Adaptive Reuse Planning of Industrial Heritage Complexes in Iran: Risbaf Industrial Complex Case Study

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ABSTRACT

Adaptive reuse is described as a process with a strategic approach to optimization of performance in existing buildings. Since the reusing of constructed buildings inefficient manner is aligned with the concept of sustainability, adaptive reuse becomes popular in modern literature with the goal of waste elimination.

Industrial buildings' conservation in Iran does not get enough attention in comparison with other historical monuments and there are no internationally registered industrial heritage sites in Iran. Thus, the need for appropriate planning for adaptive reuse of industrial heritage sites is detected by the researcher of this study in the case of Iran.

International policies, charters, and guidelines are reviewed in order to extract main elements of adaptive reuse planning for industrial heritage complexes. Authenticity (preservation of originality in industrial heritage), interpretation (heritage awareness practices), economy (contribution of adaptive reuse project to economy of the nation), regulation (alignment with rules and regulations controlling the operation of adaptive reuse) have been detected as main elements of planning. As the main elements of adaptive reuse of industrial heritage are highly interconnected, there is a need to integrate these elements in order to facilitate the planning for conducting the adaptive reuse project.

Thus, this study aims to provide using a "*strategic*, *holistic* and *integrated* planning approach for adaptive reuse of industrial heritage sites in Iran through the selected case: Risbaf industrial complex. For this aim, inductive research has conducted

through reviewing literature related to adaptive reuse planning along with managerial concepts for strategic planning.

Keywords: Adaptive reuse planning, industrial heritage, strategic planning, authenticity, Risbaf Industrial Complex.

ÖZ

Her bölgede yer alan kültürel miras ve anıtlar oranın tarih, kimlik, kültür ve mimarisini yansıtmaktadır. Tarihi binaların korunma ve amacından farklı bir amaçla kullanılması kapsamında, bu yönlerin korunması ve halkın isteklerine karşılık verilmesi için bu süreçte yer alması gereken bazı temel faktörler bulunmaktadır. Tarihi endüstriyel alanlara karşı duyulan ilginin az olmasına rağmen, bu binalar her bölgenin kültürel mirasında fazlasıyla yer almaktadır. Bu binaların çok sayıda bulunması, büyük ölçekli olmalarından dolayı kentsel doku üzerinde bozulmaya neden olabilmektedir. Bu nedenle uluslararası politika, bildirge ve ilkelere dayanarak eski binaların inşa edilme amaçlarından farklı amaçlar için kullanılması kapsamındaki bazı temel elemanlar yerin otantikliğini koruma, ekonomik yönler, yorumlama ve yasal hususlar olarak adlandırılabilir.

İran'ın tarihi ve endüstriyel bölgesinin kalbinde buluna Risbaf tarihi endüstriyel kompleksi, inşa edilme amacından farklı amaçlar için kullanılma ve korunmaya yönelik uygun bir model geliştirmek için seçilmiştir. İlk olarak, korumanın dört temel elemanına dayanarak başarı derecesini ölçmek adına İran ve dünyada inşa edilme amacından farklı amaçlar için kullanılan binalara ilişkin bazı başarılı örnek çalışmalar seçilmiştir. Daha sonra literatür, anıtların korunmasına ilişkin uluslararası ilkeler, örnek çalışma sonuçları ve mevcut durum analizinden elde edilen sonuçlar göz önünde bulundurularak Risbaf endüstriyel kompleksi için yeni bir uyumlu fonksiyon tanımlanmıştır. Sonuç kısmında ise İran'ın tarihi kentsel dokuya sahip Isfahan şehrinde ve yine Isfahan'da yer alan en meşhur turizm noktası ve kültür merkezi olan

Risbaf fabrikasının inşa edilme amacından farklı amaçlar için kullanılması önerilmiştir.

Anahtar kelimeler: Endüstriyel binalar, İnşa edilme amacından farklı amaçlar için kullanım, Kültürel miras.

I dedicate this thesis to
My beloved parents

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INTRODUCTION

1.1 Research Background

Adaptive reuse is described as a process with strategic approach to optimization of performance in existing buildings (Bullen and Love, 2011). Since the reusing of constructed buildings inefficient manner is aligned with the concept of sustainability, adaptive reuse becomes popular in modern literature with the goal of waste elimination (Sanchez and Hass, 2018). Adaptive reuse is beneficial for urban regeneration since through this process all the detected flaws in built assets can be corrected and also new functions can be added to these assets according to respective region's demands (Caves, 2004). Before starting the process of adaptive reuse, the planners should be assured of the alignment of finished projects with the need of the respective market, otherwise, the reuse process will be far from sustainability (Reiner, 1979). Adaptive reuse in the case of heritage buildings has another agenda regarding the preservation of historical and socio-cultural values of the heritage buildings (Mısırlısoy & Günçe, 2016).

Generally, the adaptive reuse of historic buildings is not a new subject. It has been done for centuries, even though, in giving the new function to the historical buildings, the theoretical and practical factors of conservation had not been considered. Their aim was just to keep their structure safe. For example, the functions of the historical buildings in France throughout the revolution, or in the renaissance period were

changed based on the needs of the society, without considering the preservation of them (Cunnington, 1988).

By the assessment of reused projects from the past, it can be understood that their main aim of reusing the historical buildings was only limited to the financial and functional reasons (Powell, 1999).

On the other hand, based on the theory and practice of conservation, adaptive reuse had been mentioned as the major element in the conservation of historic buildings and adaptive reuse has become a much more sophisticated approach for cultural heritage sites (Machado, 1976).

The international charters and policies provided for cultural heritage conservation contexts such as the Athen charter have suggested that the restoration of historical places should be done by considering the significance of the artistic and historic value of them (International Museum Office, 1931). According to the Venice Charter, conservation of cultural heritage should include reusing it for the socially convenient aims. Moreover, reusing historical monuments should be done by considering the community requirements and the culture of the area (Venice charter, 1964).

In this way, reusing is considered as an intervention, which includes the future life image of the historical monuments, as well as, small-scaled modifications that preserve authenticity. In other words, interventions and alterations for reuse should be decreased as much as possible (CHOAY, 2015). The adaptive reuse of the historical monuments should be done so that identity, culture, history of the community, the recollection of the city and residents are well-preserved. The conservation and reusing

practices for monuments should keep the cultural impacts of monuments in the means of transferring this “object of memory” to future for following generations (Hocine and Chemrouk, 2015).

Moreover, in the urban regeneration process, planners should focus more on the historical industrial areas such as factories, manufacturing places, and related structures because of their countless numbers in cities. Unfortunately, throughout time, these sites are abandoned and destroyed (Rogic, 2009). According to Clark (2013), the reuse of these sites plays a major role in the revitalization of urban fabric and social sustainability.

1.2 Problem Statement

According to charters related to industrial buildings, conservation ethics, adaptive reuse criteria, and inputs, industrial heritage buildings must be preserved to demonstrate the culture, history, and presence of the residents. There are so many various methods to preserve industrial heritage sites currently but often these methods are not completely appropriate. In this way, the main issue is the unfitting reusing of industrial buildings, which can terminate the monuments, their surroundings and the cultural significance of place. Unsuitable functions, wrong conservation methods, unnecessary/harmful interventions are the factors that cause degradation of industrial heritage sites.

Thus, there is a need for comprehensive adaptive reuse planning of historical buildings considering all charts, policies and regional conditions. Therefore, for making an improvement in the assessment of these issues, this thesis has focused on adaptive reuse and conservation of the industrial buildings specifically because the historical

industrial sites are significant elements of the culture and history of each region. If historical industrial buildings stay abandoned, they may put their environment and the neighborhood to a depressing situation. In addition, the unreachable large-scale sites, cause a disconnection on the urban fabric and transportation (Clark, 2013).

Due to the fact that industrial buildings' conservation in Iran does not get enough attention in comparison with other historical monuments, there is a need for more research studies on the conservation and reuse of industrial heritage sites in Iran. Iran's government and ICOMOS are not properly connected regarding the mutual effort for industrial heritage conservation actions, since there is no internationally registered industrial heritage in Iran ("ICOMOS to Assess Iran", 2019). Thus, the need for appropriate planning for adaptive reuse of industrial heritage is detected by the researcher of this study as a way to encourage all the Iranian related stakeholders to prepare the fields of growth for industrial heritage assets located in Iran to be globally recognized and registered.

1.3 Research Questions

In order to develop an adaptive reuse project, it is necessary to understand the main factors affecting the context. The involved stakeholders interact with the project and their degree of alignment in sense of their needs affect the success of adaptive reuse process. Every planning should have a strategy in order to be sufficiently integrated to fulfill the needs of all stakeholders (Hitt et al., 2007). The organization responsible for conducting adaptive reuse project consisting of investors and producers should have a strategic and integrated organizational approach to guarantee the success of the project. The adaptive reuse process of heritage assets is truly crucial since it has to deal with the heritage and history of a nation or even a bigger scale involving the people of the

world. The degree of responsibility towards other stakeholders is extremely high in the case of adaptive reuse of heritage assets. Thus, questions emerged regarding how to plan for these types of projects to be proper enough in order to be successful in terms of conservation of heritage assets for future generations, while benefiting involved stakeholders in the present time are as followed:

1. What are the main elements of adaptive reuse planning for industrial heritage complexes in Iran?

2. How to create balance among these elements and all involved stakeholders' needs?

1.4 Research Objectives

The aim of this study is to investigate the emerged questions derived from the mentioned problem of this study. In order to find answers to these research questions, the following objectives are assigned:

1. Reviewing the literature regarding adaptive reuse of industrial heritage assets and respective international charters, policies, and guidelines;

2. Extraction of the main criteria of adaptive reuse planning for industrial heritage complexes from reviewed literature;

3. Analyzing the adaptive reused industrial complexes from the world and Iran based on the extracted main criteria;

4. Reviewing the history, architectural features, problems and current situations of the Risbaf;

5. Proposing an adaptive reuse plan for Risbaf industrial complex considering the integration of extracted main elements along with the benefits of involved stakeholders through necessary managerial concepts for planning.

1.5 Research Methodology

In order to achieve the aims and objectives that are explained above, a qualitative research method based on the case study has been chosen. The data has been collected through literature research related to adaptive reuse and conservation of historical industrial buildings and international charters and policies. After the review of the documents on adaptive reused historical industrial complexes from both world and Iran based on administration recommendations followed. The Risbaf factory in Isfahan has been selected for the case study to assess the current situation and recommendations to adaptive reuse based on public needs. Documentation of Risbaf Factory in Isfahan, Iran has been done by assessment of its history, problems, architectural features, and current situation. Finally suggesting a new function for the reuse of the Risbaf factory to achieve the main aim involving social needs and preservation of cultural significance and authenticity with the least interventions and changes on the site. Decision making and planning process for any project (e.g. adaptive reuse in this study) is part of the planning and design strategy tasks, which are accounted as managerial tasks (Robbins and Coulter, 2017). Thus, this study employs managerial concepts for creating integration among the criteria of decision making in adaptive reuse process.

1.6 Limitations

This study is conducted with limited time and financial sources, thus reviewing case studies have been conducted through the collection of secondary data. However, due to the nature of topic that is general review of the planning and managing the adaptive reuse of industrial heritage complexes, the need for close observation of case studies is not detected. In addition, the researcher was able to collect all the necessary data to

conduct this research through secondary data collection including data for Risbaf industrial complex.

This research is narrowed to assessing the preservation of the successful samples, which are counted as respected historical industrial buildings, though there are so many other kinds of historical buildings. The samples are chosen based on definite conservation and adaptive reuse method, which meets the goal of this study by keeping authenticity and cultural significance of historical industrial places that are described in detail.

Chapter 2

ADAPTIVE REUSE OF INDUSTRIAL BUILDINGS

2.1 History of Adaptive Reuse in Industrial Buildings

The process of changing current buildings for new functions and using them for different purposes is not a new phenomenon and has been well recognized in the history of architecture. Previously, based on contemporary demands, buildings with secure structures have been modified properly without any loss or difficulties. For instance, throughout the Renaissance era, the ancient buildings were altered for new uses relating to the changing culture. During the French Revolution, religious buildings were transformed for industrial or military demands (Linters, 2006) (Cunnington, 1988). Yet, regrettably, in some cases, the interventions have been done in a manner that takes account of financial and functional concerns as the primary priorities (Pérez de Arce, 1978) (Powell, 1999). Consequently, a lack of interest in appropriate conservation of cultural heritage buildings has occurred.

In the 19th century, the theoretic approaches about the conservation of historic buildings were developed for the first time (Plevoets & Van Cleempoel, 2011). Eugène Emmanuel Viollet-le-Duc (1814–1879), was the one who proposed that adaptive reuse could be an appropriate approach for preserving old monuments. He argued his theory by stating that for best conservation of historical places is to define a new compatible function based on the public demand with the least intervention and alternation (Viollet-le-Duc, 1990).

In spite of all this, John Ruskin (1819–1900) and his follower William Morris (1834–1896) criticized his hypothesis and stated the worthlessness of his concept by using death as an analogy and said: “impossible, as impossible as to raise the dead, to restore anything that has ever been great or beautiful in architecture”. Thus, Ruskin was recognized for defending the preservation of historic buildings, by stating that giving well-organized attention and maintenance was a better solution than changing them altogether (Ruskin, 1849).

Following the conflict between different ideas about adaptive reuse in the first decades of the 20th century, Riegl (1928) discussed this issue. He suggested that the disagreements on safe preservation are rooted in different values of the defender of the ideas and their attachments to the characteristics of the monuments. Accordingly, Riegl separated values into different types and he grouped them as memorial values which would consist of “age-value, historical value and intentional commemorative value” contrasted with existing values involving “use-value, art-value and newness-value” (Riegl, 1928). By including the use-value in his valuation of monuments, Riegl indicated that the reuse of historic buildings is a fundamental part of modern conservation.

2.2.1 History of Industrial Buildings’ Adaptive Reuse

Richard Butt has put forward new discussions about the industrial buildings in the Conference of Ministers in 1985. One point was made about the need for identification of the cultural reputation of certain industrial buildings, which represents historic and architectural values. In following, he compared the situation of different old buildings such as churches which gives a visual emphasis and sense of identity for the people even who do not worship in it, and the industrial buildings which make equal inspiration but do not receive that much appreciation and respect. He stated that they

are under the risk of degradation through the constant alterations of traditional industries. He also discussed that the 19th-century buildings have received more respect but the industrial buildings did not get the same appreciation as expressed in phrases such as “dark satanic mills”. Until the 1980s the destruction of the industrial town was the easiest way for providing a healthier environment away for the residents (Butt, 1989).

The early industrial buildings have been going through a process of degradation for decades. This process has been going on in many developed countries regardless of their respect for tradition and heritage. As countries like France, Germany, United Kingdom, and The United States, shifted from an “industrial society” to a “post-industrial society”. They had vast amount of historic industrial buildings, which were abandoned, due to the diminishing of their functions (Tuturturiello & Bianchi, 2015/2016).

It is widely believed that industrial developments are the foundation of financial evolution that results in the expansion of industrial technology. Having an independent institution understanding the structure of industrial plan is a requirement for the development of human society. But this determination was dazed by the first oil crisis in 1973. From the 1990s, the world has gone into a new period strongly influenced by information, transnational exchange and the extensive growth of the international economy. In the meantime, sustainable development has gradually become a basic consensus due to the continued deterioration of the global environment. Usually, yielding to the present tendency of development, the world at the beginning of the 21st century is as said, “approaching the information era from the industrial era, advancing

from the industrial society to post-industrial society and marching from urbanization to an urban century" (Jianguo & Nan, 2007).

Some of the Industrial sites built through the nineteenth century at the industrial expansions around Europe were abandoned due to the fluctuations in economic trends, especially in areas close to downtowns. A great number of over-structured industrial constructions still remain unusable in the majority of historic districts. Dependably reusing these properties as tools for financial progress will accompany urban societies in coming eras, as economies and urban resident's change, especially in creating jobs remaining to be a universal crisis (COLLIER, 2012).

However, these obsolete areas provide opportunities for urban regeneration within city spaces. Also, in the revitalization process of these areas, industrial complexes and other structures, related to the manufacture in countless numbers, have been commonly destroyed during the reuse process (Rogic, 2009).

In recent decades, the necessity of considering industrial sites as heritage sites have sometimes been noticed by local authorities due to social concern. Especially, to avoid expected economic, urban and social problems threatening the society as a consequence of abandoned industrial heritage buildings. The industrial-historical complexes that contain abandoned buildings, sites, boundaries and structures, influence the general character of their environment. On a larger scale, it would negatively affect cities through social and economic problems that they create (Métropole & Arnaud, 2004).

Public engagement can have a major effect on reusing industrial buildings, especially in the urban context. Historical industrial buildings have a major influence on “urban regeneration, reinforcing urban character and identity, providing tourism draw cards, increasing amenity and acting as the focus of economic development.” In this way, the adaptive reuse of industrial sites should keep the urban environment. Even though the industrial sites with any scales, has impact on preservation of the site’s identity. Therefore, it needs to have strong data during the adaptive reuse process for suitable renovation (Clark, 2013).

Throughout the improvements in industrial sites, protecting the integrity and authenticity of the complex should be considered carefully. We must honor the legacies and evidence of human creativity and expression in the past and combine them with upgrading projects. Process of memory and oblivion that characterizes the society and its story. In this way, preserving could give a new life to the heritage sites and survive them. (Tuturturiello & Bianchi, 2015/2016).

Over the past two centuries, the method of creating and distributing industrial products have been transformed completely. Surely, the systems of processes for production and stocking the goods have changed as well. These changing phases played a role in the advantage of reuse of historic industrial buildings. Although, other than being over-structured, these historical industrial buildings are usually too large for current necessities and have been reserved for their further pursuits (COLLIER, 2012).

After World War II, architects created extensive building sites, in opposition to the goal of conservation of traditional buildings. Nevertheless, as a result of the increase in demolishes and appearance of new buildings, awareness has developed ever since

(Cantacuzino, 1975). Throughout the second part of the 20th century, architects like Carlo Scarpa, Raphaël Moneo, and Herzog & Demeuron began to consider historical buildings as a motivational challenge and made it an important feature of their work. (Plevoets & Van Cleempoel, 2011) Moreover, in the last decades of the 20th century (1975), the adaptive reuse in academic literature has been significantly present in various conferences on architecture and conservation. (Cantacuzino, 1975) In the last century, ascribable to the global changes in the industry, approaches in industrial processes have been changing everywhere, evidently dominating the previous methods in various regions (Francesca Cantell, 2005).

For instance, from 1880 to 1920, the textile industry was transferred to the southeast of United States from New England, and this quick transition continued by southern dominance for almost a century. However, due to the low-cost workers and globalization in other areas of the world, textile industry and other industries have plunged in the United States (Bergsman, 2003). Later, these movements caused numerous factories and companies to shut down and transfer their manufacture to developing countries like Asian countries and Mexico in order to increase their profits (Bergsman, 2003). As a result of relocation of manufactures, landscapes have been occupied with empty and obsolete mills and factories, which were built in the last years of the 19th century and early twentieth century, and usually have architectural authenticity and poor structures (Francesca Cantell, 2005).

Furthermore, considering the changes in industrial technology, the scheme of transportation, lifecycle, and labor, many structures in certain areas in cities will become entirely obsolete and old-fashioned in occupation. For almost half a century, the adaptive-reuse of historical industrial buildings has gotten more and more attention

in developed countries. Therefore, these deserted industrial buildings have not only become valuable historically of which their worth should be considered, but also have gained notable representative value for adaptive reuse. The “conservation and adaptive-reuse” of these buildings provides “cultural, economic and ecological values” to them. (Jianguo & Junqian, 2001).

