, and unit quantities of the four apartments vary. While Hoehyeon and Seosomun apartments have parking lots, Choongjeong and St. Joseph apartments provide no parking.

Due to their build year, rarity as apartment forms, representativeness of the living culture, and project backgrounds, they have been discussed as candidates for listing as the city heritage assets. In Korea, there are several levels and definitions of heritage programs: (1) national cultural heritage protected by law, (2) national Architectural Assets designating architectural, non-protected heritage, and (3) Seoul Future Heritage, which is recognized by the Seoul Metropolitan Government as city-wide heritage.

In Korea, the national protection law of cultural heritage of 1962 designates tangible cultural heritage assets, intangible cultural heritage assets, monuments, and folklore heritage by recognizing their historical, artistic, academic, and scenic values. Heritage by designation is the traditional process through which heritage is applied by experts as an honorific label to sites, buildings, and other cultural objects. In most cases it follows a top-down strategy with little room for contributions from the general public, resulting in heritage designations that are usually predictable and rarely controversial [6]. Recently, to support non-protected heritage assets, different policies including Architectural Assets and Seoul Future Heritage were introduced.

The Architectural Assets Act supports conservation of national architectural assets. The Korean architectural asset policy recommends utilizing a building while preserving only parts of the whole building. Registered architectural assets receive less support than designated cultural heritage and involve fewer regulations. There is no standard on how long after construction contemporary buildings built less than 50 years ago can be registered. If a building is registered as an architectural asset, there are benefits such as support for managing and maintain the building, tax reductions, alleviation on building coverage ratio, building codes, and parking regulation. However, if the asset receives such support, permission is needed to change the exterior, relocate the building, or demolish it.

The Seoul Metropolitan Government enforces a regulation on preservation, management, and utilization of Seoul Future Heritage. Before municipal enforcement, which began in 2013, the government initiated the Seoul Future Heritage program to discover and protect both tangible and intangible cultural assets that are not state- or city-designated or registered. The regulation applies to every tangible or intangible, modern or contemporary cultural heritage asset in the city worthy of being transferred to future generations, but which is not registered or designated as national cultural heritage by law. Anyone, including a member of the general public or a non-profit organization, can propose an object for inclusion on the Seoul Future Heritage list by submitting a free application.

Four apartments located in Seoul Station area were nominated as Seoul Future Heritage sites in 2013; (1) Choongjeong and Hoehyeon Civic 2 Apartments as Modern Heritage, and (2) St. Joseph and Seosomun Apartments as Living Heritage. The category of modern heritage was designed to preserve cultural heritage and historical heritage assets from the modern era, including modern architectural assets, urban infrastructure, and landscape elements. The living heritage category preserves various forms that help express the living culture, including memorable techniques, shops, apartments, markets, etc. As the oldest apartments left in the current city of Seoul, Choongjeong was nominated as a modern heritage asset, while Hoehyeon Civic 2 was nominated as a modern heritage asset because it is the only civic apartment remaining after all others were demolished.

St. Joseph and Seosomun apartments were recommended for living heritage because they are examples of apartments in 1970s that have been subject to few significant renovations. As Jokilehto [27] holds that cultural heritage is not confined to tangible things, interactions between people and changes over time can become heritage that represents the regional characteristics.

Due to perceived threats to private ownership and the limited ability to protect the apartments from redevelopment without nationally or municipally forced regulations and city policies, they were excluded from immediate listing and were not considered for future Seoul Future Heritage listing. Apartments listed as Seoul Future Heritage sites can be included in reconstruction or redevelopment projects but may be subject to conditions that preserve parts of the apartments. Although the four

apartments were excluded from the Seoul Future Heritage list, they have been evaluated as having national architectural heritage value by many researchers in Korea. The heritage value of apartments with regional and sustainability values must be considered [18] from various perspectives.

In cultural heritage conservation, values are critical to deciding what and how to conserve. The term “value” does not have an economic interpretation, but it is used as a synonym for “expert judgment” [28]. Even brief consideration of a typical conservation decision reveals many different values at play, including the artistic and aesthetic values of an old building, as well as the historical values of its associations, plus the economic values of its use, among other factors [10]. Heritage is rooted in space, as well as time, and is consequently place-based, site-specific, locality-sensitive, and community-contextualized. It is this everyday aspect and “use” that makes heritage buildings, places, townscapes, landscapes key components of social and cultural sustainability [29].

Alois Riegl [30] divides heritage value into three aspects: (1) historical value, (2) age value, and (3) intentional commemorative value. Historical value means that the higher the purity of the cultural heritage in maintaining its original form, the greater its value. Therefore, the aim is to prevent all weathering. Age value means that even those things that change with the passage of time are acknowledged for their value. Intentional commemorative value is manifest value tied necessarily to the original condition and does not acknowledge changes that occurred after its creation. For the heritage values we discuss in this paper, age value is the most appropriate aspect because the apartments have adapted over time to the changing tenants and lifestyles and they need to be readapted for sustainable preservation and development.

The studied apartments are important elements of the built heritage of the Seoul Station area and the city. However, typical definitions of built heritage are narrow and rely on conventional conceptions of architectural and historical value [6]. The broader range of heritage values of apartments can be listed as; (1) architectural value, (2) economic value, (3) social value, (4) symbolic value, (5) historical value, and (6) cultural value [10,16,31,32]. Architectural value can be judged by aesthetic appeal and harmony with surroundings. Economic value includes three different perspectives. The first is the values of already existing resources of structures and physical environments optimized or improved for living quality [4,28]. The second is derived from services and goods [33] provided by the important characteristics or attributes of heritage [34] that increase subsidies and benefits. The third is financial investments for the property or tourism [4,35]. Social value involves connection with others and sense of identity, while symbolic value is related to a repository or conveyor of meaning that provides a sense of integrity and association. Historical value means connection with the past and rarity. Cultural value is relevant to understanding the creation and representativeness of a certain culture, as shown in Table 1. In the table, elements of significance of heritage values are linked to dimensions of sustainability to discuss the sustainable reuse of apartments as cultural heritage.

Table 1. Heritage values, elements of significance and their dimensions of sustainability.