In the last decades, renewing old urban industrial areas and buildings has become a concern at the edge of the current urban development in the United States. These industrial sites are called “brownfields”, opposite to “greenfields”, since there can be actual chemical decays that need to be repaired before converting them into commercial or residential sites. Cantell states that “A successful adaptive reuse project can bring redevelopment, heritage tourism, and new life into a Community” (Francesca Cantell, 2005).

In Canada, during the mid-twentieth century, following the rising number of cars, major highways were constructed to provide traditional transportation systems, allowing people to live and work in the countryside other than cities. This later had an effect on Industries after employees would transfer their facilities to the suburbs where there were plenty of cheap lands ready for expansion and further extension. (Wilson, 2010).

2.2 International Charters, Policies and Guidelines on Adaptive Reuse in Industrial Buildings

The conservationists’ primary ideas had been changed from what is recognized as a monument through the addition of two key elements which can be understood in the charters of the late 1970s and 1980. One concept is the historic site, which was

considered as a new entity in the field of conservation, beyond a single building. The other one was to consider the common buildings such as vernacular buildings, besides the public monuments, as cultural heritage. Also, in the point of view of conservationists', these shifting ideas on the historic built environment, increased the focus on the historic industrial buildings and sites (Rogic, 2009). The historic monuments contain all urban and rural background, which presents an important development or an ancient event, besides the architectural buildings. Also, all great artworks and even the infamous old artworks, which are accepted to have cultural significance by time, are recognized as historic monuments (ICOMOS, 1996).

Industrial heritage contains not only the remains of the Industrial Revolution but also the traditional pioneers from the past that improved industrial processes, strengthened creative capability, supply and consumption through local marketplaces. It also embraces the communal and spatial archaeology of employees' and holders' houses, payments, colleges, and cathedrals. Industrial heritage conservation theories contain the arrangement, policies, and restoration required to achieve these remains in the period of deindustrialization (Hughes, 2009).

The important challenge is to achieve the balance between the alteration, adaption, and restoration to satisfy the investors and conserving the authentic features of the site. So these five main elements can be considered in the adaptive reuse works for reaching to the desired balance (Loures & Panagopoulos, 2007):

1. Considering the function for the redesigning;
2. Completely adapting to the new function and sustaining its new use for a long time;
3. Responding to the surrounding environment and improving their setting;

4. Visually adapting to the surroundings and providing ‘delight’ for both people who use it and the people who pass by;

5. Considering the sustainability, energy efficiency and accessibility.

2.2.1 Initiation of Council of Europe

In documents related to the Council of Europe, the industrial heritage has been mentioned as a potential source for the culture and society. In the years 1981 to 1986, the second Medium Term Plan which was counted as one of the purposes of the diplomatic work agenda of the Council of Europe was dedicated to the preservation and improvement of industrial heritage. This plan contains two studies which started in 1983, recommendations No. R (87) 24 and No. R (90) 20. The first report devoted to the northern part of Europe which published in 1985 with the purpose of picturing a framework on the industrial heritage context in Europe for future proposals (Council of Europe, 1985). This report examined the concept of “industrial archeology” which is referred to do researches and also preservation and adaptive reuse of the industrial building for new function. The differences between the archeological and architectural concepts of the industrial buildings were mentioned in the second Conference of Ministers, in the Convention for the Protection of the Architectural Heritage of Europe (Council of Europe, 1985).

In recommendation No. R (87) 24 on *European industrial towns*, it is emphasized that industrial towns can be counted as an opportunity for economic growth. All the European countries asked the establishments to renew their historic industrial buildings to make new motives for the people to live and work in their own town. It was suggested to preserve the historical and architectural industrial towns for reuse and improvement (Council of Europe, 1987). Additionally, some policy guidelines had been offered new types of cooperation between private and public sectors for the

revitalization of the existing industrial buildings. The Council of Europe organized an international conference in 1988 in the industrial town of Halifax in the United Kingdom with the name of 'Heritage and Successful Town Regeneration'. The conference discussions were about the industrial sites and buildings in Western Europe (Belgium, Germany, France, Norway, Italy, Spain, Portugal, Switzerland, and the United Kingdom) that have been done (Council of Europe , 1989).

Also, in the second report, recommendation No. R (90)20 in *'the protection and conservation of the industrial, technical and civil engineering heritage in Europe',* the methods that planned by the Council of Europe, containing the procedure for identification and technical assessment, improve people's awareness, put more effort for preparing the experts and develop the collaboration at the European level (Council of Europe, 1987).

In the document from the PACE (Parliamentary Assembly of the Council of Europe) in 2011 had been noted that there were some good works about industrial heritage conservation in Germany, Belgium, Austria, and Netherlands (Council of Europe, 2011). Also, there was a PACE report on the *Industrial Heritage in Europe* in 2013 (Council of Europe, 2013) that the industrial heritage importance had been officially accepted by the governments from the 1950s. In the UK, thousands of industrial sites had been protected, hundred sites conserved and were accessible for the people and a number of industrial buildings had been used for a new function.

In 2015 the PACE supported a promotion which was begun by the European Federation of Associations of Industrial and Technical Heritage (E-FAITH) for the

opening of the ‘European Industrial Heritage Year’ that had been supported by 19 different countries, more than 130 campaigns (Council of Europe, 2015).

2.2.2 TICCIH, ICOMOS & the World Heritage

The International Committee for the Conservation of the Industrial Heritage (TICCIH) purpose is to understand, maintain, conserve and clarify the remains of industrialization. TICCIH is recognized as the main advisor of the ICOMOS on industrial heritage context. This committee has 450 members in more than fifty countries around the world. More than 1000 members are counted as a part of the TICCIH network with the association of the national communities. For example, the Association for Industrial Archaeology (AIA) in Britain, the Society for Industrial Archaeology (SIA) in America, and the Industrial Heritage Committee of the Cultural Relics Academy of China (Martin, 2016).

TICCIH’s purposes are to grow the international association in the conservation, investment, research and increase the information in the context of industrial heritage. These purposes focus more on the industrial sites and buildings, their structure, equipment, goods, arrangements, landscapes, surrounding environment, the procedure, methods and skills for reuse and conservation.

TICCIH candidates help on Panels, assessment of proposals and suggest specialists for assessment tasks when the NGO had a great chance to affect the policies and guidelines through ICOMOS and also the World Heritage. At the UNESCO Canal Experts in Canada in 1994, the TICCIH was characterized to present the use of ‘Technical’ standards legally in the World Heritage. The first industrial heritage extension has been added by World Heritage Guidelines with one of the captions of Canal Historic Transportation Corridors. Its decisions were established in another conference at Wuxi

in China in 2011 which both TICCIH and ICOMOS had representation (ICOMOS, 2017).

On the 2003 TICCIH Congress in Russia, it has been declared that the structures that are built for the industrial purpose with their developments and used methods, sites and environment have their own significance in this context. So, they should be understood, their concept should be explained for people, their history should be shown and the special ones must be recognized and maintained to be a piece of evidence for their usage in this time and future (TICCIH, 2003).

The TICCIH's proposal to ICOMOS is summarized in four main items on 2008 which is explained:

1. Defining a framework with ICOMOS for the industrial context study, related to the acknowledged sectoral industrial arrangements and the subjects recognized in the Thematic Framework of the ICOMOS Report;
2. Identifying groups of experts able to continue the related studies and discussing financial possibilities;
3. Presenting reports containing a summary of the worldwide development on the related industry, throughout the historical age considered as industrialization, and describe issues that make a building or site significant among the other ones;
4. Presenting reports that create a list of examples on the significant buildings and sites which complete necessities of exceptional universal worth arranged by the World Heritage Committee (Terrassa, 2008).

Legal protection: Generally, the industrial heritage must count as an important part of the cultural heritage and its legal protection contains protecting plants, structures,

underground features, and the industrial site. The policies used in conservation programs of industrial heritage should include economic improvement in both national and regional scale. The originality of industrial sites must be completely protected, and any change cannot be permitted for keeping its historical significance. An appropriate way for keeping the industrial building safe is to make adaptive reuse and it should be controlled legally. Furthermore, there should be some experts to give opinions about the conservation under the supervision of the government.

Maintenance and conservation: in the context of conservation of the industrial buildings and sites, the preservation of the primary function and less innervation on the main site are vital features to keep the value of the industrial heritage. For the economic or social requirements on the destruction issues, the building can be dismantled or relocated. Also, in the case of giving a new function to the industrial building, it should be chosen with respect to the original design and materials and also compatible with the primary usage of the site. Moreover, the intervention should have the least effect on the site and building and necessary alternation must be recorded. In case of demolition of the site by violence, reconstruction is a suitable intervention for keeping the value and integrity of the whole site.

Presentation and interpretation: making the public interest on the industrial heritage conservation by publications, TV programs and making improvements on the accessibility of significance industrial sites in the tourism fields. This promotion can be more helpful in putting insurance in the conservation and preservation of the industrial heritage. The authorities may play a significant part in giving information about the value of industrial heritage to the public.

2.2.2.1 The Nizhny Tagil Charter

The Nizhny Tagil Charter was stated that the preservation of the industrial heritage is totally linked to the conservation of the original use, and the least intervention can be done in the case of conserving the industrial site. The worth and authenticity of an industrial building can be significantly decreased if the equipment got removed or less important features of the site which shape the whole industrial site got smashed (TICCIH, 2003).

Based on the Nizhny Tagil Charter for the Industrial Heritage of the International Committee for the Conservation of the Industrial Heritage (TICCIH) in 2003, the industrial sites contain the historical, social, architectural, technical and technological aspects of the culture and their value. Which can be seen in all parts of the building, its equipment, studios, factories, mining sites, storages, and the energy generator spaces, transportation routes, and areas. Also, the places linked to the people's life who work there like their houses, religion or schools (TICCIH, 2003).

Actually, not all the industrial buildings that did not conserved have the worth and cultural significance. Society, culture and the architecture of the buildings increase the value and significance of that industrial site which forms the identity of the communal. So, in the restoration and conservation process of these industrial towns, the memories and sense of belongings of their residents should be considered according to their identity.

2.2.3 The Burra Charter

The *Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter,* firstly assumed in 1979. *The last version of it* was adopted in 2013 Buildings and sites with cultural significance offering an inspiring sense of connection between

the society and the place, throughout the past and today's life. The Burra charter supports the idea of change in the case of keeping the site and building safe and also functional by less intervention to maintain its cultural significance. In the case of conservation, minimal deconstruction of an important part of the historical place is allowed by certain circumstances. Revision and adaption are allowed when there are least effects on the cultural significance of the site by minimal alternation on the vital parts of the place and its material. New additional can be possible if its material, form, shape, scale texture and character are similar to the original fabric of the place without no imitation. The conservation process should be implemented by deep studying and understanding the building which contains the physical analysis, collecting documents and drawings and sketches. Policies for certain places should be stated and used by the management plan with regular revision (Australia ICOMOS, 2013).

The guide for adaptive reuse of historic places is the principles of the Burra charter which includes conservation, restoration, preservation, adaption, and renovation. The cultural significance of place should be respected and the least alternation should be considered for this aim. Also, all three main features of sustainable development should be considered. The authenticity of the heritage must be revealed and new additions should be compatible with the original structure of the place. For allocating new function to the place, the society's need and interest should be reflected. A long-term plan for management and conservation is offered and when the opinions on planning are limited (Policy and Planning Section, 2012).

Clark (2013) summarized some regulations in the adaptive reuse of industrial buildings context from Burra charter which is planned by the city council. These items will be

helpful in offering appropriate and possible functions for the industrial sites. There is an offering model for industry studies which includes seven items:

1. Describing the industry definition;

2. Describing possible types of World Heritage buildings and sites;

3. Giving an introduction about the general background of historical place;

4. Defining the practical features and their development;

5. Assessing the principles;

6. Defining principles of the cultural significance of place;

7. Applying the principles to the main historical sites and buildings.

2.3 Main Elements of Planning for Adaptive Reuse of Industrial Heritage

Through reviewing mentioned international policies and charters, four main criteria of planning for industrial heritage assets are detected: *Authenticity*, *Economy*, *Interpretation,* and *Regulation.* Tables 1, 2 and 3 show how these criteria are related to their respective international policies and charters.

Table 1. Policy discussions in the Council of Europe (Author)

	Initiation of Council of Europe
Authenticity	The need for identifying the cultural reputation of certain buildings which shows their historic and architectural worth. Containing procedure for identification, technical assessment.
Economy	To preserve the historical and architectural industrial towns for reuse and improvement for their own residents for economic growth. Cooperation between private and public sectors in order to the revitalization of the remaining industrial buildings.
Interpretation	Making an improvement in the awareness of people puts more effort into preparing the experts and develop collaboration and involvement.
Regulation	PACE report on the Industrial Heritage in Europe in 2013 (Council of Europe, 2013)

Table 2. Policy discussions on the TICCIH (Author)

	TICCIH	
	Nizhny Tagil Charter	**ICOMOS**
Authenticity	- Conservation of the original use, and the least intervention. - The authenticity can be decreased if the equipment becomes removed or features of the site which shape the whole industrial site got smashed. Society, culture and the architecture of the buildings increase the value of the site which forms the identity of the communal.	Focus on the industrial sites, their structure, methods, and skills for reuse and conservation. The originality of industrial sites must be protected without any change. Preservation of the primary function and less innervation on the main site. The new function should be chosen with respect to the original design and materials. - In case of demolition of the site by violence, reconstruction is a suitable intervention.
Economy	ـــــ	- The policies used in conservation programs should include economic improvement on both the national and regional scale. - For the economic or social requirements on the destruction issues, the building can be dismantled or relocated.
Interpretation	The industrial buildings need information, real understanding, and perfect decision making.	-TICCIH's purposes are to grow the international association in the conservation, investment, research and increase the information. -Their concept should be explained for people, their history should be recognized and maintained to be a piece of evidence in this time and future. -Making public interest in industrial heritage conservation. -Making improvements on the accessibility of significance industrial sites in the tourism fields.
Regulation	ـــــ	-TICCIH was characterized to present the use of 'Technical' standards legally in the World Heritage. -Protecting plants, structures, underground features, and the industrial site. -An appropriate way for keeping the industrial building safe is to make adaptive reuse and it should be controlled legally.

Table 3. The policy discussion on the Burra Charter (Author)

	The Burra Charter
Authenticity	Defining principles of the cultural significance of place; Applying the principles to the main historical sites and buildings The authenticity of the heritage must be revealed and new additions should be compatible with the original structure of the place. For allocating new function to the place, the society's need and interest should be reflected.
Economy	
Interpretation	The conservation process should be implemented by deep studying and understanding the building which contains the physical analysis, collecting documents and drawings and sketches.
Regulation	Policies for certain places should be stated and used by the management plan with regular revision.

Based on the analysis of the tables 1, 2, 3, Sub-criteria of “authenticity”, “Economy”, “Interpretation”, “Regulation” is defined. Sub-criteria development is conducted in order to describe the elements in a more comprehensive manner. The developed sub-criteria are as follows:

Authenticity

✓ Containing procedure to the identification and technical assessment, which is focusing on the industrial sites and buildings;

✓ Choosing a new function by considering the original design and materials ;

✓ Choosing a new function that is compatible with the primary usage of the site;

✓ Protecting the originality of industrial sites without any changes;

✓ Intervening to the site and buildings with the least effect and keeping the value and integrity of the whole site;

✓ Defining principles of the cultural significance of place;

✓ Allocating a new function based on the societies' needs interests.

Economy

✓ Attention to industrial towns as an opportunity for economic growth by reuse and preserve them;

✓ Policymaking for cooperation between private and public sectors in direction of the revitalization of the remaining industrial buildings;

✓ Policymaking for economic improvement in both national and regional scale, in a process of conservation.

Interpretation

✓ An effort for preparing the experts and develop the collaboration;

✓ Grow the international association in the conservation, investment, research;

✓ Increase the information in the context of industrial heritage;

- ✓ Explain the importance and concept of building and sites for the people;
- ✓ Making the public interested in industrial heritage conservation;
- ✓ The important role of authority to inform public, real understanding, and perfect decision making.

Regulation

- ✓ Officially acceptation of industrial heritage importance by the governments;
- ✓ The use of 'Technical' standards legally in the World Heritage;
- ✓ Counting the industrial buildings as an important part of the cultural heritage;
- ✓ Industrial heritage legal protection containing protecting plants, structures, underground features, and the industrial site;
- ✓ Controlling adaptive reuse of industrial buildings legally.

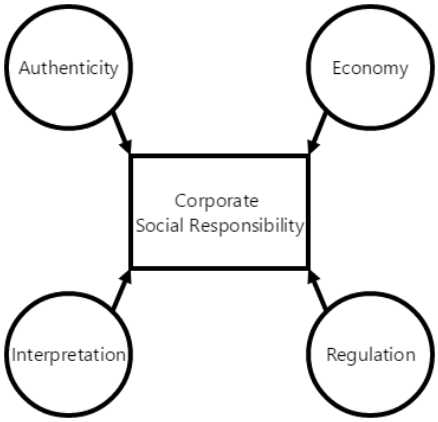

Figure 1. Integrated Adaptive Reuse Planning for Industrial Heritage Model (Author)

2.4 Adaptive Reuse Planning Method for Industrial Heritage

The sub criteria of each main element of adaptive reuse planning for industrial heritage are interconnected. For example, conducting the least possible conservation actions and interventions is a sub criteria for preserving the authenticity of the heritage asset, but it also contributes to the economy through the elimination of excessive

consumption and waste. This means that in order to optimize planning success, integrity is an essential factor (Rotmans et al., 2000). Thus, this study suggests using a "*strategic, holistic* and *integrated* planning approach for adaptive reuse of heritage assets. The proposed management and planning approach is presented below.

Every planning should have the strategy in order to be sufficiently integrated to fulfill the needs of all stakeholders (Hitt et al., 2007). Decision making and planning process for any project (e.g. adaptive reuse in this study) is part of the planning and design strategy tasks, which are accounted as managerial tasks (Robbins and Coulter, 2017). Thus, this study employs managerial concepts for creating integration among the criteria of decision making in adaptive reuse process.

In order to create integration among main criteria of adaptive reuse planning for industrial heritage to facilitate the process of Risbaf project management, this study proposes the use of a holistic management approach.

However, no plan without strategy cannot be efficient and may face future corrections (Hitt et al., 2007). In case of planning for heritage assets, plans should be strategic in order to decrease the redos (interventions) for protecting the historical and cultural value of the heritage. Adaptive reuse of heritage assets is a complex task since it includes a variety of crucial considerations regarding heritage protection, market feasibility and interests of all stakeholders (Bullen and love, 2011).

A proper adaptive reuse should be executed through a management plan including extensive historical and operational evaluations (Yildirim, 2012). A strategic plan for

adaptive reuse enables the actors to know how to create a new function for the assets to be beneficial for the society and economy (Kincaid, 2002).

Abandoned industrial buildings can be reused in a way to contribute to waste elimination (waste of material and space) and sustainability. According to DEH (2004), the outstanding adaptive reuse project is the one with modern refurbishment for new function, while preserving the heritage for future generations. Thus, it can be concluded that the strategy for adaptive reuse of heritage assets is to generate new financially feasible function for the assets with least possible interventions. Strategic planning can prevent excessive interventions through proper analyses for new function specification before executing conservation actions (Mısırlısoy & Günçe, 2016).

This study has employed strategies suggested by Mısırlısoy & Günçe (2016) regarding planning for adaptive reuse of abandoned or disused heritage buildings in order to strategize the integrated model of adaptive reuse planning for industrial heritage presented in previous section.