Heritage Value	Elements of Significance	Dimensions of Sustainability
Architectural	Aesthetic Appeal Harmony	Environmental (Physical)
Economic	Resource Services and Goods Investment	Economic
Social	Connection with others Identity	Social
Symbolic	Integrity Association	
Historical	Rarity Past	Cultural
Cultural	Understanding Representativeness	

Each heritage value can be redefined in context of the apartments:

- Architectural value: The early apartments were designed with Modernist principles, resulting in a physical structure and texture with horizontal compositions of facades in concrete [36]. As such, the apartment is representative of the features, spaces, building systems, materials, techniques, and details that prevailed in the build year. Additionally, the site of the apartment—the streets and sloped terrains—provide unique and specific morphological harmony between the building and surrounding environments.
- Economic value: The building itself, structure and materials from the specific period become the resources to be reused, providing economic benefits [14,37]. The historical value of an apartment can be appreciated by tourists and visitors and bring profits to the commercial tenants of the apartment as well as surrounding shops. From the owners' perspectives, popularity for rent, and investment by tenants and local governments can be considered significant economic elements for preserving a heritage asset.
- Social value: The collective character of the apartments holds inherent connectivity with others in the community. Also, the apartment provides a site identity to a resident, a neighborhood and other people who have a different relationship with the apartment as part of their social practices, and where the meaning of that place is part of their lived experience [38].
- Symbolic value: The symbolic value is correlated with social value. As the value of an apartment for engaging people differs according to each individual's everyday life and that of the local community, the apartment will acquire symbolic value from associations with place, holistically integrating the people sharing the collective memories and sense of place within the specific setting of the apartment [38–40].
- Historical value: As the first, the last, or one of few remaining typologies of apartments with 45 to 80 years of history, an apartment becomes the archaeological asset.
- Cultural value: The intrinsic [41] parts of an apartment are representative [42] of the everyday life and living environments of the build year as well as the lifespan of the apartment, allowing people to understand the link [42] between the living culture and creation of the embodied form [10].

2.3. Needs of Adaptive Reuse of Four Apartments

Adaptive reuse, which appears to be a promising strategy for preserving cultural heritage [32], is a process of modifying an existing structure so that the space will accommodate new functions. It involves converting a building to allow for a change of use required by new or existing owners [16] according to the era and needs, refurbishing, or renovating [16]. Changes to buildings may involve internal space reorganization and service upgrades or replacement. Adaptive reuse may simply require minor restoration works where nothing changes except the building's functional use.

Adaptive reuse of historic buildings is considered fundamental to the conservation of heritage assets and sustainable development around the world [43]. Adaptive reuse of heritage buildings is generally proposed for a new, self-financed use that serves a socially desirable purpose [17]. When adaptive reuse is applied to heritage buildings, it not only saves the building but conserves both the skill of the original builders [16] and the dedication of its occupants throughout its life cycle. Adaptive reuse conserves architectural, social, cultural and historical values [16]. It may help communities, governments, and developers reduce the environmental, social, and economic costs of urban development and expansion [16,44]. It can transform heritage buildings into accessible and usable places as well as regenerate an area in a sustainable manner. Many cities have begun to realize that reusing heritage buildings is an important part of any regeneration program. Yet, many building owners and developers still regard the reuse of heritage buildings as an unviable option due to restrictive planning and zoning regulations [16]. This applies to the four apartments discussed in this paper, and persuading land owners, apartment unit owners, and tenants of the merits of adaptive reuse has proven challenging in each case.

Factors affecting decision-making for adaptive reuse [16] include stakeholder views, ability of a building to adapt, local economics, building orientation, value to local community, social, environmental, economic, and cultural sustainability, sustainability benchmarks, heritage significance, life cycle assessment, ability to fit streetscape aesthetics, availability of materials to match existing, benefits of reuse compared with redevelopment, community values of existing buildings, compliance with building codes, creative value compared with redevelopment, demand for a building after adaptive reuse, heritage council guidelines, impact on visual amenity, increasing urban density, market opportunity due to location, opportunity for technical innovation, planning approval process, public awareness of adaptive reuse, and viability of recycling existing materials.

However, up to now, most reproduction projects involving deteriorated housing in Korea have been driven by the need to improve the environmental quality of residential areas and raise real estate values. The effect of such programs to improve social problems associated with urban and surrounding areas was limited [45]. This approach focuses on the environmental and economic dimensions of development from owners' and investor's perspectives. If adaptive reuse of apartment buildings is considered other dimensions, such as social and cultural sustainability, should be accounted for.

The four apartments hold high architectural, historical and cultural heritage values and the urban regeneration goals in the Seoul Station area target for connectivity and integrity. Their rehabilitation by way of adaptive reuse can contribute to the restoration of urban sustainability and improve existing living environments. The existing conditions of the four apartments make them amenable to regeneration through a holistic approach to sustainable development. Sustainable regeneration of housing must take into account five factors: land use and transportation; energy and resources; ecological impact; architecture and the living environment; and community [45]. Most of these factors can be accommodated by adaptive reuse of each apartment. However, to conserve the architectural, economic, social, symbolic, historical, and cultural heritage of apartments while enhancing the physical, economic, and social dimensions of urban regeneration will require a thorough understanding of the potentials and drawbacks of such approaches.

3. Analysis of Issues for Adaptive Reuse of Four Apartments

3.1. Analysis Framework

A literature review [12,16,43,46,47] of adaptive reuse strategies of heritage buildings, revealed six factors to be evaluated for design consideration and interpretation: (1) Originality; (2) Architectural Merit; (3) Use or Function; (4) Social Interest; (5) Group Value; and (6) Intervention. Historical interest, authenticity, and rarity are included in Originality. Architectural merit, which determines which parts of historical buildings should be preserved as valuable assets, includes aesthetic features, such as facades, structures, materials, open spaces, local distinctiveness to promote the streetscape and regional appearances, and harmony with surroundings for balanced urban settings. Use or Function is included to meet changing needs and market trends for mixed development. Social Interest is discussed to enhance pride and identity in a community; assess compatibility with the neighborhood; support the general public and local residents by providing public facilities and open spaces; promote and facilitate social networks; preserve societal memory with a sense of community belonging; allow community involvement in public decision-making; and encourage the public agreement. Group Value deals with the interests of stakeholders and decision-makers, including owners, tenants, potential users, investors, municipalities, governments, and both local and the general public. Those interests encompass financial support, business activities, job opportunities, and public facilities. Finally, Intervention refers to the methods to accomplish adaptive reuse according to the analysis and decisions associated with the aforementioned factors. The level of physical change means the scope of structural and architectural transformations that affect the applied regulations and construction time and costs. Accessibility comprises provisions for basic needs of the disabled, elderly or children with proper access to function

as a public facility. Safety and structural stability are the minimum regulatory conditions to protect against fire and collapse, as determined by the level of physical change and the building code.