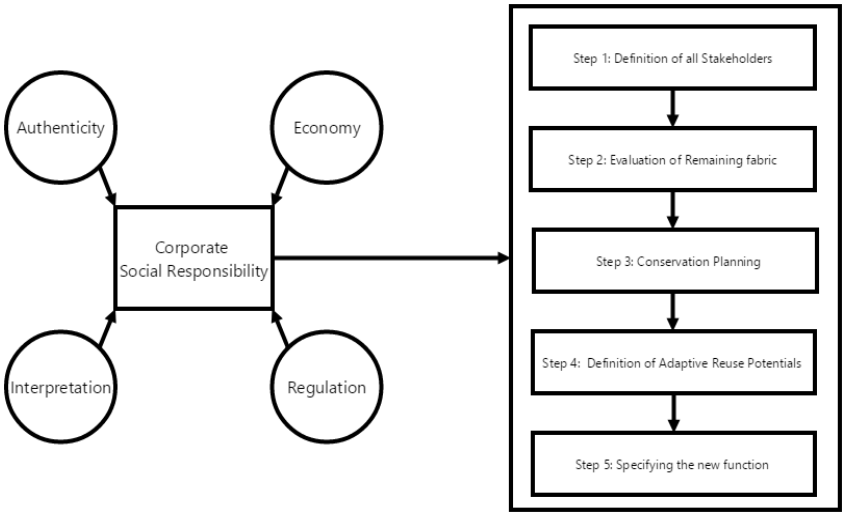

Figure 2. Strategic Model of Adaptive Reuse Planning of Industrial Heritage (Author)

There many factors that affect adaptive reuse decision-making and for a successful adaptive reuse project, they must be taken into consideration in a comprehensive manner. The indicated aspects are the factors that affect adaptive reuse process.

First of all, actors in decision-making must be defined. Actors can be defined as the stakeholders that have the role in adaptive reuse decision making. Actors can be categorized as: users, producers, investors and regulators, which will be explained in depth in the following section. In order to find the most appropriate function for the new use, the views of the actors in decision-making should be defined.

Secondly, analysis of the existing fabric should be done, which includes original function, physical characteristics, adaptive reuse potentials and needs of the district. The original function of the heritage buildings and the history behind it should be questioned in depth. Then, physical characteristics of the fabric should be investigated. Building should be interpreted for each heritage value one by one. Also the needs of the district should be investigated by supporting them with interviews and questionnaires. The decision of the new function according to the needs of the region is important in terms of the life of the adaptive reuse project.

Thirdly, conservation actions should be decided. These actions have been categorized under four categories. Phase I includes emergency measures of the building and there is no full restoration. Phase II comprises full restoration of the building including consolidation and completion of missing parts. Phase III includes proposals for new additions and remodeling of the building. And also there might be the possibility of combination of two or three phase together.

Fourthly, adaptive reuse potentials of the architectural for the new use should be evaluated. These potentials have been divided into 9 headings as physical, economic, functional, environmental, political, social and cultural.

Lastly, the functional changes of the building and the new use should be decided. Buildings should be interpreted for each factor one by one for defining the most appropriate strategy for a heritage building (Mısırlısoy & Günçe, 2016).

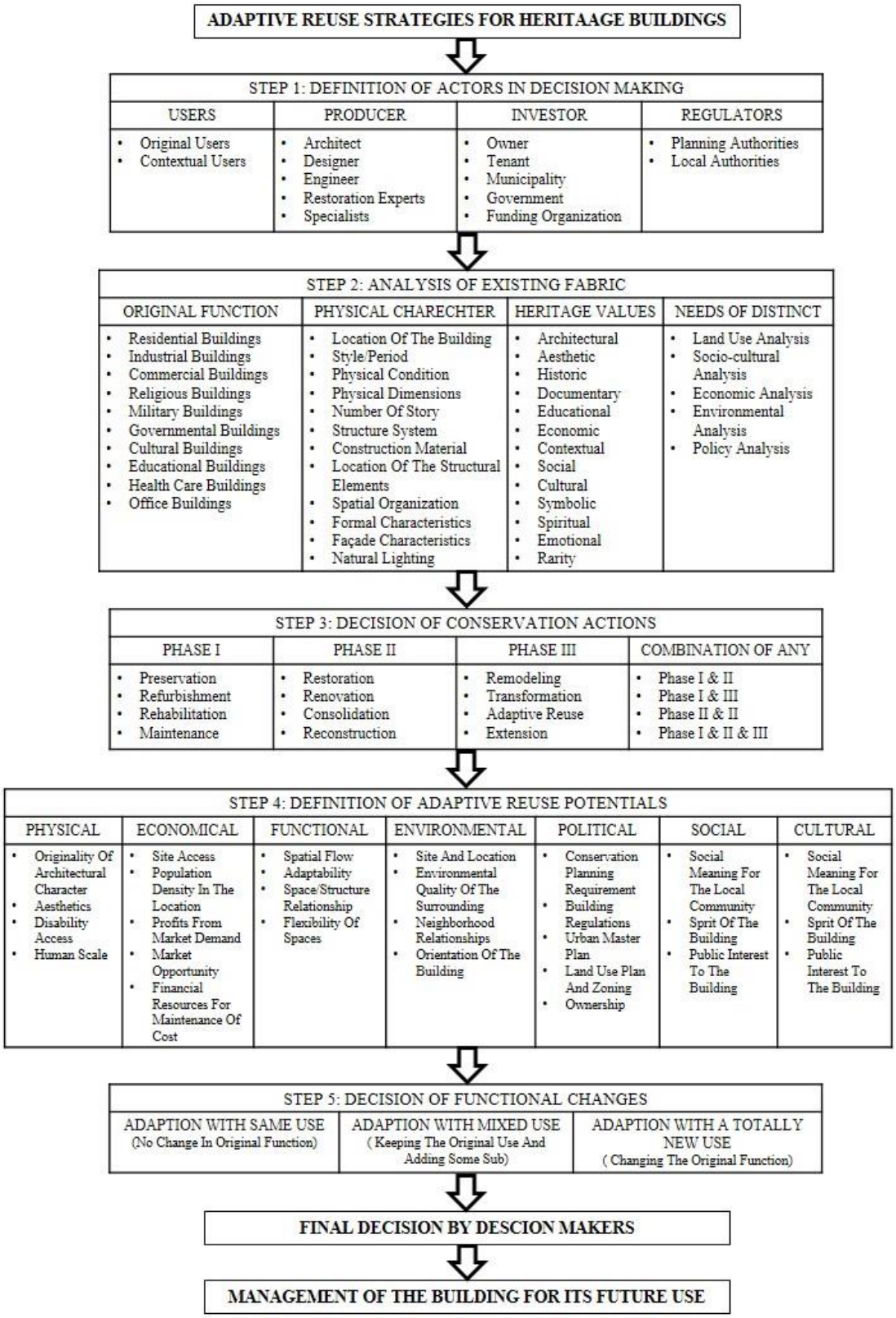

Figure 3. A model for developing adaptive reuse strategies for heritage buildings (Mısırlısoy & Günçe, 2016).

According to critical investigations, there is three kind of adaptive reuse project. For the first option is there is an abandoned or disused building and a new used is searched for it. In the second option, there is building and the existing function but some sub-functions are searched to support the existing function. For the last option, there is a function and an appropriate building is searched for this function. For this category, an appropriate building should be chosen first and then the model should be applied.

Then, it should be searched whether the building is listed or non-listed by the authorities. There will be no change for the application of the model for both but only difference is for the listed ones the regulations will be indicators of the decision-making. After all, each step should be applied one by one as explained below.

STEP 1- Definition of the actors: The first step is concerned with the actors in decision-making process. The actors can be defined as the stakeholders that will contribute in decision-making process and affect the decision for the new use. These actors have been grouped in four categories as: users, producers, investors and regulators. In decision-making process, the actors of the projects should be defined since they can change in every project. After the identification of the actors interviews should be done with them.

Investor can be a private owner, company, tenant or government, municipality and funding organizations. User can be grouped into two as original users and contextual users. The user contribution in decision making is very important, however it is mostly ignored in adaptive reuse projects. Originals users are the users of the initial function of the building. Although it is not possible to find them in older buildings, if they still exist their contribution should be provided. Contextual users are the current

stakeholders of the district and they are also the possible users of the building. Interviews and questionnaires should be done with users and their opinions and ideas about future use of the related building should be asked.

Producers are the actors in preparation and application of the conservation project. It can be changed from project to project and includes architect, designer, engineer, restoration expert and specialist. Mostly, investors hire the producers after decision of the new use; however their ideas should be asked since they are the experts of the issue.

Regulators include planning and local authorities. These authorities can be government, municipality or departments that deals with conservation of monuments. They are the authorities that decide the regulations on the conservation and restoration projects also give approval before the application and control the projects. The names and missions of these authorities can be change from country to country. The regulators contribution is important in decision-making process in order to prevent unnecessary interventions to heritage buildings.

When the actors of the decision-making process have been investigated for the selected reused examples in the last figure, it is seen that in all examples the users did not have contribution in decision-making process.

STEP 2- Analysis of existing fabric: The second step is analysis of existing building stock, which includes identification of original use of the architectural heritage, its physical characteristics, heritage value and needs of the district.

The identification of original use is important in terms of making an appropriate decision. The functional classification of the heritage buildings has been categorized in 11 headings as: residential, industrial, commercial, religious, military, agricultural, governmental, cultural, educational, health and office buildings.

Analysis of physical characteristics of architectural heritage is crucial in order to find the most appropriate new use for the heritage building. It includes location, physical dimension, structure system and location of structural elements, construction techniques and materials, number of story, style/period, physical condition, spatial organization, formal/ façade characteristics and natural lighting. All these factors should be analyzed in depth before decision of new use. Identification of heritage values is another important factor in decision-making, which directly affect decision of new function. Lastly, needs of the district should be defined in order to define the most appropriate function for the heritage building. The heritage buildings should not be accepted as a single object and it should be evaluated in framework of the whole district.

STEP 3- Deciding conservation actions: In the third step, necessary interventions that will be applied to the heritage buildings should be decided. This action has been defined as the third step since it should be decided just after the analysis of existing fabric since it is a factor that will affect decisions in further steps. The observation of the existing physical condition of the building will directly affect the decision of the new use. The heritage buildings can be a neglected and can be reused by just some maintenance and rehabilitation works, can be a partly demolished building that needs restoration and consolidation works or can be a ruined building that needs adaptations such as remodeling and addition. All these considerations will directly affect decision

of the new use so should be observed and necessary decision regarding with the intervention to the building should be taken from the beginning of the process.

STEP 4- Definition of adaptive reuse potentials: The fourth step is identification of adaptive reuse potentials of the heritage buildings. Adaptive reuse potential means to realize benefits when adaptive reuse is implemented. Realization of potentials of the building is important in terms of developing suitable strategies for the building for a sustainable adaptive reuse. These potentials can be defined as: physical, economic, functional, environmental, political, social and cultural potentials.

STEP 5- Decision of possible new function: After the evaluation of all steps in decision-making, decisions on the new use strategies should be done. There are 3 options in new use alternatives for an adaptive reuse project.

First option is to use the building with the original function with some necessary adaptation to fit the building for today's requirements. This approach is chosen when the all heritage values of the building are very important and changing the function may harm the originality of the heritage building.

The second approach is adaptation of the building with mixed use. In this approach, the original function of the building is kept as it is and it is supported by additional functions for the sustainability of the heritage building.

And the third approach is the adaptation of the building with totally new use. However, this strategy cannot be applied for all kind of heritage buildings since it depends the values of the heritage building. If the building is a listed building, certain authorities

will control its interventions. Especially, for the religious buildings, this strategy cannot be applied in certain occasions due to regulation barriers.

After the final decision of the new use, as the final step, a management plan should be prepared by the experts. In many adaptive reuse projects there are problems in management approaches to the heritage buildings. The preserved buildings should make their profits for the maintenance and rehabilitation works of the structures in the future. There is lack of existence of proper management plans and strategies for sustainable heritage adaptation. The main aim should be preserving the values and originality of the building and its context; however the economic sustainability of the building is important for the future of the built heritage.

Chapter 3

CASE STUDIES

For more clarification on the conservation and adaptive reuse, five different projects of industrial heritage conservation are selected worldwide and further explained. The Elsecar Collieries in Barnsley, the Bankside Power Station in London, Nedregate Culture District in Oslo, Bourg Les Valence Factory in the south of France and Steam Plant in Ohio are chosen as examples, because they are noticeable adaptive reuse projects on keeping the authenticity and originality of buildings, and also considering the other main elements such as economy and interpretation, while providing benefits for involved stakeholders. Moreover, these projects have some similarities with the main case study (Risabf factory) such as the time of establishment, original function, structure and material, their significant location in their region. In the end, these case studies have been discussed and tabulated regarding the main elements of adaptive reuse planning. Regulation criteria are not discussed since industrial complexes have been converted due to existing regulations in their respective districts.

The criteria for analyzing "already-reused" industrial heritage buildings have been extracted form literature (mainly international charters) and the mentioned cases have been analyzed through them. Regulation criteria could not be included in assessment, since the researcher could not reach the producers of the case studies to interview with them about their practices regarding regulation alignment. The mentioned fact is one of the limitation of the research. The researcher have employed secondary data for

conducting this research. However, analyzing "already-reused" case studies with 3 other criteria (Authenticity, interpretation and economy) reveals proper set of practices regarding adaptive reuse of industrial heritage complexes and inspires the researcher for devising adaptive reuse plan for Risbaf complex. Devising an adaptive reuse plan for Risbaf as abandoned site, needs a framework including extracted criteria but integrated through strategic managerial concept.

3.1 Elsecar Collieries in Barnsley (The Elsecar Heritage Center)

In South Yorkshire, England, there is a small Victorian village in six miles distance from Barnsley, which contains five major industrial buildings and sites. Elsecar village's historic base was chosen for conservation in 1974. Despite the fact that it is a small conservation zone, it covers a well-preserved and nationally important mining village. In the early 15th century, a small coal mining and iron making complex was established in the zone, but until the 18th century, Elsecar was not anything more than farms. Nevertheless, in the eighteenth century, Elsecar was converted into a successful and active village with a canal, a deep mine and two iron workshops at the center of a great Industrial Age (Hey, 1986). These industrial buildings consist of a workshop, Railway, Milton Hall, Newcomen Engine and Flour Mill which can be seen in figure 5.

Figure 4. The conservation area and the five main buildings

This industrial rural area was chosen by the later West Riding County for conservation. The Elsecar area can be a good example for the conservation of an industrial heritage asset, which the character and cultural significance of the original fabric has been respected (Barnsley Metropolitan Borough Council, 2017)

Background of the industrial buildings: The 4th Earl of Fitzwilliam has inherited the Wentworth Estate in 1782 and by the end of 1795 the Elsecar New Colliery was destroyed. The Elsecar Ironworks, where has been constructed by John and William Darwin & Co., were initially located near outcrops of ironstone and has been remained ruined until now (Elsecar Heritage Centre, 2016).

Elsecar New Colliery was on a deeper level, which was destroyed in the zone when a Newcomen Beam Engine was constructed to evacuate water from the mine. The Engine worked from 1795 to 1923 and then it was exchanged with electric pumps (Barnsley Metropolitan Borough Council, 2017).

The Elsecar Steam Railway is situated behind the Centre and was constructed to support the Earl Fitzwilliam's collieries and iron workshops (Benson & Neville, 1976). Two major ironworks had been closed in 1883. One is completely destroyed, and some parts of the other building have been changed to a new yard that is recognized as the Elsecar factory (Rotherham & Handley, 2017).

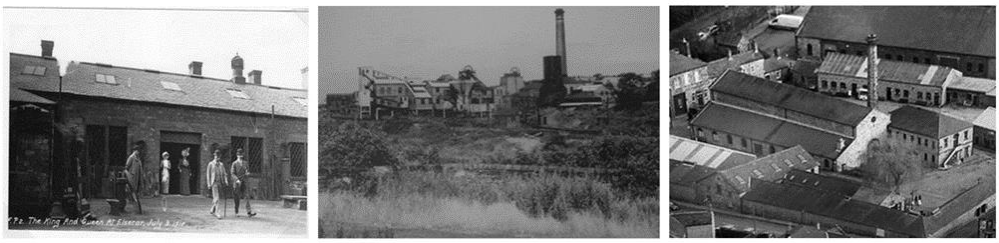

Figure 5. New Yard (Elsecar Workshops) and the workshop building

The Elsecar workshops were constructed in 1850 for the achievement of a more operative organization of the several industrial initiatives near the Fitzwilliam estate. As the mines started to fail to meet the demand of workshop services they were led to the termination. In 1986, the Department of the Environment recorded the majority of the buildings as distinct architectural or historic assets. Barnsley Council bought the workshops and the Newcomen Beam Engine in 1988 and began the practices of preservation and renovation. The function of these buildings is now changed and they contain artist studios, indoor children's playroom, coffee shop, exhibitions, antique centers, guest centers, and craft shops. These buildings have made an amazing influence on the whole of the Elsecar complex (Rotherham & Handley, 2017).

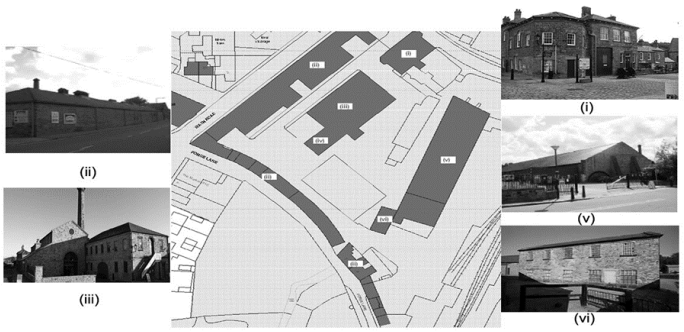

Figure 6. The location of workshops on area

There were some workers who used to work in these factories and workshops such as Elsecar Colliery, which Milton Hall now owns its site. In 1870 Milton Hall was built as a market and then its function was changed to the assembly space. The new Colliery

was built for the maintenance of the Newcomen Engine to make an improvement on the drainage of the pit. This building is now the only original building in the area, which is also recognized as one of the major industrial buildings in England (Barnsley Metropolitan Borough Council, 2017).

Figure 7. Milton hall - Newcomen Engine Late 18th Century

The Railway was built in 1850 at the Elsecar area, and its private station can still be seen in the workshop site. The Flour Mill was built as a three-floor building in 1842, which is now used for the flour production as well as a café and some shops (Elsecar Heritage Centre, 2016).

Figure 8. The railway heritage and the flour mill

The area's cultural significance has been respected and its original historic fabric has been kept safe through adaptive reuse and conservation practices. This project contains

some approaches such as consideration of the least possible interventions in the buildings, the environmental and economic issues, energy consumption, solid structures of the buildings, architecture, and functionality (Elsecar Heritage Centre, 2016).

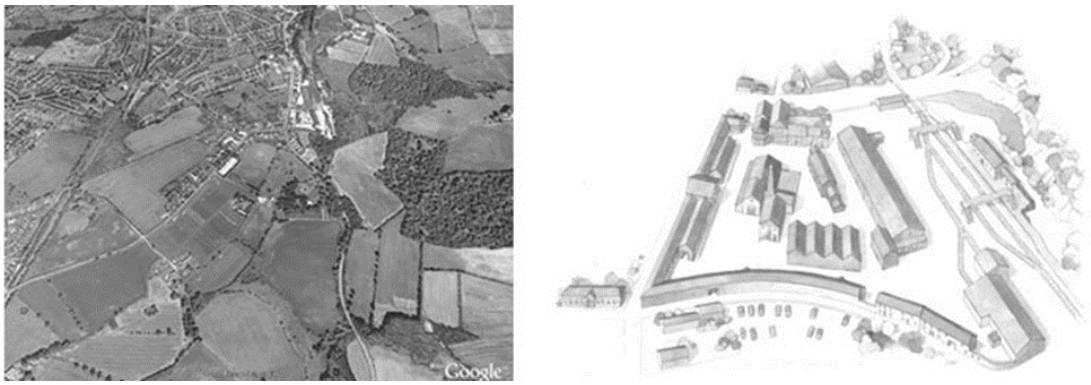

Figure 9. Aerial view of Elsecar heritage center

For more demonstration of buildings' original use and their new function see the table below.