As shown in Table 2, each item can be linked to a sustainability dimension. Here we introduce the concept of actor and action. Actors are people concerned with the building for various reasons [48]. They are the main agents affecting and making an item, including planning authorities, local authorities, municipalities, original users, potential users, and producers, such as architects, engineers, experts, and specialists. An action is a measure taken by an actor through the project phases from evaluation, decision-making, planning, design, and operation with management. Although each item requires divergent actors and actions, there may be main driving forces between actors and actions. This is applied as a framework for analysis of issues for adaptive reuse of the four apartments. To study the current progress of projects and relevant actors and actions for each apartment, documents from the Seoul Information Open Portal and news articles from the Naver News Portal were searched. Key issues were selected and are summarized in this section.

Table 2. Analysis framework with factors leading to the adaptive-reuse of historical buildings and their items with links to sustainability dimensions and actor/action. (●: Relevant)

Factor	Item	Dimension				Driving Force	
		P	E	S	C	Actor	Action
Originality	Historical Interest				●		●
	Authenticity				●		●
	Rarity				●		●
Architectural Merit	Feature (Appeal)	●					●
	Local Distinctiveness	●					●
	Harmony with Surrounding	●					●
Use	Changing Needs			●		●	●
	Market Trend		●			●	●
	Local Needs			●		●	●
Social Interest	Local Interest and Identity			●		●	
	Neighborhood Compatibility			●		●	
	Support for the General Public and Local Residents			●		●	
	Social Network			●		●	
	Memory of Society			●		●	
	Community Involvement			●		●	
Group Interest	Public Agreement			●		●	
	Financial Support		●			●	●
	Business Activities		●			●	
	Job Opportunities		●			●	
	Public Facilities			●			●
Intervention	Level of Physical Change	●				●	●
	Accessibility	●					●
	Safety	●					●
	Structural Stability	●					●

3.2. Choongjeong Apartment

3.2.1. Originality

In 1932, the Chosun Housing Foundation under Japanese occupation tested several housing typologies. Choongjeong Apartment, built as a four-story building in the 1930s by Toyota, the plot owner, is the oldest apartment in Seoul. There are many assumptions regarding the exact build year. An old land register records that Toyota purchased the site in 1932 and transferred it in 1937 [49]. The name of the apartment changed several times after Korean independence.

The apartment was a significant place since its construction, with adapted functions and forms. It housed a People's Army court at one point, with the basement used as a hanging chamber. During the Korean War, the building was purchased by the UN and transformed into Tremor Hotel. In 1961, after ownership was returned to the Korean government, it was awarded to an individual and became a Korea Tourist Hotel. Due to fraudulent activity by the owner, the building was confiscated by the

Internal Revenue Service. Finally, in 1975, the building was converted back to an apartment complex. In 1979, road expansion required demolition of a portion of the building. The current appearance of the building is the result of subsequent repairs to the surviving structure [49], and is evidence of sustained adaptive reuse.

3.2.2. Architectural Merit

Choongjeong Apartment shows morphological transformations by age and use, as indicated in Figure 3. It is assumed that it was built as Japanese-style housing at the time of construction but changed with the heating system, which left a chimney inside the building, and the ground floor became the common space while being used as a hotel [49]. Afterward, the current top floor was added and the street-facing side was demolished, leaving the current front facade of the building.

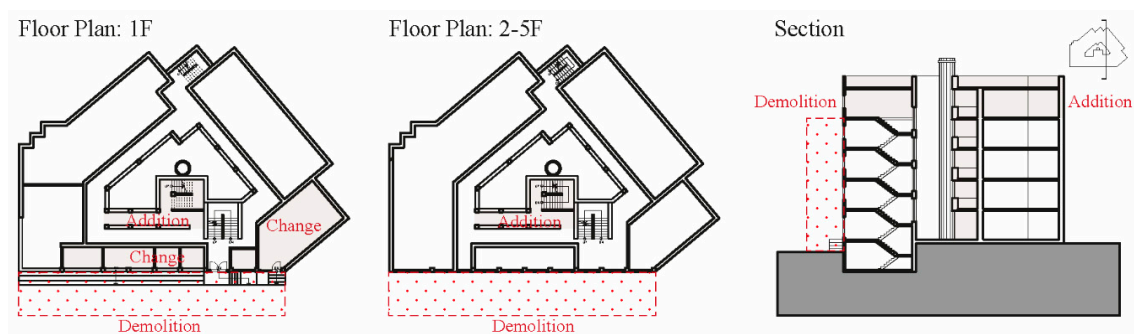


Figure 3. Plans and section of Choongjeong Apartment [49,50] (redrawn by: Author).

The interior space was expanded by reducing the atrium, the housing unit plan was changed, and individual boilers were added. Although the building now looks old and shabby, it contains layers of different age and architectural transformations.

As shown in Figures 4 and 5, the shape of the building is irregular, with a modernist horizontal window facade that has been kept up to date.



Figure 4. Current facade conditions of Choongjeong Apartment (2019; Photo: Author).

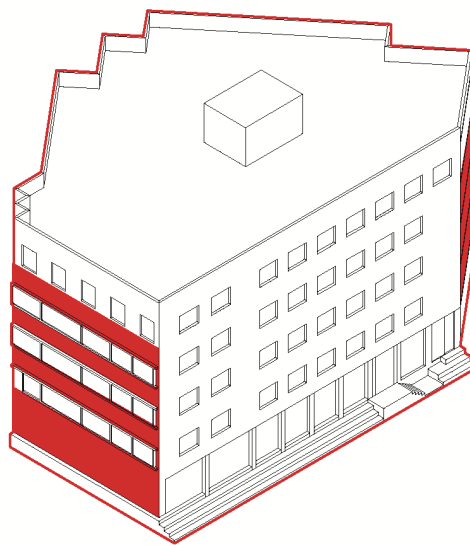


Figure 5. Architectural merits to be preserved of Choongjeong Apartment (source: author).

3.2.3. Use

This apartment went through multiple adaptive reuses throughout its history. Originally rental housing for families [49], it was later used by a court and a hotel before returning to residential apartment use. The ground floor was used as the common space for the hotel and, after 1978, most of the ground floor space was occupied by commercial shops. Currently, there are many unoccupied housing units and a redevelopment project encompassing the surrounding area is in progress. Although the Seoul Metropolitan Government reportedly has begun a phased purchase of the units, Land Ownership Information dated December 2018 shows no ownership by the government. A plan to utilize Choongjeong Apartment as a cultural space has been discussed and is included in the redevelopment plan.