Table 4. The original and new functions of the buildings (Author)

Name Of Building	Original Use	New Function
The Workshop	The steam engine and boiler repair shop, a wagon repair shop, blacksmiths shop, joiners shop, sawmill.	Artist studios, production museum, antique space and exhibitions, indoor children's playroom, café, guest center, offices, educational classes.
The Newcomen Engine	Drainage of the pit.	Heritage monument.
The Rail Way	Transportation.	Heritage railway offering steam and diesel trains rides and special events.
The Flour Mill	Flour production.	Manufacturing, café, and shops.
The Milton Hall	The market space and assembly place.	Hall and exhibitions for different events.

Elsecar industrial site as one of the major spots for industrial heritage tourism had been conserved by a strategic plan. This plan has focused on achieving organic development

related to history and culture of complex and improving the Elsecar's district economy. This strategy is formed by four major elements:

1. **Corporation**: identifying the interests of cooperation to achieve the result;
2. **Investing in the knowledge:** Discovering the features that are unique for the visitors;
3. **Advancement**: identifying the necessity to describe the process and its cost to interested tourists;
4. **Intelligence gathering:** Detecting the requirements for assessing the progress by recognizing the signs, records, and intelligence (Barnsley Metropolitan Borough Council, 2017).

Refurbishing some parts like windows and doors, reinstating some parts of pavements, changing the front land to the car parking area, adding gardens, pubs, cycling, and walking routes, planning different events and extending the railway path are the interventions to the site. In addition, the tourism attraction, outcome of this conservation and adaptive reuse project, provide so many job opportunities, especially for local people. Also, the ability of conservation of industrial heritage on supporting the art and culture has been witnessed. The area's character and the image are changed and a sense of place for the local people has been created (Rotherham & Handley, 2017).

The achievements of Elsecar as adaptive reuse based on main elements of planning is shown in the following table.

Table 5. Planning Highlights of Elsecar Collieries Project (Author)

Elements of Planning	Elsecar Collieries Project
Authenticity	Conservation practices have been conducted with the least possible interventions while adding sufficient new functions to the complex for its sustainability.
Interpretation	The new function of Elsecar as a heritage center including vast cultural activities increases the significance of this industrial heritage complex along with similar assets in the district.
Economy	Turning the outdated industrial function (coal mining) to a new function capable of attracting tourists and creating jobs for district citizens.

3.2 Bankside power station In London (Tate Modern Museum)

The last power station, which was built in the center of London has played an important role in the social, economic, environmental and technological aspects of this city's history. This power station is called Bankside Power Station located near the Thames River (Murray, 2010). The final acceptance of this power station was in 1947 when the problems on the post-war national fuel source context appeared (Hannah, 1979).

Figure 10. Bankside power station in London (Archdaily, 2019)

The Bankside Power Station designed by Sir Giles Gilbert Scott has been built in two phases from 1947 to 1963 (Glancey, 2006). Bruttomesso (1999) stated that the Bankside power station has an inspiring shape and epic facade. The primary structure of the station had three components: its turbine hall with 152 meters long and 35 meters high, the boiler house and the massive chimney with 99 meters high. The chimney has been constructed 99 meters high, not to undermine the St Paul's Cathedral across the Thames river (Glancey, 2003).

Figure 11. The Tate Modern after conservation (Archdaily, 2019)

The station has been closed in 198, due to economic issues, regarding the increasing oil prices in 1973-74, as well as the concerns about the pollution and negative environmental impacts that station used to cause (Murray, 2010). Thirteen years later, the existing Tate Gallery representatives declared that they are going to change the original function of the Bankside Power Station to the international and modern art gallery, which is now recognized as the Tate Modern (Lister, 1994; Irving. 2012). The Swiss architects, Jacques Herzog, and Pierre de Meuron won the competition for redesigning the power station and they were chosen for the responsibility of the

Bankside Power Station renovation due to their respect to the history and maintaining the original fabric of the building (Glancey, 2006). They focused on the urban background on their design by putting the Turbine Hall in the way of the pedestrian axis, which can be walked through, without visiting all the museum, but on the other hand, being encouraged to go inside and visit all the galleries (Ong-Yan & Peltason, 2010). This renovation project had been finished in 2000, which Irving (2012) has defined it as a "minimal style" created by the use of concrete, timber, steel, and glass as materials (Glancey, 2006; Murray, 2010).

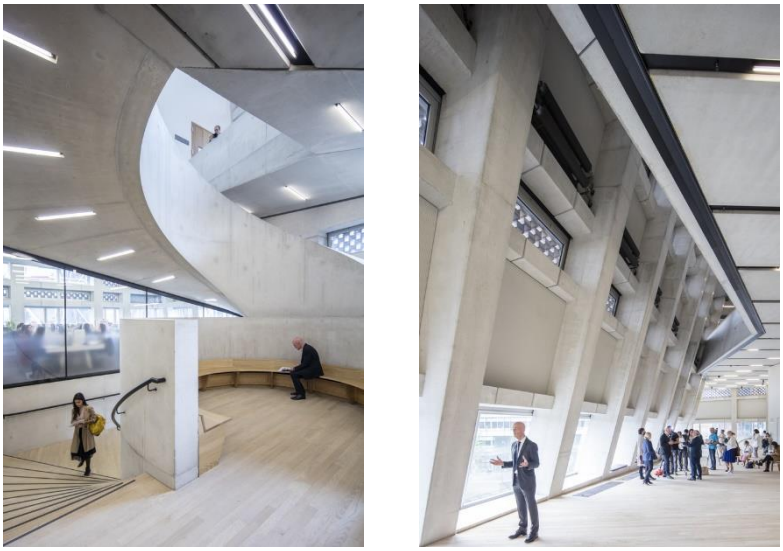

Figure 12. Tate Modern interior (Archdaily, 2019).

The interventions to the interior of the building include installing five floors of galleries and changing the Turbine Hall to the gigantic lobby for showing the big sculptures and events. The exterior of the building has been conserved in its original look (Glancey, 2006). After 9 years, the designers have made an extension project for the galleries' space by removing the useless oil tanks. The galleries have been connected by a bridge, which was opened in 2016 (Ravenscroft, 2014).

Figure 13. Tate modern Interior (Archdaily, 2019)

Table 6. Planning Highlights of Bankside Power Station Project (Author)

Elements of Planning	Bankside Power Station Project
Authenticity	The new building for the museum has been constructed considering both its new function's requirements and preservation of the original heritage building. Using original sections and facilities of the complex as decorative assets for reuse projects. Using non-modern materials to renovate the heritage assets in order to preserve the historical and cultural meaning of the site.
Interpretation	Through the construction of one of the largest contemporary art museums, investors (Tate institute) stress the importance of industrial heritage conservation regardless of its outdated original functionality.
Economy	Reuse of high potential land in London with inefficient and environmentally damaging functionality. Creating new streams of revenue for the district by adding new touristic functions. Using modern architecture for creating additional advantages in reuse projects in order to guarantee the success of new functions.

3.3 Signal Mediahus (Nedregate Culture District)

In the late nineteenth century in Oslo, Signal Mediahus, which was designed by Ove Ekman and Einar Smith had been renovated by Space Group and its conservation has finished in 2012. This area is known as the NY York (New York) for its massive development of art and architecture in 1858 (Archdaily, 2019).

Figure 14. Nedregate Culture District (Archdaily, 2019)

Signal Mediahus (Signal Media House) is located on the Akers River in Oslo, Norway. This building used to have so many different functions in the past such as textile factories and different offices. Some parts of the building had been burnt in the 1980s. Many different film production companies have used this building's large glass roof with light penetration to the deep part of building through it. The spaces were planned based on the amount of light in each room as cinema spaces are in the basement, around a big black box. Edition studios are placed in the ground level on two wooden boxes and offices in upper levels in transparent spaces for more connection and collaboration between the workers (Divisare, 2019)

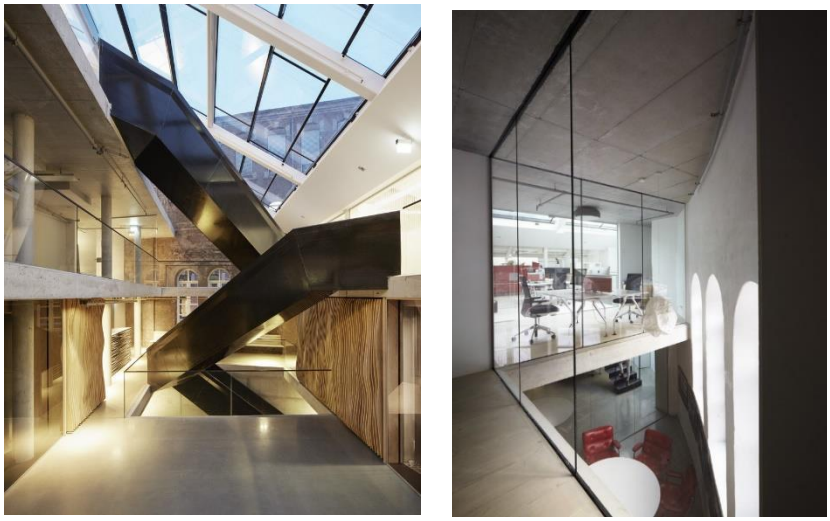

Figure 15. Signal Mediahus (Archdaily, 2019)

The boxes are employed for their acoustic features in the Atrium. This atrium plays an important role in keeping the building alive, which includes meeting spaces, café, a lounge, a vertical green area, and the centrifugal passage. The mentioned passage is maximizing the connection between the users and the place (Archdaily, 2019).

The plan and the sections are designed in a big open space, which brings a well-organized consumption of energy and ventilation. The goal was to reveal the space with emphasize on the materials, installing a new big wooden stair which is like a hall and connect the section of Contemporary Art offices to the project space. This stair classifies the space to three different areas, discourses space, a library of Norwegian Artist and the surrounding space for exhibitions. There are also the Office for Contemporary Art Norway (OCA), artist workshops for OCA's residence platform and project space with 450m2 (Spacegroup, 2019).

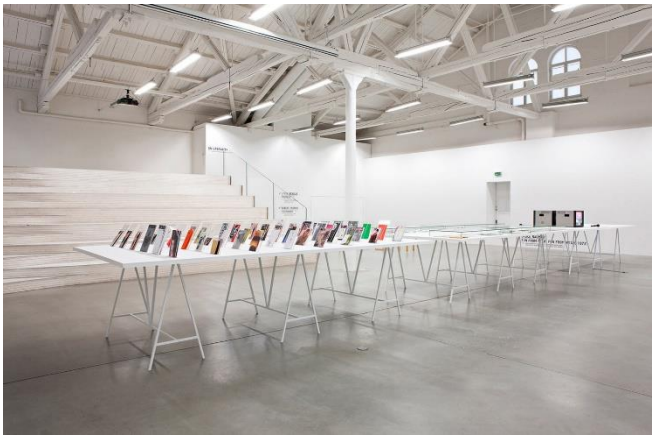

Figure 16. Office of Contemporary Art (Archdaily, 2019)

As the part of the big Nedregate project, Spacegroup designed the “NY York Kulturbarnehage” (New York Culture Kindergarten). This kindergarten is purposely designed in order of open spaces and the closed ones. The big space allows different horizontal and vertical lines, which create rooms for a small group of children. This kindergarten has four different centers arranged around the big staircase allocated for the theater, film, musical meetings and a space for dancing and playing. Back of each room, there is a large curvy wall bearing the whole mechanical installations that are made of stainless steel and twists the viewer picture in an entertaining way. The project was developed with the collaboration of related heritage specialists in order to conserve the historical values of the buildings (Divisare, 2019).

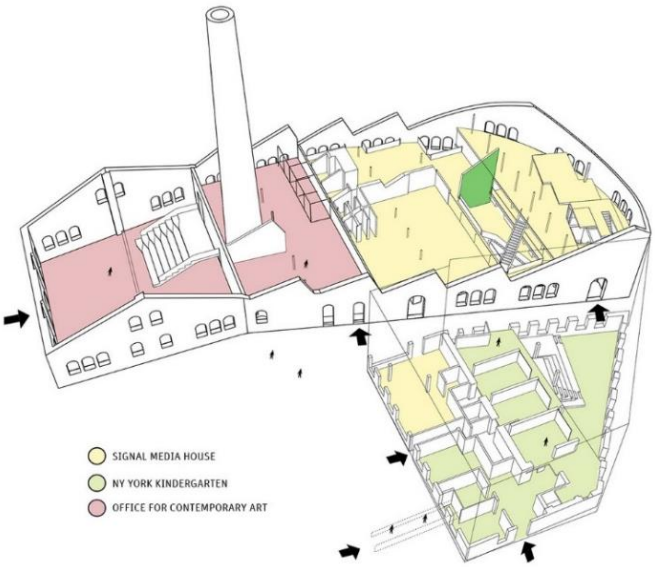

Figure 17. Showing all the three parts of the building (Archdaily, 2019)

Table 7. Planning Highlights of Nedregate Culture District Project (Author)

Elements of Planning	Nedregate Culture District Project
Authenticity	Preservation of building's façade due to its historic meaning, while renovating the burnt areas for new functions. Collaboration with heritage regulators to preserve the heritage of the district.
Interpretation	Contributing to public awareness regarding the significance of industrial heritage through attracting people for cultural activities in a site with industrial heritage meaning.
Economy	Regeneration of a burnt and abandoned factory building and attracting film production companies into the renovated building.

3.4 BOURG-LES-VALENCE Industrial Site

The industrial developer Noël Sanial built this textile factory in 1855, in the south of France in Bourg-de-Péage commune. After 20 years, it was ruined, so the state bought it right after and started for its renovation and this task was done by R Buildings. Two warehouses were built in the site in 1914 when the site has been changed to the state cartridge factory during the war, (Frameweb, 2019).

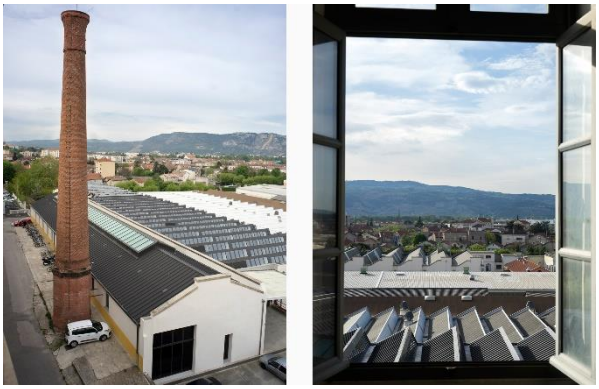

Figure 18. Bankrupt Textile Factory in South of France *(Frameweb, 2019)*.

In the 1960's, the former textile and then cartridge factory became the host of Folimage Studio. The warehouse has been registered as the historical monument in February 2003, for preserving the site from destruction. The architect of the project, Antoine Santiard stated that the old buildings were transformed to the places for the film production companies in 2009, so they started the second stage of alteration for different functions in the place, (h2oarchitectes, 2019).

Figure 19. Renovated areas *(Frameweb, 2019)*.

The renovation project dilemma was restoring the building to its primary function or reuse the buildings for a new function with some interventions and additional simple installations. The R Buildings Company offered the Parisian h2o Architectes Company to change two huge ruined voids, which require restoration. The outside of the building

had been renewed with the roof, glass and new façade. The interior space has been revealed by the new white finishing and an egg-shaped gallery floor has been added to complex above the main hall (R1) with self-support structure (Frameweb, 2019).

Figure 20. The main Hall (R1) *(Frameweb, 2019)*.

The second space (R2) elements were colored for the communication rooms for collaborative work and coffee breaks. The footprints of the initial renovation for the open space can be seen in the completed renovation in the second stage for using all the space in a creative way (h2oarchitectes, 2019).

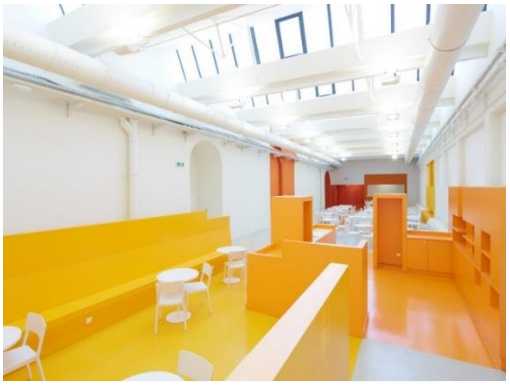

Figure 21. The second hall (R2) *(Frameweb, 2019)*.

Table 8. Planning Highlights for Bourg Les Valence Factory Project (Author)

Elements of Planning	Bourg Les Valence Factory Project
Authenticity	One of the first projects including conservation practices for maintaining a factory as an industrial heritage in the 1960s. The new function (host of film production companies) due to safer activities of the user in comparison with former manufacturing practices, is more aligned with the preservation of this industrial heritage.
Interpretation	The project won historical prize reflecting their success in the preservation of industrial heritage for society.
Economy	Defining a successful new function that can be developed by the use of technology without fundamental changes in the workplace.

3.5 Steam Plant in Ohio (Urban Healthcare Campus)

This conservation project is an adaptive reuse of an old historic steam plant, which was designed by Daniel Burnham in 1896 in downtown Toledo, northwest Ohio. The new function is The ProMedica Headquarters, in which the conservation was done by Architecture Firm HKS Company. ProMedica wanted to recover the district in the American Rust Belt (Dezeen, 2019).

Figure 22. The ProMedica Headquarters in Ohio *(Dezeen, 2019)*.

The concrete refurbishment was required for the conservation and also constructing a parking area. Also, near the campus, a new park that continues alongside the Maumee River was opened recently (McKnight, 2018).

Figure 23. The ProMedica Headquarters facade (Dezeen, 2019).

As HKS stated, the new site has the articulation, materiality, space design, and is dynamic as well as maintaining the historical character of the place with appropriate function and architectural image. Moreover, this campus has provided many job opportunities for the downtown of the Toledo city. This adaptive reuse idea has shown the commitment of the ProMedica to Toledo's people by making a connection in a transparent way in the area's historical site (Minimalblogs, 2019).

The steam plant was useless for thirty years until the ProMedica bought it. The red brick walls of the building, the steel roof trusses, and its two tall steam stacks were preserved. The inside of the building had been altered to the four-story offices with big communication spaces and a bright hall. A 13 tons bridge crane that now hangs the atrium is also preserved (McKnight, 2018).

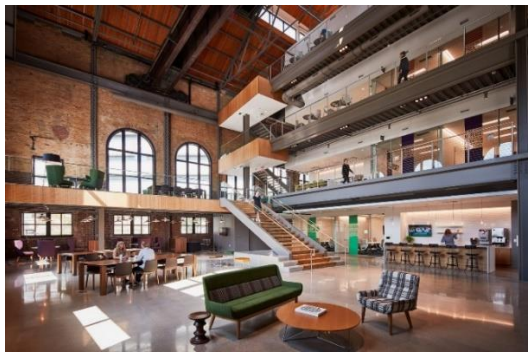

Figure 24. The ProMedica Headquarters interior (Dezeen, 2019).

In respect of Daniel Burnham's idea on the open and fully-lighted spaces and landscape, some windows are installed which open to the Maumee and Promenade Park without making an intense impact on the current structure (Dezeen, 2019).

Also, the conservation team has built a rectangular three-level building on the side of the main building that is facing the river, the Junction Building, which was firstly used by the Toledo Trust Company and then, by Key Bank. After its renovation, the three levels of the building have been used as office spaces, two restaurants have been opened on the ground level, and the basement was used as a gym. Its façade has been covered with glass and terracotta (Minimalblogs, 2019).