3.2.4. Social Interest

To understand the social interest and progress of relevant projects or city policies, official Seoul Metropolitan Government documents retrieved through the Seoul Open Information Portal have been reviewed, and this method was applied to all the apartments. The first extract document prepared by the Department of Cultural Policy states that Choongjeong Apartment was not selected for inclusion on the Seoul Future Heritage list. From 2018, documents were prepared mainly by the Department of City Vitalization and Public Development Center. In 2018, the government ordered evaluation of cultural heritage values and utilization plans of Choongjeong Apartment. In 2019, the government hosted a briefing session with residents on preserving Choongjeong Apartment in the Maporo 5-2 Redevelopment District and subsequently added an obligatory condition to include Choongjeong Apartment preservation in the redevelopment project. The government stated that a change of use to a cultural facility considered, as were incentives such as easing the maximum building height to avoid negative impacts on development feasibility.

Local interest focuses on redevelopment of the neighborhood, including preservation of Choongjeong Apartment as a cultural heritage asset. Municipal and local authorities are making efforts to balance the economic feasibility of redevelopment with the need to preserve historic heritage by organizing briefing sessions and involving the community. However, public and community consensus has not been reached.

3.2.5. Group Interest

Thirteen news articles [51–63] were extracted to analyze group interest. For the owners, economic benefit is the main goal of redevelopment. The neighborhood was designated as a redevelopment district in 2008, but due to a lack of consensus on compensation among residents and owners, progress has been slow. Furthermore, differing land share conditions between 5th-floor owners and others has made reaching agreement on redevelopment directions and compensation difficult. However, the city government has continually pushed to preserve the building through policy and planning guidance. Although direct financial support may not be provided, the municipality is considering minimizing other obstacles. Meanwhile, public concerns regarding structural stability and fire safety have been expressed.

3.2.6. Intervention

No remodeling or replacement of mechanical and plumbing equipment has been undertaken in recent times. The managing office has been dealing with water leaks and electrical problems. Before deciding a level of intervention, an assessment of the building's structural integrity and services should be undertaken.

The building code defines levels of intervention as: new construction, reconstruction, rebuilding, addition, change of use, major repair, and relocation. Most cases of adaptive reuse involve addition, change of use, and major repair. According to the building code in Korea, major repair is defined as adding, dissolving, repairing, or changing load-bearing walls, columns, beams, roof frames, fire compartments, and major or fire-escaping stairs at more than three locations, along with changing exterior appearances of buildings located in scenic zones. Given the need to ensure accessibility to all the users in a building that may be adaptively reused as public facilities, major repairs are necessary for buildings without elevators. If major repairs are planned for a building, not only structural stability but seismic stability should be secured, in addition to barrier-free and energy-efficient design, as required by law.

Change of use should be assessed to verify that building code standards are met for means of egress, fire compartment and sprinkler installation, building materials, parking spaces, and required building services and equipment.

Additions can be considered by the decision-maker based on construction budget, but within the maximum building coverage area and the maximum floor area. Additionally, the impact of the added area on parking spaces must be considered, which may be a difficult issue to resolve in all four apartments, which already occupy most their plots and do not meet current parking requirements.

If Choongjeong Apartment is planned for adaptive reuse as a public cultural facility, both a change of use and major repairs may be necessary, requiring a seismic retrofit and major upgrade of building services, which would increase costs substantially.

3.3. *Hoehyeon Civic Apartment*

3.3.1. Originality

Hoehyeon Civic Apartment is the only remaining social housing supplied by the government in the 1960s to improve the residential environment. Individual toilets were introduced into housing units and the central heating system was adopted for the first time [64]. Its housing unit layouts have been transformed by adaptive reuse over the decades. Changing resident lifestyles resulted in expansion of balconies, elimination of interior walls, and privatization of public areas.

This apartment is the tallest among comparable buildings of the construction era.

3.3.2. Architectural Merit

The 10-story building with a central courtyard is located at the northern foot of Namsan, on a sloped site. Due to the absence of elevators, accesses into the building took full advantage of site

conditions, with seven entrances at different levels, and bridges connecting floors to the surrounding land, as shown in Figures 6 and 7.

To alleviate the financial burdens on tenants, the main reinforced-concrete frame and electrical system were provided by the government, and interior construction was assigned to tenants. This cost-sharing process is revealed in the building facade, which is composed of concrete framework and brick finishes built by tenants [65] (Figure 6). This feature is an authentic element that should be preserved (Figure 8).



Figure 6. Current facade and access conditions of Hoehyeon Civic Apartment (2019; photo: author).

The courtyard served as a center of community and everyday life by providing a common cooking and food storage space. Each 38-square-meter unit consisted of living space with an individual toilet and three bedrooms which were later autonomously transformed by tenants.

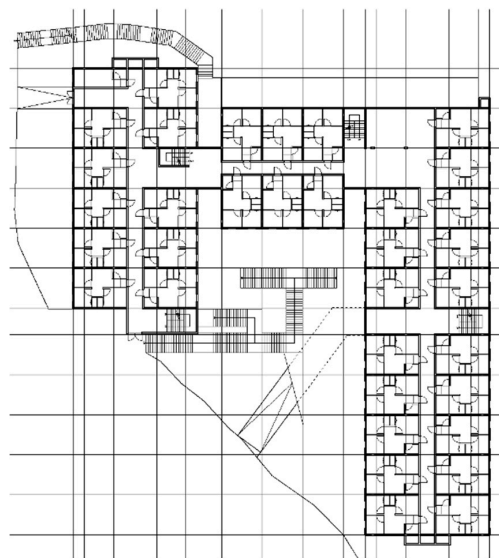


Figure 7. Sixth-floor plan of Hoehyeon Civic Apartment [64–66] (redrawn by: author).

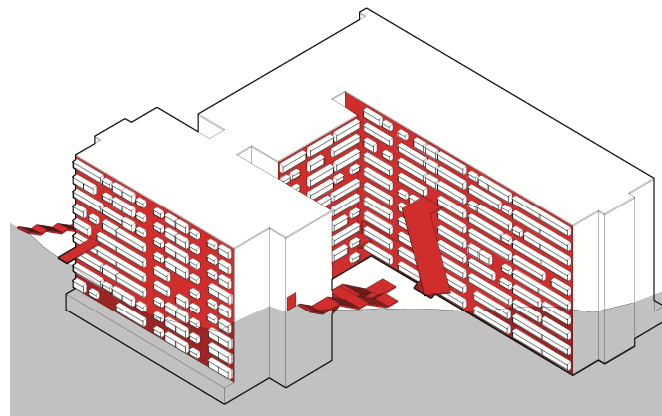


Figure 8. Architectural merits to be preserved of Hoehyeon Civic Apartment (source: author).

3.3.3. Use

Although designed for low-income residents, occupants from divergent social classes have lived in the building over the years. In 1997, the Seoul Metropolitan Government announced plans to demolish the building after purchasing it and replacing it with a public park or community center for the welfare of local residents [65]. However, in September 2016, the government unveiled a revised plan to adaptively reuse the apartment as long-term lease residences for artists and relevant working spaces.

A feasibility evaluation and basic plan for Hoehyeon Civic Apartment as an artists' residence and work space [66] was completed in 2017. Three scenarios were proposed: (1) 100% residences; (2) 80% residences and 20% exhibition space and shops; and (3) 40% residences, 40% work space, and 20% exhibitions and shops. The main differences among the three scenarios involved objectives and actors in urban regeneration. The first scenario would stabilize the unstable artist living space situation with artists as actors. The second scenario would provide specialized housing for artists while attracting the public. The last scenario would provide work and living space to artists while providing opportunities for communication and exchange among artists and the general public, who would become actors in urban regeneration.

Housing units for existing tenants who did not want to relocate themselves are included in the current scheme by remodeling [67].

3.3.4. Social Interest

Documents regarding Hoehyeon Civic Apartment were collected from the Seoul Open Information Portal [68]. As with Choongjeong Apartment, official documentation begins in 2013. Although reviewed for possible inclusion on the Seoul Future Heritage list, ultimately, Hoehyeon Civic Apartment was not selected. Other documents from 2017 deal mainly with adaptive reuse strategies for Hoehyeon Civic Apartment as a residence for artists in the context of urban regeneration, along with discussion of compensation or special housing for tenants. The main agent of remodeling of the apartment is the Department of Cultural Facilities and the compensations and relocation of tenants were handled by the Department of Apartment Housing. As of 2019, a task force for remodeling was at work.

Thanks to the synergy associated with the Seoul Station Area Urban Regeneration Project and other neighborhood projects, the current adaptive reuse direction now enjoys the support of the public and local residents. Land ownership by the government contributed to the negotiation process and allowed compulsory actions by the government that gives tenants a choice between relocating with compensation and continuing to reside in the apartment after remodeling. If the current plan is implemented, societal memory of the civic apartment will be preserved while a remodeled building will accommodate both existing residents and incoming artists and provide cultural and community spaces for the general public and tourists as part of the Namchon planned connected network.

3.3.5. Group Interest

A review of selected 23 news articles [55,69–90] revealed that divergent groups have been involved in decision-making for Hoehyeon Civic Apartment since 2004. A local district plan and guidance for the special adaptive reuse of Hoehyeon Civic Apartment was announced 17 January 2019. The two main actors involved are the Seoul Metropolitan Government and tenants. Residents' have consistently focused on compensation. However, the Seoul Metropolitan Government's plans for the building have changed significantly over the years, from demolition to adaptive reuse, from greenery for the general public to residences and working space for artists. The current program focuses on support for artists and their creative businesses.

Other goals include attracting young residents, fostering a cultural atmosphere that can be linked with the larger urban regeneration scheme, and promoting pedestrian-friendly environments and tourism.

3.3.6. Intervention

Because the building was given a grade of D for structural integrity, which implies a risk of catastrophic failure, the structural reinforcement should be prioritized. Structural reinforcement techniques must be thoroughly investigated to achieve the seismic stability required by law within the construction budget. Preservation principles proposed in the basic plan [66] that call for retaining the exterior facade and minimizing other morphological changes may be embraced by planning authorities and architects in the future process.

3.4. St. Joseph Apartment

3.4.1. Originality

St. Joseph Apartment is one of the apartments built in the 1970s, and it has preserved its original linear shape, which is representative of living environments of the time.

The land was originally owned by the Catholic Church and while the apartment was constructed as a profitable business for sale to individuals [25,36], the plot is still categorized as religious land.

3.4.2. Architectural Merit

The apartment was planned with gardens at each entrance to connect with the adjacent church and the neighborhood. The sloped topography and the street resulted in a linear plan, with stepped design in elevations, as shown in Figures 9 and 10. The building shows distinctiveness in its elevations and sections in harmony with streetscapes and the larger neighborhood (Figure 11).



Figure 9. Current facade and internal corridor conditions of St. Joseph Apartment (2019; photo: author)

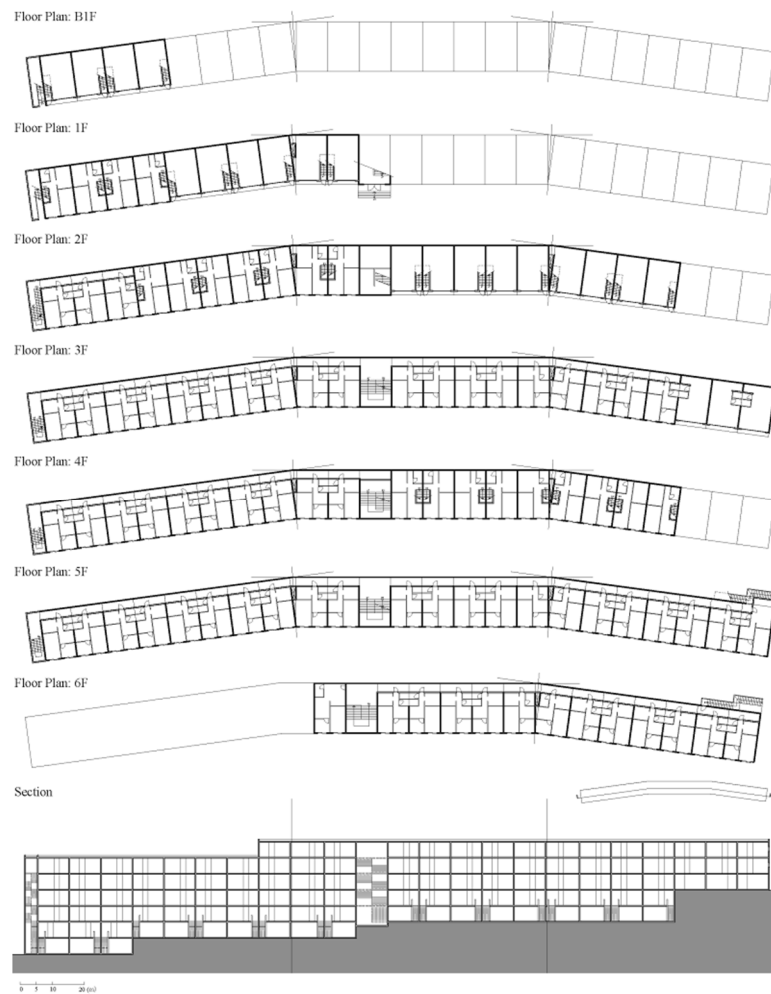


Figure 10. Plans and sections of St. Joseph Apartment (redrawn by: author).