Figure 25. The Junction Building *(Dezeen, 2019).*

In addition, because of insufficient options for public transportation in that area, the team has built a six-floor building with 760 parking areas for the employees. Its façade was covered with metal panels and fins, and also a large screen was added on the north side of the building that faces the riverfront park which shows public movies or concerts (Dezeen, 2019).

Figure 26. The building with parking spaces *(Dezeen, 2019).*

Table 9. Planning Highlights of Steam Plant in Ohio (Author)

Elements of Planning	Steam Plant in Ohio Project
Authenticity	Implementing conservation practices with the least possible alteration to the original building. Construction of new buildings as requirements for new functions instead of changing the characteristics of original assets. Preservation of the original façade as representative of industrial revolution era maintains the meaning of this heritage.
Interpretation	Attracting public attention to this industrial heritage through different provided services.
Economy	Attracting different business industries to create streams of revenue for the complex. Creating job opportunities for the district. Creating social services with the reuse project.

Chapter 4

ADAPTIVE REUSED EXAMPLES OF INDUSTRIAL COMPLEXES IN IRAN

In the following part, the conservation process of three adaptive reused fabric factories in Iran has been analyzed. In case of the region, policies and original function similarities. Moreover, the successful samples in adaptively reused fabric factories among the limited number of such complexes in Iran have been selected.

4.1 Khosravi Leather Complex of Tabriz

History: Khosravi Leather Factory was the third leather manufacturer in Tabriz after Mihan Leather and Iran Leather factories. Khosravi Leather was established in 1931. The factory, besides producing leather and footwear, produced military boots and horse riding shoes during World War II. There seem to be other exports, including leather tablecloths, which are kept in safe deposits at Pullman Hotel in Pulta city in Italy. Its machines were all from German. Khosravi's large leather complex having its towers and chimneys is one of the important signs of the city of Tabriz (Afshar Naderi, 2004).

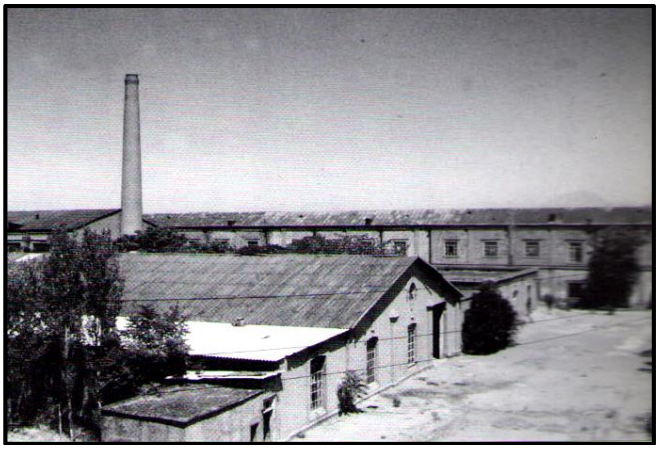

Figure 27. General view from Khosravi leather complex before conservation

Figure 28. General view from Khosravi leather complex after conservation

Until 1968, the factory had its own routine; but in the period of 1969 to 1970, it was shut down as stockholders were losing money. Finally, with the permission of the court, management of the factory was given to Industry Support Organization. Since 1979, Khosravi Leather Company became a member of the national industrial group and was managed by National Industries of Iran until 1987. Due to the development of the city, the factory, which was located inside the residential areas, transferred to the industrial city of Shahid Salimi for health reasons (Izadi, 2010).

Figure 29. Location of Khosravi leather complex in Tabriz

Architectural Features: This complex consists of four large parallel blocks and several smaller disjointed blocks. There are a total of 8 main buildings with more than one or two floors with bricks, vault arches, girth, beam, and wood truss to cover them. The main blocks have two floors and facades are decorated with a combination of European industrial architecture and Qajar architecture of Tabriz. There are dual fixed modules, consisting of brick frames placed on the text of the bricks. Horizontal coils and vertical pillars remind the late Qajar period. The exterior facade arrangement has a traditional brick decoration, which shows a classical arrangement (Afshar Naderi, 2004).

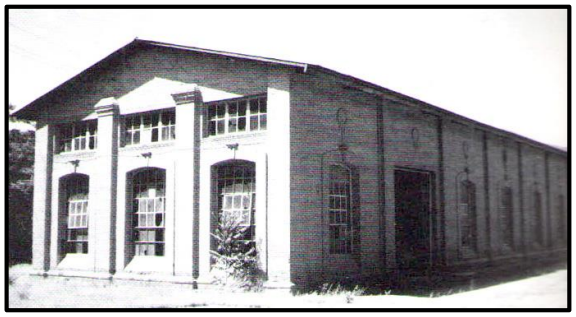

Figure 30. General view of Khosravi leather complex

Strong windows are at the bottom and flat door joints at the top. The margin of the windows is rugged which makes the windows outstanding. Some ceilings have a triangular cross-section and some are arched. Brick chimneys and rectangular cube tower of the factory are important key elements of the complex (Behanm, 1978).

Figure 31. General view of Khosravi leather complex

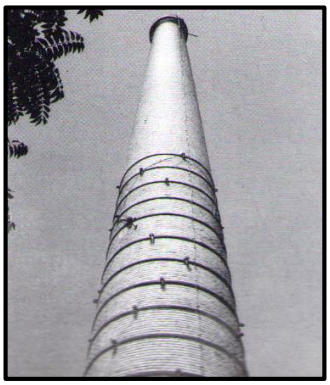

Figure 32. Cooling tower of the complex

Current Situation: In 1988, according to the Governor's order, the factory's use was changed and became a cultural center, which began its work in 1994. The ownership of Khosravi Leather's buildings was transferred to Sahand Industrial University. Therefore, this complex was provided to be used by Sahand Industrial University in 1998 its use was changed to an educational environment. It has more than 3 hectares of the arena and 1 hectare of sub-basement. After the independence of the faculty of art from Sahand University of Technology and its conversion to the Islamic Art University of Tabriz in 1999, the factory turned into Art University. Restoration of the campus complex has begun since 1997, and the aged buildings have been renovated and changed to the amphitheater, office building, gym, cafeteria, and library. Turbines and generators that remain in the leather factory's facility section are used in the industrial museum (Feizi, 2012).

Figure 33. General view of the complex after conservation

Figure 34. General view of the complex after conservation

One of the advantages of the Khosravi leather complex is its location where has the capability and potential for development to become a huge cultural and educational complex. A large site that is now used as an Armenian cemetery in Tabriz where is located on the southern side of the leather complex which can be added to the university to expand the complex. On the eastern side of the complex, there are also old factories and workshops, which are ruined, abandoned buildings or warehouses. There is also a residential area on the same side that does not have much physical value, and have been purchased partly by the university. These features of the leather

complex have led the university's officials to plan for expansion and construction of new colleges in this complex (Feizi, 2014).

Figure 35. Art university of Tabriz

Figure 36. Site of university

An important point to be mentioned here is the consideration of the original features of the leather complex and its architectural values in the construction of new buildings and faculties; so that new design has preserved the values of the old part, as being in the same harmony with the original features of the complex (Afshar Naderi, 2004). The Khosravi leather complex consists of 4 buildings that their new functions have been described in further text.

New Functions of Buildings: The basement of building number 1 is used as an exhibition space titled the university's gallery. This space, with an area of 635 square meters, has created a space suitable for exhibiting due to the specific design of the ceiling and the special presence of light in space (indirect natural light). It should be noted that in addition to the works of students, the exhibition also brings the opportunity to present the works of other artists and it is open to the general public

(Afshar Naderi, 2004). The western part of the ground floor is dedicated to the permanent exhibition of artistic masterpieces of Professor Kahnemuyi.

The ground floor of building number 2 has educational use including classes and workshops. In addition, the university library is located at the end of the hall of the same building; due to its high ceiling height, a half-story section was constructed to separate magazines and reference books from the others (Feizi, 2012).

The main hall of building number 3 is a sports saloon and has an infrastructure of 1900 square meters. Part of the building is now futsal, table tennis, and badminton courts, while volleyball and basketball court is shared. On the south side of the sports hall of Building No. 3 is a section for the Physical Education Department of the University, a gym, and a wrestling hall. In addition to the sports sections of this building, there is a connecting space on its western side that is specific to administrative use. This space consists of a director's office and a secretariat. The director's office is on the ground floor of the annex to the building, and on the eastern and western sides of this room, four areas are installed (Afshar Naderi, 2004).

Contrary to the other buildings in this complex, which lack a proper and suitable entrance, in the middle section of building number 4, an entrance hall has been designed. The wide entrance brings an interesting spatial sense to the audience; according to users and experts, this space is the strength of this building's design (Faghih, 2006). On the western side of building No. 4, an amphitheater of Khosravi leather complex has been constructed. The amphitheater has a half-story and sloping floor. It has been tried to use brick in interior decoration of this space, which, of course, has created a different spatial sense in comparison to common amphitheaters, but it is

aligned with the theme of the complex (Feizi, 2012). In the design and renovation of this space, a false ceiling (dropped ceiling) has been used and acoustic considerations are carefully observed (Afshar Naderi, 2004).

Table 10. Planning Highlights of Khosravi leather complex (Author)

Elements of Planning	Khosravi leather complex Project
Authenticity	Construction of new buildings with the same theme of the original buildings to preserve the originality of the complex.
Interpretation	Providing different artistic activities for the public in order to promote the value of art.
Economy	Exploiting the available land of the complex through the construction of different buildings with various functions. Establishment of the university beneficial for the development of the district's economy.

4.2 Isfahan Pashmbaf Factory

Introduction: The factory, located on the northern edge of Zayandehrood River and northeast of Khaju Bridge, was one of the major industrial factories in Isfahan. Phashmbaf was founded in 1935 and started its operation in 1938. Like other Isfahan factories, its pattern of construction was based on a combination of both modern and traditional styles. The pattern was the result of the architect's cooperation, such as European specialists including German architect Schunemaal (Taki, 1968). Like other industrial institutions, the factory faced a depression period. According to newspaper articles and old documents in the early 1941's, the factory was temporarily closed because of financial crisis and then it was governed by the "Supervisory Board of the Elected Shareholders"(Abedi, 1955). This trend continued in this way until some sources reported the closure of Pashmbaf Factory in the early 1960s (Shafaghi, 2006).

Figure 37. North view from Pashmbaf factory (Pahlevanzadeh, 2014)

Figure 38. General view from Pashmbaf factory (Pahlevanzadeh, 2014)

Following the expiration of the activity period and prosperity of Pashmbaf Factory, suggestions were made for the use of factory's land. These suggestions included a proposal for redesigning the factory for Radio and Television Broadcasting Iran's revolution. As the majority of the buildings were destroyed the proposal was rejected. After the revolution, the Jihad Organization demanded to separate factory's land, which did not happen; Radio and Television Organization restored the complex in 1991 and changed its usage. The new buildings' construction theme is aligned with the original theme creating harmony throughout the site. The new construction and renovation process has regenerated the heritage of this site while providing new

functions for this complex. This complex was registered in the list of National Art Works of Iran by number 11596 on December 11, 2004 (Pazoki and Shadmehr, 2005).

Characteristics: According to the factory's aerial images in recent years, what has remained of this complex are: an office building, one of the workshops, the cooling tower, and the factory's chimney along with its connected building.

Figure 39. South view from the office building

This complex has been renovated and:

1. Generator's area and factory's plant changed to stadium and decoration workshop and repair-shop;

2. Resources section changed to monitoring hall;

3. Spinning hall changed to studio, manufacturing and transportation chambers.

New spaces were also built to provide room for the new user (Radio and Television Organization), including some space in front of the south entrance and some spaces in front of the west entrance.

Table 11. Planning Highlights of Pashmbaf complex (Author)

Elements of Planning	Pashmbaf complex Project
Authenticity	The consideration of the original features of the complex for the reference theme in new construction plans to regenerate the heritage of the building.
Interpretation	Providing artistic workshops in the heritage building in order to increase cultural awareness. Being registered in the national art database to evoke the national value of this industrial heritage complex.
Economy	Regeneration of destructed complex and contribution to urban development. Providing new functions benefiting the economy of the district.

4.3 Beryanak Sock Factory-Tehran

Introduction: The factory was located in the western region of Tehran, in one of its oldest villages with a pleasant climate, named Beryanak. The village consisted of Beryanak castle and extensive plains; all its inhabitants used to live in the castle. This village did not change much until the first Pahlavi's rule. After modernizations, Berayank Sock Factory was constructed in the northwest of Haft Chenar (Beryanak Square). This factory was built during Reza Shah Era including the first hosiery plant a local power plant in 1922. However, some believe that this factory was probably part of Amin al-Zarb Power Plant Complex and has become a sock factory later. According to Afshar Naderi, this building is similar to aristocratic residential mansions of Qajar period. A brick-built building with a simple rectangular plan, a four-layered roof covering and a typical facade show that period's style. It has brick frames with a white plaster background and a window or a door inside each frame, etc. At the end of the walls' edges in the attic, there are beautiful brick borders of the late Qajar style. The factory chimney is also a beautiful urban landmark in the form of a simple and magnificent brick minaret (Afshar Naderi, 1997).

Figure 40. General view from Beryanak factory before conservation (Haft-chenar museum of Tehran archive, 2018)

Unfortunately, the factory had a similar fate as other mentioned industrial institutions and was shut down due to financial problems before Iran's Revolution. Due to the specific situation of the factory, the municipality of the district was determined to use this complex to meet the needs of urban spaces. Therefore, restoration of this factory and decreasing the land surrounding it were on the main agenda (Afshar Naderi, 2004). The municipality of District 10 has restored and refurbished the damaged building fundamentally with least possible interventions. It was opened in May 1997 as Museum of Natural History and Wildlife of Haft Chenar. Today, this complex is a combination of old architecture, green space, and wildlife, which provides an eye-catching and tranquil environment for the viewer with a dramatic proportion. Haft Chenar Museum is located on an area of 7693 square meters and infrastructure of 2683 square meters. Its greenery is a memorial of the old and beautiful Tehran gardens, in which old pine trees stand out. The factory was registered in 2000 by number 2528 in the list of National Art Works of Iran (Ansari & Hasankhan, 1999).

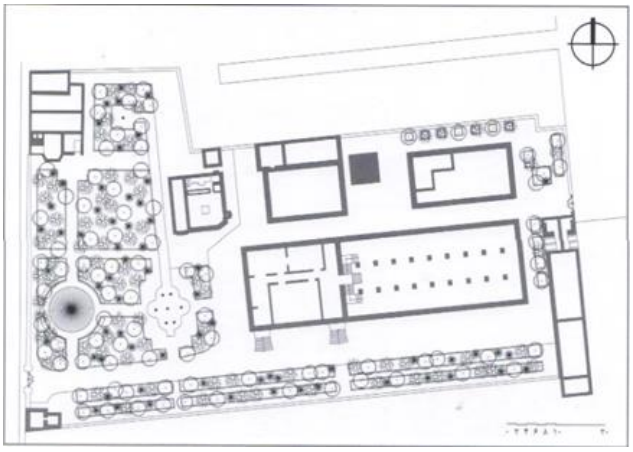

Figure 41. Site plan of Beryanak factory after conservation (Haft-chenar museum of Tehran archive, 2018)

Table 12. Planning Highlights of Beryanak Factory (Author)

Elements of Planning	Beryanak Factory Project
Authenticity	Regeneration of the factory heritage with the least possible interventions. Decorating the surrounding area of the heritage factory with beautiful green spaces to present the heritage factory in a proper manner.
Interpretation	New function of the building as a history museum contributes to public heritage awareness The conversion of the factory to a public site attracts the attention of people to this industrial heritage.
Economy	Conversion of a bankrupt factory to an awe-inspiring public asset located in one of the oldest districts of Tehran.

4.4 Summary

Reviewing each of the samples shows that a clear result of each one or a general result of a specific strategy does not come from all of them, because each one has been designed and implemented according to its use. The only possibility that reflects on the characteristics of these samples and similar examples is to find "principles and criteria" that each one has in a method, in a plan, degree of interference, apparent changes, structural fundamental changes, and how the productivity of the work reveals and hides. A remarkable point in all of these samples is an attempt by architects and

teams to design and implement these principles. This point suggests that conventional principles and criteria in dealing with historical effect have a place and a degree that is not only indisputable but also necessary and essential. Considering such a view of the historical significance, it raises a question that whether the principles and criteria to be taken into account in world samples are also applicable in Iran or they only can be used for the purpose of knowing current trends in other societies. The answer to this question is possible in many different ways. One can rethink the foundations of architecture, and dealing with the traditional historical heritage in Iran, reflecting its principles and criteria in comparison with the world. It is indisputable that the existence of charters, recommendations, resolutions, and laws in the world, and in particular in Europe, shows that there is a constant review of the work done. This will play an important role in regaining the shortcomings and necessities of attention and dealing with the historical work and the principles and criteria governing it.

Chapter 5

CASE STUDY: RISBAF INDUSTRIAL COMPLEX

5.1 General Introduction to Risbaf Industrial Complex

Modern architecture has entered Iran along with industrial architecture. At that time, factories were places with modern and varied usage and their entry into Iran required changes in the way of construction. As a result, the modern architecture movement came to Iran (Feizi, 2014).

Risbaf Factory is one of the first factories established at the beginning of the modern industrial period in Iran. It was built with a combination of modern architecture derived from Germany and traditional Iranian architecture. Risbaf factory, which is one of the textile factories of Isfahan, is the last industrial complex from the first Pahlavi era on the structural axis of Chahar-bagh Garden in Isfahan. Because of its unique modern architecture as well as its strategic location, its maintenance, and restoration is a concern for the public and the state (Ansari & Hasankhan, 1999). Years after the complete setback and closure of the complex, eventually with a lot of follow-ups, this industrial complex was purchased by the Ministry of Roads and Urban Development from the National Bank in 2014 and it has been prevented from demolition (Feizi, 2014).

5.1.1 Location

Risbaf Factory is located in a land with a total area of 69,000 meters on the southeast of Sio-Se-Pol, and it is constructed at the "Etemad al-Dowleh" and "Hatam Beyg" gardens, on the eastern axis of "Hezar Jarrib"(current Upper Chahar-bagh).

Figure 42. Location of Risbaf factory (Google map, 2018)

At the moment, the factory located in the central axis of Upper Chahar-bagh, from the Yahya-khan secondary axis on North, from "Haft-dast" secondary axis on South and from a residential area on the East.

Figure 43. General view of Risbaf factory from Chaharbagh Street (Author)

Figure 44. General view of Risbaf factory from Chaharbagh Street (Author)

In terms of access, Chahar-bagh Street is the main road to Risbaf Industrial Complex. And the Southern Boulevard of Zayandehrood River and Nazar Street define the eastern axis of access. Ferdowsi Bridge from the east and Abuzar Bridge from the west side bring access to the north of the site.

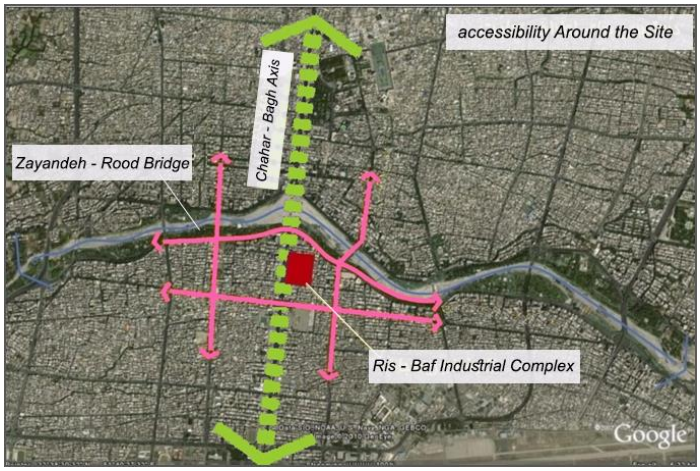

Figure 45. Accessibilities of Risbaf factory site (Google map, 2018)

It should be noted that Sio-Se-pol Bridge is considered as one of the most important pedestrian tourist attractions along Chahar-bagh Avenue and a linear park parallel to Zayandehrood River.