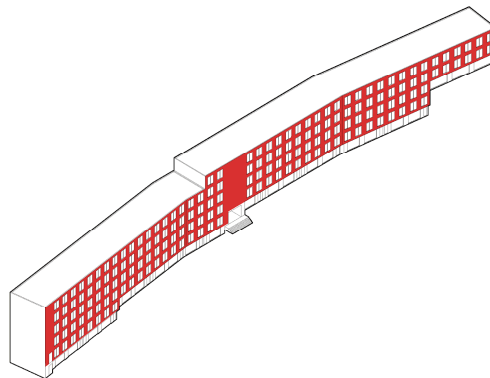


Figure 11. Architectural merits of St. Joseph Apartment to be preserved (source: author).

3.4.3. Use

Since a market once operated at one end, the lower floor of the apartment served as an extension of the market, with retail spaces attracting merchants as early residents. Housing began the second floor up. Incoming tenants for the shop space on the ground floor converted the space to cafes, design shops, etc. (Figure 12).



Figure 12. Current ground floor condition (2019; photo: author).

3.4.4. Social Interest

Fewer official records of official documents regarding St. Joseph Apartments could be found through the Seoul Open Information Portal [68] compared with the other three apartments. Documents regarding a Seoul Future Heritage list assessment and safety checks against disaster risks appear in 2013 and 2014. There has been no active discussion on St. Joseph Apartment. This can be interpreted as evidence the building is well-maintained and positively viewed by residents, the local community, and the general public.

3.4.5. Group Interest

Eleven news articles [91–101] from 2014 through 2018 were selected after searching the portal site. Apartment residents and neighbors appear to hold positive attitudes about their community, local identity, and societal memory. At one moment, the government promoted redevelopment of the building, even providing incentives to increase business profitability. However, since the advent of Seoul Station Area Urban Regeneration, the local community has been involved in improving the streetscape and commercial activities to attract new tenants and programs targeted for younger tastes and market trends.

3.4.6. Intervention

Although the building was constructed more than 40 years ago, its structural grade does not warrant demolition. The original ground floor shop space has been upgraded with minor changes and repairs.

Although the upper apartments are not designed for accessibility, the current residents are satisfied with current conditions. Unless the building use is changed to a non-housing purpose, no architectural interventions other than minor repairs and maintenance are required for sustained use of the building.

3.5. Seosomun Apartment

3.5.1. Originality

Seosomun Apartment was planned as an informal linear building on covered land above the waterway. It maintains its original appearance and form, which are typical of mixed apartment with shops built in 1970s, along a smoothly curved street on the front.

3.5.2. Architectural Merit

The building preserves the original form of a 1970s apartment along the street (Figure 13), while being in contact with existing houses, restaurants, and shops at the back of the building. Stairways to the upper housing floors are located between shops on the ground floor, connecting two housing units at both ends of the stairs [26,36] (Figure 14). The main architectural features to be preserved in Seosomun Apartment would be the street facade and stairways (Figure 15).



Figure 13. Current facade and exterior conditions of Seosomun Apartment (2019; photo: author).

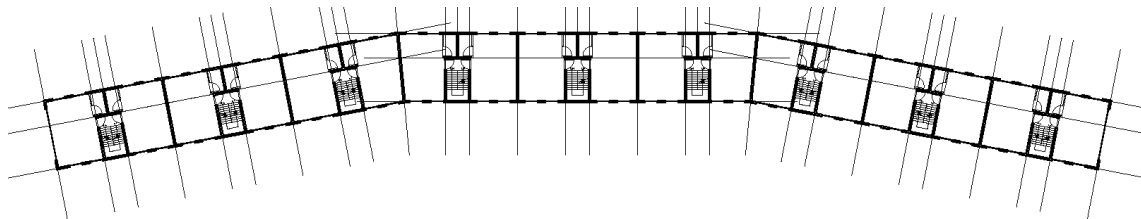


Figure 14. Typical Floor Plan of Seosomun Apartment (redrawn by: author).

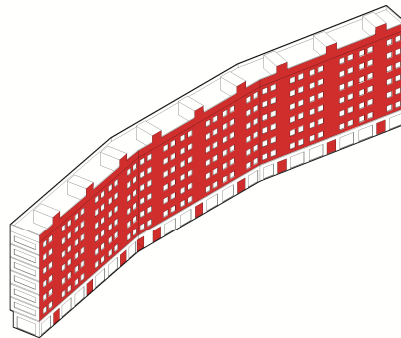


Figure 15. Architectural features of Seosomun Apartment to be preserved (source: author).

3.5.3. Use

The shop space is occupied by restaurants, pubs, cafes, and similar operations (Figure 16). The housing units are occupied by owners and tenants with comparatively inexpensive sale and rent, despite the central location, due to a lack of private property rights and ownership by the city.

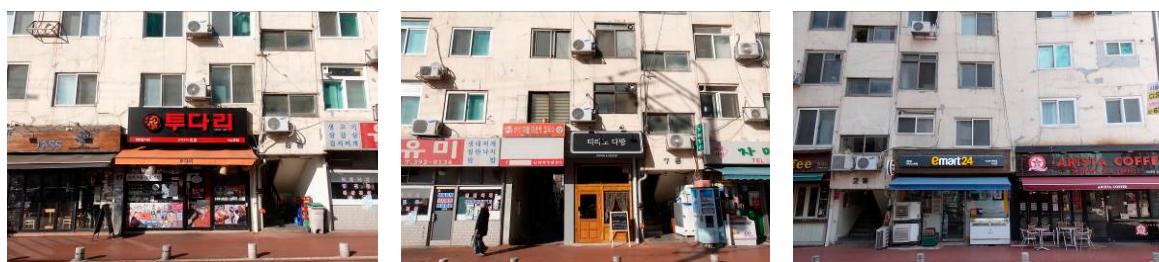


Figure 16. Ground floor use of Seosomun Apartment (photo: author).