At the present time, the remains of the wool industries along Zayandehrood, Sio-Se-pol Bridge, Chahar-Bagh Street was the most important production activity near the Risbaf factory. The numerous number of industrial complexes made industrial area Pahlavi's period. Even though with the destruction of these factories one by one, the area changed gradually and replaced itself with a residential urban context (Taki, 1968).

Currently, on the edge of Chahar-Bagh Street and Sio-Se-pol Bridge to the intersection of Nazar Street, the Risbaf factory is located. There is a shopping area which attracts the residents. The green area in the middle of Chahar-Bagh Boulevard is another attraction for the pedestrian population in the area. On the other hand, the subway station construction site, in front of the Risbaf factory, has partially affected and has reduced the vitality of the axis (Feizi, 2012).

Figure 46. The attractions near to Risbaf factory (Google map, 2019)

5.1.2 History

The Risbaf Factory Complex was officially launched in 1933 as a joint-stock company with the number of 8 during the first Pahlavi era, on the Coast of Zayandehrood River, with the support of Afshar, the ruler of Isfahan (Abedi, 1955).

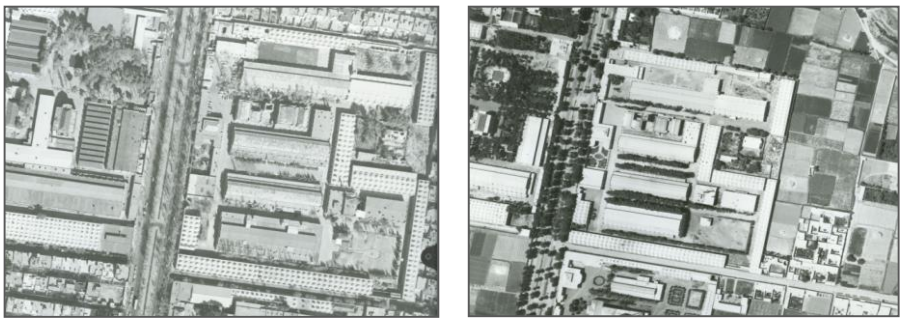

Figure 47. Risbaf Factory aerial photo in 1956 (right photo) and in 1994 (left photo) (Mapping organization of Iran, 2019)

Afshar's first action was to establish this factory in Isfahan. He encouraged some anonymous capitalist traders to invest in Risbaf Textile Company with "500,000 Toman" and quickly bought the machines by British brothers from England." The factory was launched in Jun 1934 after two years from its establishment. (Fatemi, 2000).

Figure 48. Risbaf factory in working time (cultural heritage, handicrafts, and tourism organization, 2019)

Figure 49. Risbaf factory in construction time (Cultural heritage, handicrafts, and tourism organization, 2019)

This construction was designed by an architect named "Motamedi" under the supervision of "Schunemaal", a German engineer, in which the direct influence of German architect Peter Behrenz is apparent. Therefore, it is worth mentioning that Iranian architects have designed the facade decorations due to limitations created by German architects (Reza Feizi, 2014).

Figure 50. General view of Risbaf factory in working time (Cultural heritage, handicrafts, and tourism organization, 2019)

It was written in Akhgar magazine No. 850 in June 1933 as follows: "Since the purchase of Isfahan Textile Factory was originally ordered, it is likely that the factory will be transported to Isfahan. The land was purchased for the factory site at the beginning area of Chahar-bagh bridges in front of Zereshk Garden (Akhgar, 1933).

In one of the remaining documents related with this joint-stock company, dated 1936, the following names have been mentioned as founders of this factory: Mr. Haj Seyyed Javad Kasayi, Heidar Ali Imami, Hassan Soltani, Ezaz Nikpay, Haj Abdul Ali Feyz, and Haj Seyyed Ebrahim Kassayyan (Taki, 1968).

Willem Floor was also mentioned as a member of the factory's Board of Directors same as Haj Abbas Akbari, Heidar Ali Emami, Haj Seyed Javad Kasayi, Haj Mohammad Kazem Mesghali, and Ali Almasi, (Floor, 1992).

Like other industrial complexes from the same period, this factory has gone through a lot of ups and downs. It has often been closed down and reopened many times, because of debt, shortage of raw materials, inability to pay workers' salaries, etc (Ansari & Hasankhan, 1999). Finally, Risbaf factory, which continues to be owned by the National Bank as a result of its debt, was acquired by the bank and continued to operate under the name of Risbaf National Company. The activity of the factory continued until it was finally closed in the 2000s like many other textile factories in Isfahan, following an economic crisis. Therefore, after the factory was shut down in August 2002, Risbaf industrial-historical factory, following an operation history of more than 80 years, was registered in the list of National Monuments with the number 6018 (Ansari & Hasankhan, 1999).

5.2 Architectural Features of Risbaf Industrial Complex

In the following text, the plans, façade, structure, and details and ornamentation are explained.

5.2.1 Plans

The 69,000 square-foot sites of Risbaf Factory is currently limited to the central axis of the upper Chahar-bagh, from north to Yahya-khan secondary axis, from south to "Haft-dast" secondary axis, and from east to residential context.

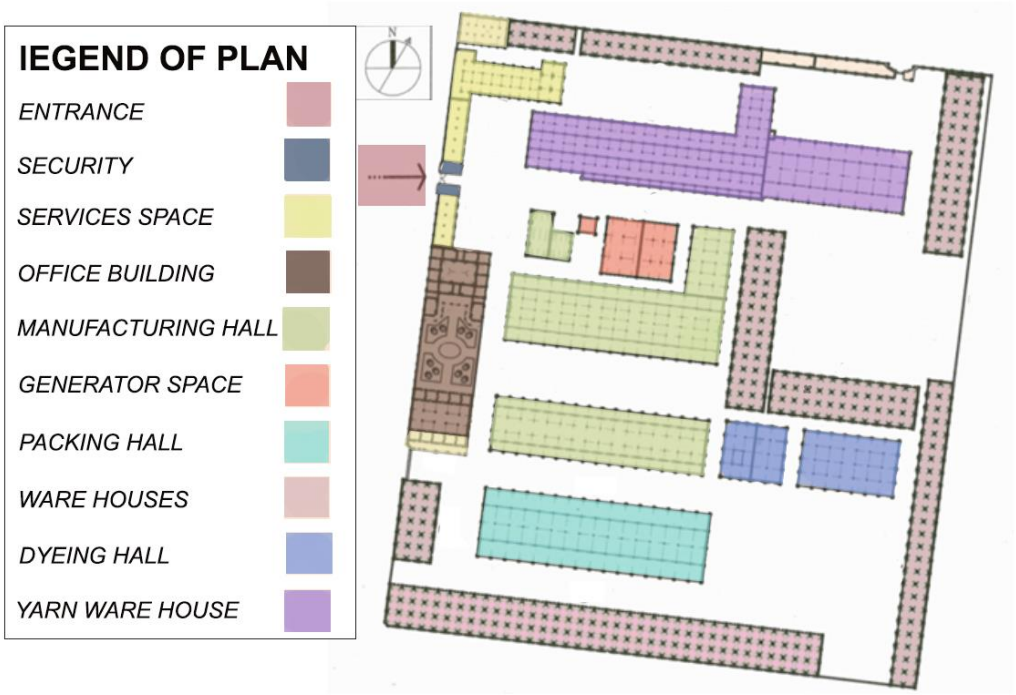

Figure 51. Risbaf factory plan (Cultural heritage, handicrafts, and tourism organization, 2019)

More of the western side of the factory's site is allocated for the entrance, office and service spaces, while the warehouse is placed on other premises. In this way, workshop spaces in the middle of the site are surrounded by these perimeter spaces. Because of this fact, the northern and southern sides of the factory have a long, simple-looking wall, which sometimes a few plain windows are located (Izadi, 2010).

In the middle area of the site, production halls are located on the west side, packing halls on the northwest side and dyeing halls are located on the south-east side. Distillation tower on the northern side of the complex and factory's chimney on the eastern side (modern metaphors of old minarets, which they're lofty, have a symbolic role and a symbol of the city), are other volumes of this industrial complex. Sports spaces and infant/toddler spaces (for working women's children) are among the other spaces that are included on the site (Pahlevanzade, 2006).

The architecture of the Risbaf Factory consists of a variety of volumes, each allocated for a specific use, such as production halls, office, and dressing room. In this industrial complex, predominantly, instead of a single rectangle, many rectangular fragments have been used (Faghih, 2006).

Figure 52. Site plan of Risbaf factory (Author)

Figure 53. Site entrances (Author)

5.2.2 Architectural Features and Structure

Nasrin Faghih, in the book, The Beginning of The Iranian Industrial Architecture, considers the Risbaf Factory, with "a vertical portrait and also an image of a mountain", to be very similar to the Pantheon Theater. This illustration is very similar to "the way the expressionist architects turn to nature". The portal door of the factory, which resembles "the keys of an organ", recalls the Grundtvig's Church in Copenhagen architected by "Klint". She sees this church as a successful combination of "past models and new themes" (Faghih, 2006).

Figure 54. General view of Risbaf factory

After describing this twentieth-century church and referring to medieval trough and its baroque reminders of its innovations in traditional designs and patterns, Faghih writes: "This feature is the combination of traditional and native architecture, with new manifestations and technology by Iranian architects and industrialists which can also be seen in buildings of Isfahan factories, including Risbaf Factory (Faghih, 2006).

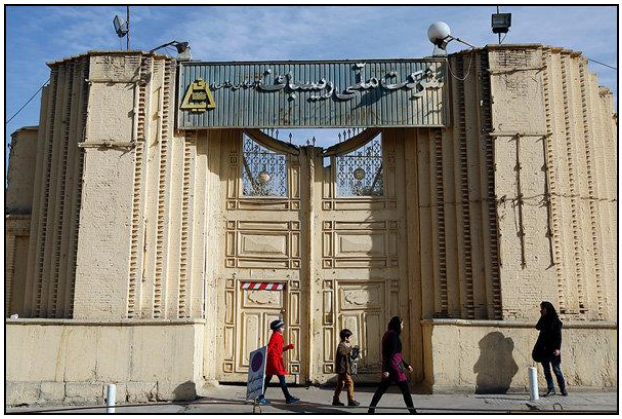

Figure 55. The main entrance of the complex

In another part of this book, Faghih describes: "the uncompromising combination of arched roofs at the entrance with the representation of Gothic spirit and organ shaped of a church" suggests the presence of traditional Iranian architects in the construction

of this complex. Architects who face steel structures for the first time and also a new material called cement; but "they have used this situation to showcase its expertise in providing details of windows, doors, and brickwork. Even by putting a "water jug" in a corner of the building, they reminisce about their own construction customs and consider it as a graceful sign for starting construction." (Faghih, 2006) In fact, Risbaf Complex is a compilation of traditional Iranian architecture and the start of a modern architecture that has entered Iran through the introduction of Western technology.

The buildings in the site have been classified into four main types based on their similarity in structure, ornamentations, and details such as the office building, manufacturing halls, dyeing hall/ yarn warehouse, and warehouses.

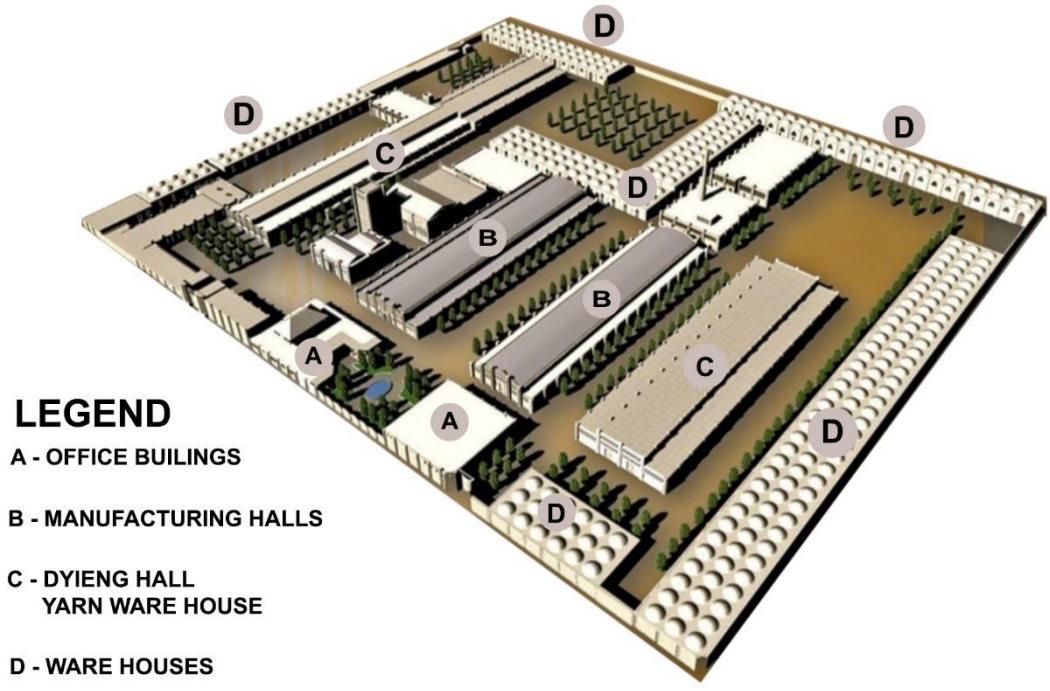

Figure 56. Risbaf factory perspective (Cultural heritage, handicrafts, and tourism organization, 2019)

A. Office buildings: The main material of this structure was cement. In accordance with traditional structure and arrangement of the space, decorated wicker windows

with colored glasses have been used. For office building, decorative features can mention to arched stairways, porches, decorative colored windows with wooden drawings and colored glass windows, colored surfaces, dished bricked squared surfaces. Also, it should be noted that the added decorative features to the exterior columns, can count as the ornamentation of the façade (Izadi, 2010).

Figure 57. Office building (Ghasemi, 2017)

Figure 58. Office building (Ghasemi, 2017)

B. Manufacturing halls: It combines two types of buildings with two types of structures and two different approaches. In one of the manufacturing halls, steel beams were used for the first time for its structural system, trusses, and external shapes. In all the main halls and cooling tower, all the decorations and details are made of bricks that reflect the architect's skill in combining new materials with traditional ornamentation (Ansari & Hasankhan, 1999).

Figure 59. West view of the manufacturing halls (Izadi, 2017)

Figure 60. Entrance view of manufacturing hall (Izadi, 2017)

Figure 61.Manufacturing halls and part of office building (Izadi, 2017)

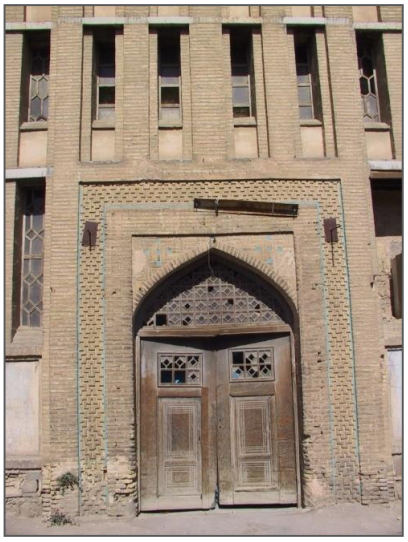

Figure 62. Brick and wooden ornaments in the manufacturing hall entrance (Ghasemi, 2017)

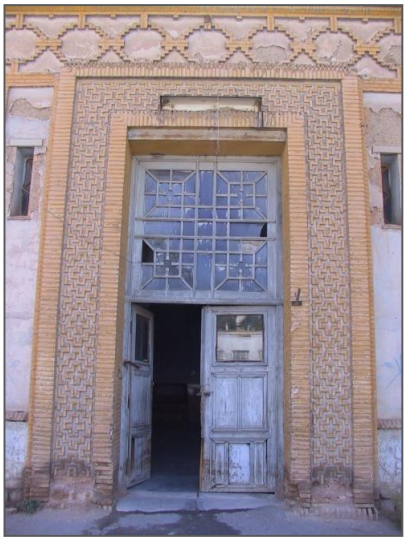

Figure 63. Brick ornamentation of manufacturing hall entrance (Ghasemi, 2017)

The ornamentations used in this complex are double-level brick pillars with an intermediate gap, circular brick pillars on cross-edges, dished bricked squared surfaces and elliptical and circular oval-shaped drawings, elegant brick streaks in the distance between windows. Also, star-shaped cracks at the edge of some of the facades, upper brick arches of the windows are among the decorations of this complex.

Figure 64. Metallic porter columns of manufacturing hall (Ghasemi, 2017)

It was found that Risbaf factory had two general segments in space division in total. One segment contains manufacturing halls of the factory, which were made as integrated sheds with a beam structure, columnar and truss, and surrounded by brick walls (Feizi, 2012).

Figure 65. South view of manufacturing hall (Izadi, 2017)

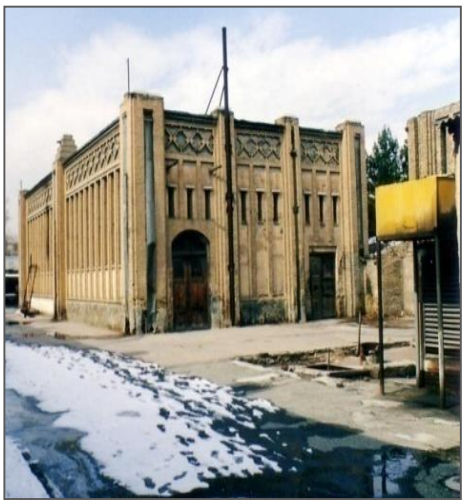

Figure 66. Manufacturing hall (Ghasemi, 2017)

D. Dyeing hall and yarn warehouse: The dyeing hall and the yarn warehouse on the northern and southern sides has a simple and elegant facade, which several plain windows ornament it (Feizi, 2014). The structure used in these spaces is beam structure, columnar and truss which are surrounded by brick walls (Feizi, 2012).

Figure 67. Dyeing hall (Ghasemi, 2017)

Figure 68. Dyeing hall (Ghasemi, 2017)

The ornamentations used in these spaces are the same as the ornamentation on the manufacturing halls' façade.

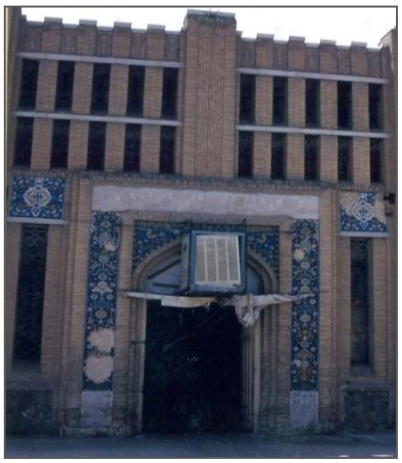

Figure 69. Tilling ornamentation of the entrance (Ghasemi, 2017)

Figure 70. Wooden ornamentation (Ghasemi, 2017)

Figure 71. Metallic porter columns and beams (Ghasemi, 2017)

Figure 72. The metal construction of the building (Ghasemi, 2017)

Figure 73. Porter columns with a brick view (Ghasemi, 2017)

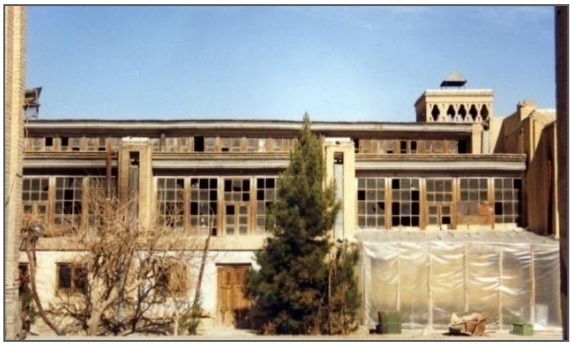

Figure 74. Brick facade (Ghasemi, 2017)

D. Warehouses: Another part of the building, which is located on the edge of this site, is in the form of a rectangle (almost a square) with the seven-hectare area (one side is 280 meters and the other is 240 meters). These marginal buildings mostly are warehouses of the complex. Warehouses built by arched and groin structures that were designed by using elegant and exquisite bricks (Feizi, 2012).

Figure 75. Kolonbu arched roof of warehouses (Ghasemi, 2017)

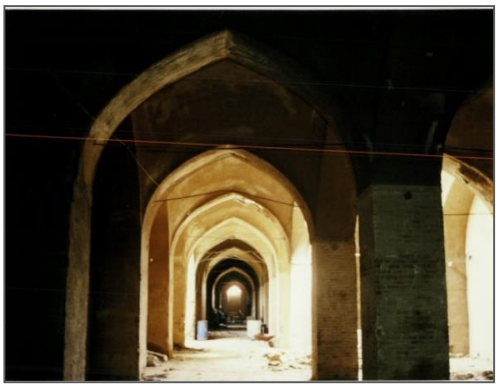

Figure 76. Traditional rib structure in warehouses (Ghasemi, 2017)

For example, warehouses have facades made of plaster of clay and there are arch structures, very fine brick pillars and copings and windows with arches in the form of numbers five and seven.

Figure 77. Warehouses interior

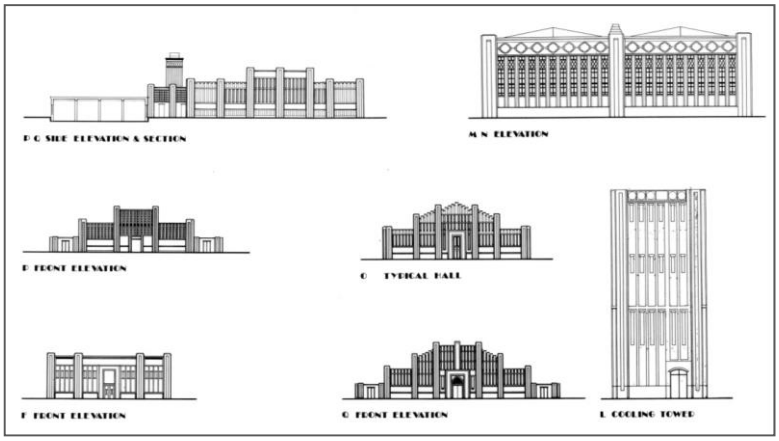

Figure 78. Risbaf factory elevations (Cultural heritage, handicrafts, and tourism organization, 2019)

Also, very beautiful ironwork at the entrance and polygonal designs of the upper edge of the cooling tower are counted as ornamentation (Taki, 1968).

Figure 79. Ironwork ornamentation of the complex entrance (Ghasemi, 2017)

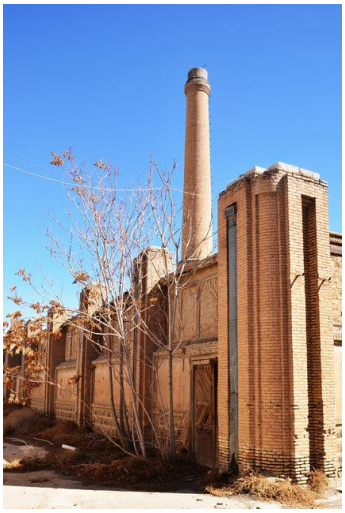

Figure 80. The cooling tower

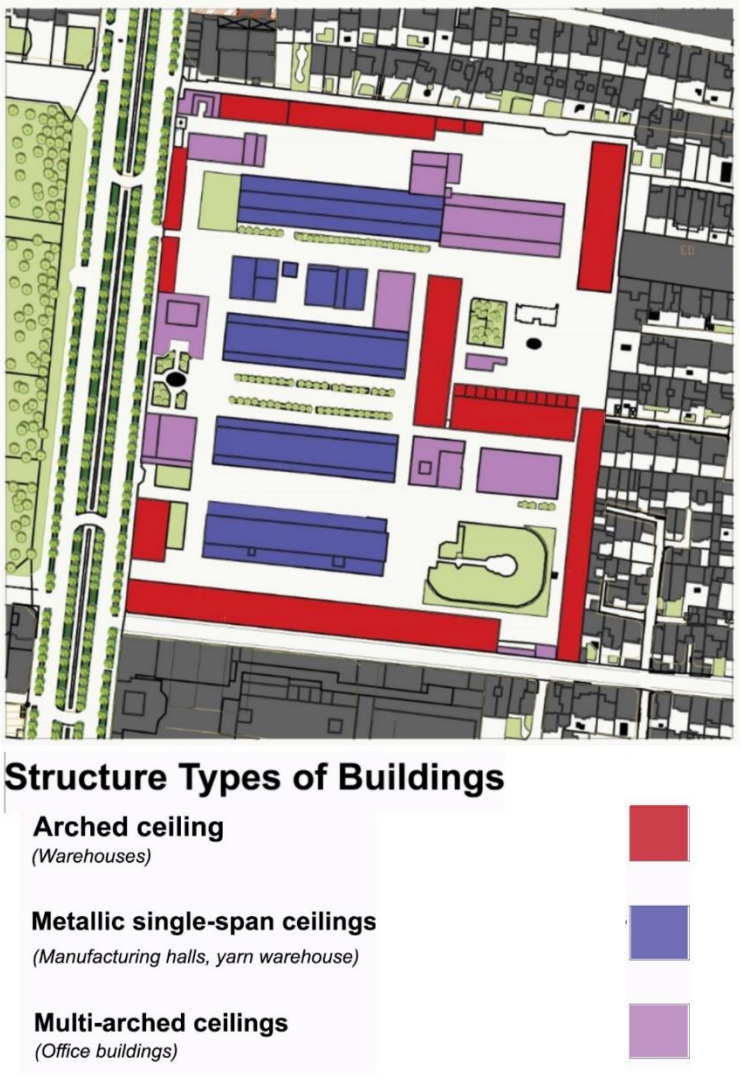

Figure 81. Structure types of buildings in the site (Author)

5.3 Deterioration Evaluation

In this complex, some sections of warehouses built with traditional architecture style, have apparently been abandoned in periods as this kind of architecture requires periodic maintenance. During these periods, parts of the arches were destroyed and the roofs were damaged because of compression. In these spaces, we have small ruined parts. Roof insulation should be repeated and the arches should be re-installed. Nevertheless, more than 90% of the complex is completely undamaged (Izadi & Feizi, 2010).

Most of these saloons are undamaged but must be strengthened or removed in restoration or protective measures on these buildings in different periods. As well as gable roofs and extensions; however, they are physically intact and have no structural problem.

Figure 82. Deterioration in the roof of warehouses

Figure 83. Deterioration in the roof of warehouses

Unfortunately, the location of the Nursery is unclear on the site. And in some spaces, small volumes are connected to the original volume or have been removed from it. In addition to climatic factors such as wind and rain, there is precipitation of cams over arches of

the warehouses and the consequent collapse of them and so many accidental factors, and so on (Taki, 1968).

5.4 Additional Issues

According to Feizi (2012), there are some problems that should be solved through adaptive reuse of Risbaf industrial complex.

- Lack of awareness and recognition of the values of society by different classes of society;
- The burnout of parts of the buildings and the destruction of some warehouses' vaults in the factory;
- The construction of high-rise buildings around the complex and disturbing the skyline and ruining the view of Sio-Se-pol Bridge;
- Failure to properly introduce the architectural, historical, and social features of the factory and prevention of any research activity on the work by the current owner;
- Abandonment and lack of proper use of the complex.

Also, the figure below is showing the current situation of buildings on the site based on their wellness.

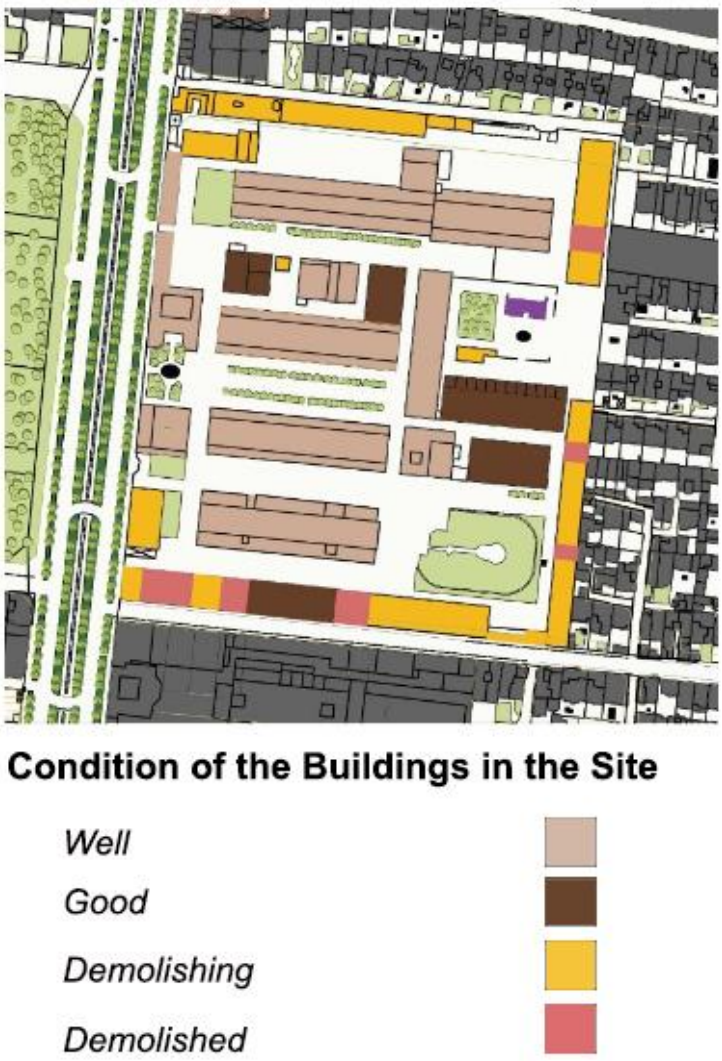

Figure 84. Condition of the buildings in the site (Author)

Figure 85. The schematic model from original Risbaf factory before demolition

5.5 Legal Perspective

The function of the Risbaf factory is defined as social services in the detailed urban master plan. According to the terms of the detailed plan approved by the City of Isfahan, the definition of "social services" are as follows.

Those services are provided by governmental bodies or under their administration. Such services are categorized into the following types:

1. Administrative-Law Enforcement: Headquarters of offices, banks, organizations, institutions and other governmental and affiliated governmental and law enforcement agencies;

2. Vocational and higher education: vocational training centers, teacher training centers, higher schools, and universities;

3. Education: Kindergarten, elementary school, middle school, high school, and high school;

4. Health: Public bath, clinic, and hospital;

5. Parking;

6. Tourism: inn, motel, hotel, and camping;

7. Green Space: Children's playground, park, green space, and amusement park;

8. Religious-Cultural: Center for the Intellectual Development of Children and Youth, Public Library, Exhibition, Museum, Cinema, Theater, Mosque, Imamzadeh, Church;

9. Sports: Sports and Indoor Spaces, Sports Complex and Stadium (Rajayi, 2008).

Chapter 6

A PLAN FOR ADAPTIVE REUSE OF RISBAF INDUSTRIAL COMPLEX

6.1 Introduction

In this chapter, the researcher tries to create an integration among the detected main elements of the decision-making process of adaptive reuse by proposing an adaptive reuse plan for Risbaf industrial complex as a heritage complex. In order to make the main elements of decision making applicable for adaptive reuse planning, there is a need to strategize the main elements in a holistic manner. To achieve this, managerial concepts have been employed, since deciding and planning for any project are managerial tasks. The proper decision-making model should create integration and synergy among all stakeholders of an adaptive reuse project by being socially responsible in nature. In order to encourage all stakeholders to collaborate, a proper plan should consider the roles and needs of stakeholders. Thus, the proposed plan for the reuse of Risbaf complex is based on the main elements of adaptive reuse and it is the result of literature and case studies review by the researcher. The proposed adaptive reuse of Risbaf is with new functions of being a cultural center with the aim of serving society through various cultural related services. The details of this proposal were presented in chapter 2.

6.2 Strategy Design for the Adaptive Reuse of Risbaf Industrial Complex

This section is provided exclusively for Risbaf case since other case studies are actual cases of adaptive reuse with new functions and providing strategy for their conversion is not the case of concern. Already reused cases can be evaluated by their results and potential heritage assets for adaptive reuse can be discussed from the beginning of the project (strategy and planning).

In order to develop a strategy for adaptive reuse of Risbaf Industrial complex, the holistic model of Mısırlısoy & Günçe (2016) expanded by extracted main elements of adaptive reuse planning of industrial heritage buildings has been used. Considering the steps proposed by the aforementioned authors along with the developed main elements of adaptive reuse of industrial complexes by this study are the foundations of the strategy proposed for reuse of Risbaf.

The first step is to identify the stakeholders involved in the process of making decisions regarding the tasks that should be done for the adaptive reuse of Risbaf. The former and potential users of Risbaf should be defined at the beginning of the first step. Defining former users leads to having a better understanding of the cultural heritage context of the Risbaf. The tasks practiced by users created an important part of Risbaf history and added meaning to this historical industrial complex. Thus, reflecting the history of Risbaf towards better authenticity and originality in adaptive reuse cannot be achieved without considering former users. The potential users are the main reasons for changing the function of an industrial complex. The selection of potential users should be based on the flaws and wrong practices of old users in order to overcome

the former environmental and economic issues. In addition, comprehensive regional surveys can be conducted in order to detect the region's needs and demand to define potential users accordingly. However, this study was unable to conduct this survey due to its limitations and recommend this practice for future studies in related fields. Thus, the potential users' definition of this study is based on the former environmental and economic issues.

Further, during stakeholder identification, the other actors including producers, investors, and regulators should be defined. Producers are experts that should be involved in the reuse of Risbaf and they should give consultation regarding technical aspects of the project. Producers provide guidelines for improving the authenticity and economic feasibility of the Risbaf project. In addition, they can guide the project to be beneficial for societal awareness regarding environmental issues and cultural heritage along with the legal aspect of operational goals. Thus, produces are the collection of experts in various fields such as architecture, engineering, law, business, and history. Investors are the main actors of strategy design since they provide financial means for operational goals. The other important stakeholders are regulators who have authority to regulate the process of reuse projects according to related legal terms and standards.

Through proper identification of stakeholders, the possible linkages between different actors can be detected. For example, when the potential users are defined, it is easier to find investors who are interested to deal with defined potential users. Further, experts for designing and implementing the project can be employed and through additional proper legal and financial consultations, investors and regulators along with producers can act systematically together to improve the quality and transparency of Risbaf reuse project based on main elements proposed by this study. The proper and

constructive interactions among stakeholders will bring aligned guidelines for technical aspects of Risbaf reuse (authenticity and interpretation) along with beneficial economic plans and policies regulated by legal authorities.

The second step is to analyze the physical features (which is provided in the previous chapter), values and regional needs of Risbaf complex. Through analyzing the physical features of Risbaf complex, the proper new function of this complex can be concluded. Information about physical features and existing fabrics, in general, reveals the values and potentials of Risbaf complex for its respective district. Risbaf values are historical and cultural as a heritage building and its location has potential to produce economic and social benefits for its respective district. Analyzing the needs of the region, which Risbaf is located, can reveal useful hints for proposing new function for Risbaf complex. The Risbaf complex should not be analyzed solely, but rather as a crucial entity in the region. Thus, the new proposed function should be based on consideration of the whole region's demands. A proper new function for Risbaf complex capable of creating benefits for environment and society can encourage investors and regulators to collaborate for improving the economy of district while protecting the originality of heritage for future generations and increasing awareness for the importance of that.

The third step is to plan for necessary actions to conserve the Risbaf complex. After a thorough analysis of Risbaf's physical features, it is time to decide what kind of conservation operations are needed for different parts of Risbaf complex. The planned actions should retain the originality of Risbaf complex as a heritage complex (authenticity) aligned with regulations of related authorities and also should provide economic and cultural benefits for the region.

The fourth step is to identify the potentials of Risbaf complex for adaptive reuse. The sustainability of the Risbaf's adaptive reuse is dependent on considering the potentials of this complex regarding economic, socio-cultural, physical functional, political environmental and natural environmental aspects. The holistic approach towards the potentials of Risbaf will enhance the sustainability of Risbaf's reuse in terms of detected main aspects (authenticity, economy, interpretation, regulation).

The fifth and last step for designing a strategy for Risbaf's adaptive reuse is the determination of possible new functions. Since, the possible new functions based on all mentioned steps and different variables (e.g. different needs, different possible investors) are somehow unlimited. This study proposes one of these possible new functions according to the detected gaps and needs of the researcher. This new function is also related to the interest of the researcher as an architect. The researcher of this study with this proposal acts as a consultant and a hypothetical stakeholder (producer of consultation described in the second step of this section) of Risbaf complex. The underlying reason is that the proposal for Risbaf as a potential case for adaptive reuse can integrate the findings of this study within a case and yields to a conclusion for this study.

6.3 Defining Stakeholders

Contextual users of Risbaf are now different from original users of it. This heritage building used to be the venue for manufacturing but now because of its historical and cultural value, it should be used in a manner that the preservation of it becomes feasible. Thus, mainly educational, cultural and touristic activities can be the allowed activities for this complex as a social service venue with heritage to be protected.

Producers are the one group of involved stakeholders who use their skills to plan and operate the Risbaf project. They have to work jointly with investors and regulators to fulfill the needs of the market while protecting the heritage of Risbaf complex.

Ministry of Roads and Urban Development as a governmental entity is the owner of the Risbaf complex. The other investors from the public and private sectors can be involved in this project. Ministry of Cultural Heritage, Tourism and Handcrafts as the main regulator of heritage assets can also be involved in the proposed plan since the proposed new function is aligned with this organization's goals. There is a mutual interest among the owner and the regulator upon Risbaf project since through adaptive reuse of this complex, Ministry of Roads and Urban development will benefit from urban regeneration and Ministry of Cultural Heritage will benefit from the conservation of a heritage asset. Considering the demands of related authorities will facilitate the success of adaptive reuse of heritage assets.

6.4 Conservation Actions Planning Based on Existing Fabric and Values of Risbaf

The first step in the process of rebuilding a historic building and granting new uses is to recognize its physical and functional features and capabilities. Undoubtedly, identifying the historical background of the complex and how it was used, plays an important role in defining today's role of the monument. Feasibility studies in Risbaf historical complex have attempted to organize the revitalizing program with the aim of identifying the potentials and spatially analyzing the whole complex on one hand and its constituent elements on the other hand.

The outlook of the project's conservation actions is firstly formulated by considering the characteristics of available spaces, documents, programs, and outward plans, the theoretical foundations of restoration of historical monuments, comparative studies and review of records, similar experiences and examples, and the views of experts; which presents the ideals, missions, and values of the study group in the form of a statement.

Selected examples include the performing arts centers, concert halls, ceremonies halls, art centers and cultural centers in Iran as well as in other countries of the world. The reviewed complexes cover a wide range of possible uses in a complex such as the Art and Event Center. Most of the introduced cases, such as cultural centers and multifunctional art centers have multiple uses.

Studying similar examples of this complex -the Art and Event Center- both inside and outside Iran provides a comprehensive account of the spaces and activities deployed in such complex. It should be noted that the selected centers for examination are mainly cultural centers, art centers; and centers with similar titles to the "Art and Event Center" have not been found.