3.5.4. Social Interest

As with other apartments, the first official document found on the Seoul Open Information Portal [68] states that Seosomun Apartment was not selected for Seoul Future Heritage. Two other documents deal with an architectural value evaluation by the Department of Apartment Housing and Seoul Urban Architecture Archive research by the Department of Disaster Management. Because the apartment was built on covered land above a waterway, and the building code has been revised to

forbid new buildings above waterways, redevelopment or reconstruction is not possible. Furthermore, the property rights of the building and the land are separate; the city owns the land. Although there have been assessments of its historical value, and research for archiving has been conducted, there is no detailed plan for redevelopment or restoration.

3.5.5. Group Interest

Eight news articles [53,102–108] from 2003 through 2019 were searched and selected for review. As mentioned above, there is no official development plan for Seosomun Apartment. In 2003 and 2004, the transaction price increase for Seosomun Apartment was recorded as the biggest among apartments in Seoul. But after it was determined that redevelopment or reconstruction of the building is not allowed, there has been no interest by any parties. Even Seoul Station Area Urban Regeneration had no apparent effect. However, the building has recently started to attract attention from real estate agencies and young potential tenants due to the low rents and sale prices, convenient location, and good transportation options. Voluntary upgrading of interior spaces and building services would be involved.

3.5.6. Intervention

Although no major repair or replacement of building services have been carried out, the heating, plumbing and electrical services have been upgraded. Additionally, the exterior walls are being constantly painted to maintain the building's appearance. Younger residents repair their housing units independently according to their tastes and within their budget.

3.6. Summary

Four apartments were reviewed according to the proposed analysis framework. Although these apartments are located in the same urban regeneration project area and recognized as the valuable architectural, historical, and cultural heritage assets, levels of discussion on the adaptive reuse of the buildings by divergent actors including government and authorities, residents, local communities, and the general public show significant differences. All four apartments exhibit originality and architectural merit because they represent historical housing typologies and have been preserved in their original forms. Choongjeong Apartment and Hoehyeon Civic Apartment are planned to be adaptively reused as cultural facilities through different implementation procedures and policy involvement. Major repairs with change of use are unavoidable, meaning it will be necessary to evaluate the financial feasibility of such projects. A lack of interest in redeveloping either St. Joseph Apartment or Seosomun Apartment has resulted in voluntary involvement and environmental improvement by residents and local communities, without major changes or repairs.

4. Discussion: Realizing Strategies for Adaptive Reuse of Apartment as Heritage

4.1. Factors and Driving Force between Actor and Action

The driving forces associated with the actors and actions involved in adaptive reuse of the four apartments are summarized in Table 3. Determination of historical heritage value and architectural merit is generally carried out by services contracted by the city government or academic researchers. In case of social interest, various actors are the main driving forces that determine actions and promote values. However, group interests, uses, and interventions depend on each apartment's specific issues. Impossibility to redevelop the building or residents' indifference to top-down redevelopment process by the government result in different reactions and attitudes to adaptive reuse of apartments. In the following discussion, more detailed strategies for adaptive reuse of apartment as heritage are described, with a focus on actors and actions.

Table 3. Adaptive reuse factors and driving force-action/actor from case study (●: Related).

Factor	CJ		HH		SJ		SS	
	Actor	Action	Actor	Action	Actor	Action	Actor	Action
Originality		●		●		●		●
Architectural Merit		●		●		●		●
Use		●		●	●		●	
Social Interest	●		●		●		●	
Group Interest		●		●	●		●	
Intervention		●		●	●		●	

4.2. Actor

4.2.1. Public Actor: Municipal Policy Supports for Conservation of an Apartment Building as City Heritage

The Seoul Future Heritage program focused initially on gathering information supplied voluntarily by the public and voluntary consent to a listing. Feedback leads to public awareness and agreement on preservation and community-improvement needs. In case of apartments, however, sharp conflicts of interest were evident among various stakeholders, including owners and tenants. Voluntary registration of privately owned apartment buildings as heritage sites has proven ineffective.

Although negotiating with residents and including them in decision-making are believed to be key to fostering an understanding of the role heritage plays in society, in the case of Choongjeong Apartment and Hoehyeon Civic Apartment, residents' interest in financial compensations provides too strong to be addressed without compulsory actions by government. Both apartments have been undergoing a compromising process for a long time—more than a decade for Hoehyeon Civic Apartment—and, finally, authorities notify residents of the determined provisions and guidance after giving up consensus.

Although incentives that enhance the financial feasibility of redevelopment by changing maximum building floor area are currently being considered for Choongjeong Apartment, domestic and international examples suggest a wider variety of incentives may need to be provided to individual property owners. Incentives may include technical support, professional training, subsidies for preservation, heritage recognition, interest-free loans, local support, etc. [109]. Incentives that enjoy broad support at the district level are particularly worthy of further considerations and may lead to the consensus among all the stakeholders.

As part of its strategic role, the city government or municipal planning authority is responsible for ensuring that social and community needs are safeguarded in the conservation process by supplying affordable housing to existing tenants, and protecting the rights of residents to live in a healthy and safe environment [110]. Embedding all conserved built heritage into an official urban plan would greatly improve city conservation efforts [109]. The potential benefits of pinning graded historic buildings onto the official zoning plan and giving them control and protection at an urban planning level are worth considering.

Local government expects private actors to play more active roles in managing historic buildings. To promote their voluntary participation and involvements, the long-term benefits in social and financial terms need to be specified in regulations. Public actors need to take the lead, assigning resources and acting as catalysts for the involvement and contribution of other stakeholders through policy support. Their effective engagement will help guarantee the sustainability and continuity of initiatives at the community level, including initiatives for conservation of cultural heritage [111].

4.2.2. Private Actor: Self-Directed Participation and Involvement

Since the early 1990s, urban development strategies have sought an appropriate balance between public commitment, private investment, and community initiative. Partnerships between public and private actors have increased in popularity in the US, Canada, and other western nations [111].

An expanding role for private organizations and local communities in rebuilding community structures and in spreading awareness of the value and appropriate use of the historic fabric among the general public has been recognized world-wide [111]. Successful regeneration depends on creating the right partnerships of stakeholders and ensuring they share a common vision and understanding of the opportunities and constraints of the project. Partnership may originate in many ways, but typically the different stakeholders will have varying objectives. To succeed, these objectives should be reconciled toward realistic expectations, both individually and as a group, otherwise long delays or stalemates in negotiating development agreements and moving the scheme forward are likely to occur [15], as in Choongjeong Apartment and Hoehyeon Civic Apartment.

Sometimes, the inability of authorities to prevent misuse and deterioration of cultural heritage can be blamed on the inadequacy of the regulatory and institutional framework [112]. As the case of St. Joseph Apartment shows, self-directed participation and involvement by private actors who attach great importance to local identity, neighborhood compatibility, and connections, and societal memory can correct mistaken policies.