In the next step, based on the set standards, a list of the required micro-spaces for each space was prepared and according to the physical spaces in the complex, the required range for each of the main spaces was determined. The next step involves adapting the activities and applications of the complex plan based on the capacities, advantages, and limitations of each building and offering a suggested stain. For this purpose, several criteria were determined in assessing the capabilities of each building. Then, each building was awarded a suitable score based on the proposed land use and based

on the criteria set for evaluation. At the final stage, based on the obtained points and comparing them with each other, the best possible use for each part of the complex is specified and the result of this process is presented as a suggested stain on the complex plan.

Studying similar examples and using backgrounds and experiences in this field can be used to reinforce strategies for using in design. The motivation for reviewing records, experiences and similar examples is to use these experiences in identifying how to intervene and plan Risbaf Historical Complex. The design strategy for Risbaf complex is as follows:

- Restoration of the factory with emphasis on economic, cultural and tourism capacities;
- Providing services to selected audiences;
- Creating spatial and dynamic life in Risbaf Factory and its affected areas;
- Increasing the scale of factory performance and expanding the scope of its services;
- Considering activities and services appropriate to the dignity and traction of factory spaces.

Based on the document has been reviewed in chapter two, international policies, charters and guidelines section, the conservation quality of any space can be based on criteria such as authenticity (the degree of interference in the work and the degree of its departure from its original state, either in the totality of the space or in the constituent elements). Also, the quality of the interventions (or if restored, quality of restorative intervention), used materials and used decorations has been Checked.

Based on this definition and with regard to the main features of the complex according to current situation analysis of Risbaf factory in chapter four, which defines its architectural character and creates a unique image of the new architecture to the country, which is in combination with traditional Iranian architecture. Significant buildings of the factory that present these features include manufacturing buildings, yarn warehouses, packing hall, dyeing hall, cooling tower, and office buildings and warehouses should be considered in traditional Iranian architecture style as the next priority.

During the adaptive reuse process, the conservation of materials and methods should be noticed in a way to be compatible specifically with the original materials of each part of the buildings. Hence, in Risbaf factory, the windows that have been designed as a part of architectural features, gave special characteristic to each space. So, in the conservation process, windows as one of the major parts of ornamentations should be completely preserved to keep the cultural significance of complex for users and visitors. And also, it will show the main aim of architects who were tried to make compatibility between Iranian traditional architecture and modern industrial architecture.

Moreover, the original material that has been used for main building facades was brick, for this, during the reusing process, these brick facades with their special decorations that have been explained in chapter four should be kept safely and in case of any interventions, same material must be used.

In addition, some demolished parts such as the warehouses' roof, should restore the same as the original ones without any damage and change with the same material and

structure which were plaster of clay with arch structure. Because the warehouses are the only buildings that were built with traditional design.

Furthermore, the new function should be chosen to be compatible with the original structure and material with the least interventions. Also, it can remind the primary use to the public. Besides other spaces, the cooling tower with the specific Iranian design should be kept as a significant element of the historical industrial site.

6.5 Potentials of the Risbaf Complex

Potentials of Risbaf to benefit the stakeholders are considered. The potentials of Risbaf are defined in order to be socially responsible about users' needs while preserving the heritage of Risbaf.

- Participation in promoting the social and spatial identity and dignity of the historical context of Isfahan;
- Participation in the sustainable development of Isfahan historical and cultural context and promotion of balanced productivity of historical sites;
- Participation in promoting the tourism industry in national and international scale; due to the unique role of Isfahan in tourism development of the country;
- participation in urban regeneration process in the historical area that can improve the urban quality of life;
- Acting on the potential values of cultural heritage economics by relying on historical, cultural and artistic values;
- Achieving new patterns in improving the quality of urban spaces using historical structures;
- Highlighting the values of the works of later historical times that have received little attention.

6.6 Determining the Complex New Function

A cultural center with various activities related to heritage awareness benefits the involved stakeholders. Heritage awareness activities inform people about the ways that they can preserve their heritage (Authenticity and Interpretation), eliminate waste in construction (Economy) and interact with related authorities (Regulation). The vision of this new function planning is to encourage people, national authorities and related international organizations (ICOMOS) to collaborate for preservation and recognition of Iranian industrial heritage assets.

The streams of revenue for the owner and investors can be created through domestic and international tourists for visiting Risbaf heritage complex along with conducting educational services for the district citizens.

In terms of architectural detail, Risbaf Factory is one of the most beautiful factories in Isfahan during the first Pahlavi-era. It has beautiful ornamentations that diverse in each section of the factory, according to the use and structure of that section (Taki, 1968). With considering the detailed plan of the Isfahan city, the function of the Risbaf factory listed as a social service, and also with considering the demolition of the Bafnaz factory, Wool industries, and New Shahreza factory, the Risbaf is the only opportunity in the Chahar-bagh area for the social service. The Risbaf factory has the potential for creating a vibrant urban spirit and an attractive environment for citizens and tourists.

The determination of the complex use is done according to studies. What emerged in studies of the theoretical foundations of exposure to such works was the creation of attractive, social varied uses. While respect and safeguarding the values of the work is also an important consideration. The successful experiences of reusing industrial

buildings around the world show that cultural and artistic uses are the most successful uses that thrive on these buildings and the urban environment around them. Museums, multipurpose art centers, and cultural centers are the most important and successful uses.

According to the studies and the conditions of Risbaf Factory in terms of its location in Isfahan and its large dimensions, which include large architectural spaces (about seven hectares) and flexible and open areas. The most suitable application for this industrial complex is Artistic Multipurpose Center which is intended to be the main artistic center of Isfahan where artists can attend and work for the art events.

“Chahar-bagh Cultural Center” can be the title of the complex that the former Risbaf factory will have with a new use.

The spaces needed for the Chahar-bagh Cultural Center: a place for the permanent presence of artists and art enthusiasts should be able to respond to this presence. This approach seeks to provide suitable venues for various art events, as well as venues for formal and intimate gatherings, and, alongside these spaces, appropriate services to the complex are provided. The spaces will be as follows:

1- Library 2- Cinema 3- Theater And Concert Hall 4- Tea House 5- Open Door Amphitheater 6- Food Court 7- Traditional Restaurant 8- VIP Meeting Area 9- Office Building 10- Textile Workshop 11- Iranian Traditional Textile Shop 12- Amphitheaters 13- Visual Art Gallery Spaces 14- Archive 15- The Fabric Qalamkari Work Shop 16- Contemporary Art Museum 17- Iran Industry Museum.

6.7 Classification of Spaces Based on the Spatial Characteristics of Buildings

One of the features of the Risbaf industrial complex is the large-sized and integrated spaces that can be used for multiple activities. Obviously, larger sized spaces will allow the designer to design interior space and be able to accommodate a wide variety of activities. The spatial prioritization of buildings will be placed higher in terms of capacity and flexibility.

In this connection, what can be considered as a weakness of the complex is the pillar of the main halls which would be problematic for applications such as an amphitheater, cinema and conference hall. To solve this problem some parts of the halls can be removed to reach the desired spaces. By this definition, the first priority will be the spaces of the Ribsaf complex office building. And the production, finishing, yarn, dyeing, and power plant halls come in second, and warehouses and service spaces come in third.

Therefore, the suggested model classified into four different scopes. In each classification placement of functions mentioned above will be demonstrated in following figures. As can be seen in figure 134, library, cinema, theater and concert hall, tea house, and outdoor amphitheater are located in the first classification. Because of the suitable physical and spatial connection between the spaces, the potential of the open spaces for the contemporary functions like an outdoor amphitheater and being near the two main entrances.

Figure 86. Placement of new functions for the buildings in the first classification of the suggested model (Author)

The second classification is placed in the center of the complex site which includes public areas such as the food court, traditional restaurant, VIP meeting area, office building, textile workshop, and Iranian traditional textile shop. Because of the structural and aesthetical connection between the main buildings of the site and also the main entrances. Also, the center of the site is an appropriate place for the public and crowded spaces.

Figure 87. Placement of new functions for the buildings in the second classification of the suggested model (Author)

Figure 136, shows the third classification which is connected to the south entrance and is placed on the main axis of the site. This scope contains the two amphitheaters, two visual art gallery spaces, archives, and the fabric Qalamkari workshop.

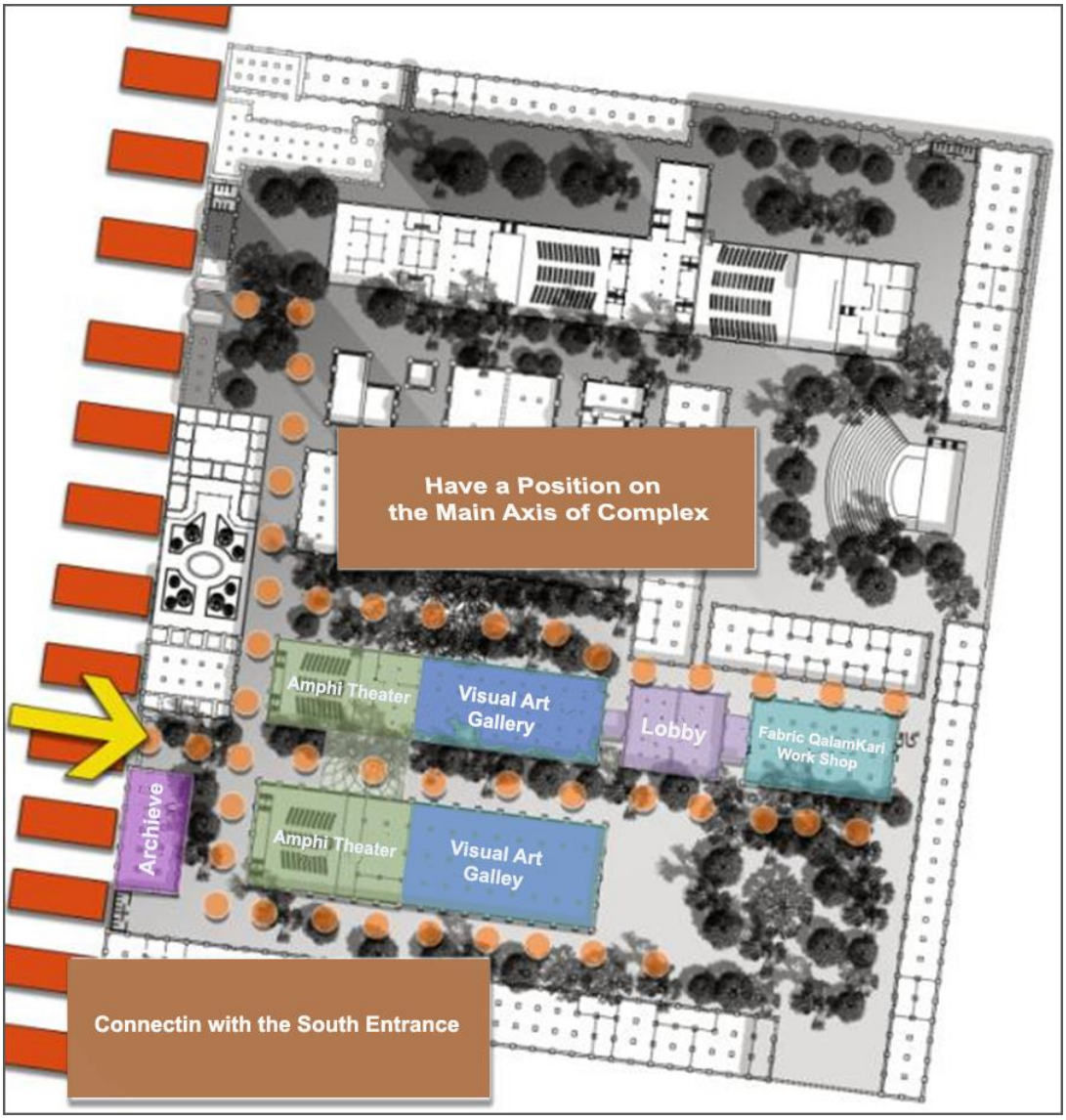

Figure 88. Placement of new functions for the buildings in the third classification of the suggested model (Author)

The last classification includes the contemporary art museum and the Iran industry museum, which are located on the corner warehouses due to the lack of light.

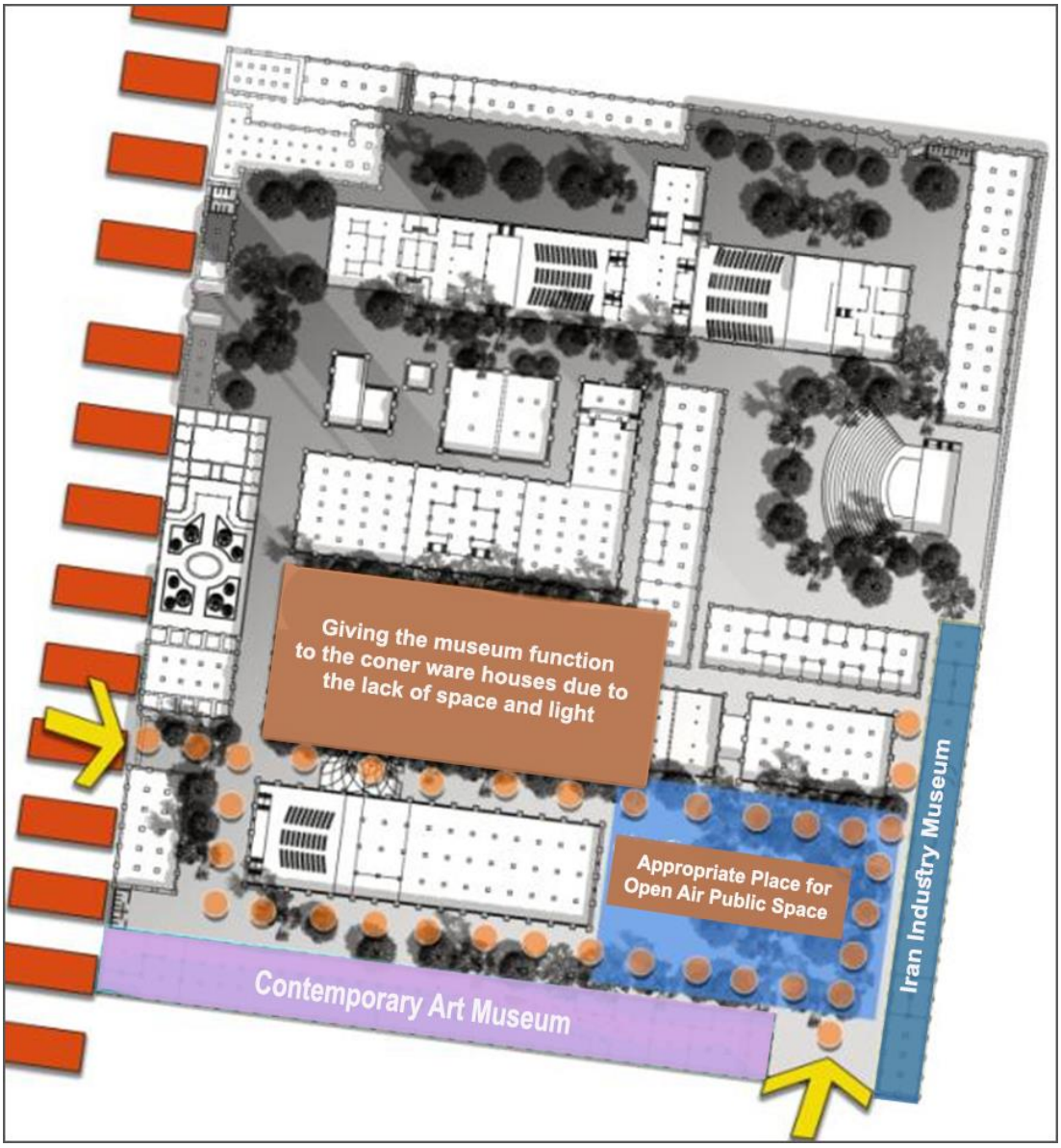

Figure 89. Placement of new functions for the buildings in the fourth classification of the suggested model (Author)

Chapter 7

CONCLUSION

7.1 Conclusive Summary

This research through a preliminary literature review reported in "Research Background" has detected the necessity of a strategic approach to the matter of adaptive reuse planning for industrial heritage complexes. Further, after evaluating the research context (Iranian industrial heritage assets), the problem of not having international recognition for Iranian industrial heritage has been stated. This problem reflects the flaws in planning for adaptive reuse in the industrial heritage realm in Iran.

In order to investigate the mentioned flaws, there is a need to find the main elements of adaptive reuse planning for heritage industrial complexes. Since heritage assets have historical and cultural values for a nation or even broader scale, the involved actors or stakeholders are not limited to investors and regulators as can be seen in adaptive reuse projects for non-heritage assets. The heritage as a national identity involves a wider range of stakeholders and changes the scale of stakeholders' responsibilities to the social and national level. Moreover, the value of heritage assets in globalization era has been expanded to international level and related organizations such as ICOMOS are interested in being involved in preservation practices of heritage assets worldwide. The described situation of heritage assets brings up the questions of this research. The main elements of planning for reuse of industrial heritage complexes and a method for creating integration among them are the questions of this study. In order to answer these questions, the objectives of this study are set and research methodology is chosen

accordingly. This study employs an inductive approach to achieve the objectives of this study.

International policies, charters, and guidelines are reviewed in order to extract main elements of adaptive reuse planning for industrial heritage complexes. Authenticity (preservation of originality in industrial heritage), interpretation (heritage awareness practices), economy (contribution of adaptive reuse project to the economy of the nation), regulation (alignment with rules and regulations controlling the operation of adaptive reuse) have been detected as main elements of planning.

Further, successful international case studies with their original establishment and functionality belonging to the industrial revolution are chosen in order to discover their achievements regarding the main elements of planning for industrial heritage reuse. Through analyzing these case studies, the researcher of this study obtains inspirations for designing a plan for Risbaf case study. In addition, the researcher analyzes some Iranian case studies to realize the history of implemented plans for Iranian industrial heritage assets.

In order to create integration among the findings of this study through reviewing extant literature and case studies, a plan based on detected main elements and inspirations from successful international cases for an industrial heritage complex called Risbaf in Iran is devised. Since planning is a managerial task, related managerial concepts are used to design proper planning for Risbaf. Thus, a strategic approach to the matter of planning is chosen

7.2 Implications for Planners

According to the findings, this study suggests planners of adaptive reuse for industrial heritage complexes to use a strategic approach to this matter. Mısırlısoy & Günçe (2016) work is worthy to be mentioned regarding strategic planning for industrial heritage assets. This study has expanded the aforementioned work by considering extracted main elements of adaptive reuse planning of industrial heritage has used it for planning Risbaf adaptive reuse.

As Mısırlısoy & Günçe (2016) explains, one of the brutal mistakes in adaptive reuse context is to plan the conservation actions before specifying the new function for the project. The conservation actions should be based on the planned new function/functions in order to decrease unnecessary interventions or any additional installments. Thus, a step-by-step approach to adaptive reuse planning will add optimization and sustainability to the project, while preserving the socio-cultural values of heritage with the least possible interventions.

As the main elements of adaptive reuse of industrial heritage are highly interconnected, there is a need to integrate these elements in order to facilitate the planning for conducting the adaptive reuse project.

In the case of Risbaf industrial complex, a need for the creation of balance between involved stakeholders' interests has been detected. Thus, this study has used a strategized planning in order to achieve the mentioned balance. Throughout the planning process, the detected main elements of adaptive reuse planning for industrial heritage sites have been considered. Finally, the determination of the new function for

Risbaf as a cultural heritage center and related conservation actions in the reuse plan are the outcomes of mentioned analyses.

Risbaf is one of the examples of industrial projects, which were forced to become shut down due to financial issues. Regeneration of these failed industrial projects through strategic plans for new functions will lead to financially possible ways of industrial heritage preservation and the economic growth of their respective districts. The new function of Risbaf as a governmental cultural heritage center contributes to all involved stakeholders' interests through providing cultural services to public.

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