In addition, as shown by the St. Joseph Apartment and Seosomun Apartment examples, when there is no interest in redevelopment and potential economic benefits, adaptive reuse of apartments would likely not have taken place without progressive and autonomous private participation and involvement in upgrading buildings and improving surrounding neighborhoods. Of course, city government support of urban regeneration programs can embolden revitalization efforts, providing funding, operational support, and political backing to advance improvements in surrounding environments and enhance streetscapes. Community-led neighborhood regeneration initiatives motivated by urban regeneration plans may support adaptive reuse strategies for shops located on the ground floor of each apartment, creating business activity, job opportunities, and public awareness.

The future of adaptive reuse of apartments depends to a large extent on changing public opinion at the national level. Heritage objectives need to be integrated into wider cultural, social and economic concerns public awareness and understanding of the importance of heritage must be maintained [22].

4.3. Action: Coordinated Strategic Intervention with Changed Use

Deciding on a new use for a heritage building can pose challenges to the decision-making process as there are many factors involved. Finding the most appropriate function is crucial to preserving the cultural significance of a heritage building. All the factors must be taken into account, including possible use, technical considerations, structural limitation, planning issues and fire service requirements, for adaptive reuse decision-making to find the most appropriate function for a building [12]. Basic principles of heritage conservation, such as adopting a minimal-intervention approach and promoting a culture of repair rather than replacement, are sustainable practices. Heritage conservation can also help maintain or improve local industries, materials, and skills, while promoting the preservation of local, community-defined values and contributing to the preservation of urban landscapes [5].

Conservation requirements need to be specified to bring out the historical significance of the building. These should be based on an analysis of originality and architectural merits that balances the architectural authenticity of the buildings with current building requirements. In the case of the studied apartments, as originality and architectural merits were mostly found in the original form and facades, every effort should be made to preserve the morphology and the facades of the buildings. The original external facades of the buildings should generally be left unaltered. However, especially with the discussed apartments, additions may not be considered due to many legal restrictions and complicated considerations.

The national building code would greatly affect the extent to which a heritage building could be preserved and used fully in present day. As long as technically feasible solutions are available at a reasonable cost, intervention proposals should aim to comply with the statutory building control requirement through suitable modification works subject to preservation of essential historic features. To comply with statutory building requirements, the planning and designing actors, including architects,

need to investigate means of escape, emergency vehicular access, insulation and energy efficiency, natural lighting and ventilation, barrier-free access, fire-resistant materials, floor loadings, building service, plumbing and sanitation, sewage, drainage systems, and waste disposal.

Many countries have turned to a performance-based building code for designated or graded historic buildings. Non-regulatory development plans are useful tools in governing built heritage and its context, as demonstrated by Australia, which identifies layers of different characteristics to anticipate future development, including elements such as building mass, streetscape, views, heights, use of materials and function, etc. [109].

Historic buildings that are not listed or fully protected in legislation may have a significant cultural value in identifying the role cities play in providing a sense of identity to the community. However, existing materials, building structures, and envelope design may limit the choice of interventions that can be applied, while restraints in thermal-performance upgrades can limit their cost-effectiveness. Compared with newer buildings, these interventions can be more demanding in terms of maintenance and more challenging in energy-saving during the operational stage. Preservation of historic buildings poses a risk, not only from natural weathering of materials but also from the convenience of rebuilding instead of restoring or developing renovation methods tailored to modern buildings [112].

Decisions on conservation, restoration, and retrofitting historic buildings need to take into account not only the significant energy savings embodied by the building stock and energy performance targets achievable through refurbishment, but also a broader range of benefits that account for historic, artistic, cultural, and social values or the preservation of authenticity and use of materials compatible with the original structure [112].

To promote sustainability and regeneration, the findings of this study suggest that the encouragement of a young adult population is particularly appropriate because this sector of the population offers the most support to the economy. It is similarly the younger population that is most likely to walk to work in a city center [113].

5. Conclusions

Urban regeneration has become an essential matter of course in the city center. Historical buildings in Seoul's urban regeneration area can play a central role in providing sustainable development opportunities and achieving successful regeneration in Korea. In this study, we investigated four apartments in the Seoul Station area that are widely known as unlisted Seoul Future Heritage assets with historical and architectural values and are representative of the single-building apartment typology. Given the speed at which this type of building is disappearing in Seoul, particularly as a result of the district redevelopment, interest in the conservation and adaptive reuse of historical apartments has gained widespread public attention. The apartments are no longer viewed as obsolete structures incompatible with urban development. Instead, they are considered as functioning residential structures that can be upgraded or adaptively reused for socially disadvantaged people who can respect and obtain benefits from the distinctiveness of the old apartments.

Drawing on the results of a considerable literature review, this study has proposed an analysis framework by extracting six underlying factors (originality, architectural merit, use, social interest, group interest, and intervention) that can lead to the adaptive reuse of apartments and realize holistic sustainable development. The framework was applied to a review of the four apartments. In addition, impacts by actors and actions affecting six factors in each apartment were examined. Apartments with various and complicated ownership of land and building properties exhibit divergent issues and relationships among actors, requiring specific actions.

Economic compensation and benefits from redevelopment are sensitive and challenging matters when making decisions on adaptive reuse of apartment. City government-led or -forced apartment reuse projects encounter difficulties in providing compensation and evicting the tenants. A lack of interest in redevelopment due to newly enacted legislation or well-maintained buildings may contribute to autonomous efforts and participations in adaptive reuse projects, with effective implementation of

subsidies from the urban regeneration project. When an assessment finds a building has historical and architectural merit, government intervention will depend on whether the building is situated within an urban regeneration or redevelopment plan.

More importantly, this study highlights the importance of agreement on architectural, economic, social, symbolic, historical and cultural heritage values. Successful regeneration requires finding a viable use that can support adaptive reuse of such buildings, provide the owner and residents with a reasonable return on their investment and relocation, and ensure the long-term maintenance of the building and associated public functions.

Although the analysis framework presented in this research is not unique to the context of the Seoul Station area or the apartments, it was a useful tool to identify the six heritage values and four sustainability dimensions in the case studies. The framework analysis also informed the relationship between adaptive reuse factors and actors or actions of each apartment. The apartment cases could be divided into two categories according to top-down or bottom-up governance, with differences in driving forces of building uses, group interests and interventions.

This study expects to contribute for Seoul's urban regeneration and adaptive reuse of historical apartments and to Korea's ability to make well-balanced interventions in changing building uses through the cooperation of public and private actors and with public support and agreement.

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