

Original Research Article

# Landscape Regenerative Flows in the Persian Garden (Case Study: Shazdeh Garden, Mahan, Kerman)

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**Abstract** | Persian Garden is one of the most significant symbols of Iranian architecture, which has been the result-of flow-based approach toward the environment. The Persian Garden is a glorious sample of design and regenerative development. The term “regeneration” describes the process by which a system of reconstruction, renewal, or regeneration incorporates its inherent resources and creates sustainable development. This sustainable development, links the needs of society to nature. Meanwhile, current available strategies in sustainability only investigate the state of ecosystems in the “present” time. This dilemma has caused the “sustainability” approach to be expressed without focusing on “improvement of the past.” The regenerative theory has taken its core ideology from philosophical perspectives, which are based on “ecological” concepts, and, by strengthening its origins in social and environmental systems, it guides a wide range of concepts and approaches. The Persian Garden is a “unique network”, “multilayer” product, and is “consisted of living systems within a geographical area”; This product is the result of a complex interaction of “time,” “ecology” and “culture.” The hypothesis of this research is that Shazdeh Garden reveals the concept of design and regenerative development. In this study, it has been tried to investigate that how Shazdeh Garden have represented the defined frameworks of regenerative development; Accordingly, the analytical framework of the LENSES has been used as an analytical-measurement tool, and evaluation worksheets were utilized in order to measure and evaluate the flows that have shaped the regenerative development in a multi-layered network as Persian Garden. Evaluating Shazdeh Garden with the LENSES executive framework leads to a deeper understanding of the environmental, economic, and socio-cultural situation. As most of the focal points in the regenerative flows of the Persian Garden are constructive, it can be stated that the initial hypothesis of this study has been confirmed. The findings of this study are appropriate basis for possible future investigations in order to focus on sustainable aspects of the Persian Garden as a repeatable regenerative model for urban spaces.

**Keywords** | Persian Garden, Shazdeh Garden of Kerman, Regenerative development, LENSES executive framework, Sustainable development, Regenerative flows.

**Introduction** | Persian Garden is one of the most significant symbols of Iranian architecture, which has been the result-of flow-based approach toward the environment.

This pattern has been capable of arranging natural elements such as water, trees, and plants nexus along with artificial elements such as Kushk and walls to illustrate the infinity in the Persian landscape; This, indeed, has a holy existence which has sewn the earth and the sky (Mansouri, 2005).

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Iranians have not considered the garden as a symbol of paradise for a long time, and the Persian Garden has used the same pattern (Wilber, 1970), which is a symbol of the connection between humans and nature.

The Persian Garden is a model beyond the concept of sustainability whose primary goal is to meet the current generation needs without harming the needs of the future (Brundtland, 1987).

In fact, the Persian Garden is a glorious example of regenerative design and development. The term “regenerative” describes the process by which a system of reconstruction, renewal, or regeneration incorporates its inherent resources and creates sustainable development that links the needs of society to nature.

### **Beyond sustainability: Regenerative development**

In today’s world, the concept of sustainability has faced many limitations, and its main problem is caused by its broad definition. What exactly do we want to preserve? A living world for humans and other creatures? Economy or culture and society?

On the other hand, there has been a lot of criticism about the application, success, and desirability of Sustainability. Academics, environmentalists, and companies realize that mere understanding of the concept of sustainability is not enough. As the matter of fact, they are looking beyond sustainability concept in order to search for the most appropriate solution.

If we truly want to achieve sustainable construction, we must seek prosperity, and mere efforts in order to maintain the current situation, cannot achieve sustainability. Sustainability has not been developed enough in order to guarantee the survival of society beyond half a century. Hence there is a need for regenerative design. More than half of the use of all fossil fuel emissions had occurred since 1987 - the year when the idea of Sustainable ability came to the fore with the United Nations report “Our Common Future.” In fact, sustainability has not had such a significant impact on preventing the worsening of environmental crises. Based on Bill Reed’s analysis, anything less than 100% sustainability is inevitably a part of a degeneration cycle. Therefore, using methods to design an artificial environment is necessary to provide an upward and regenerative cycle (Pawlyn, 2019, 1). Thus, after years of debate and research, sustainability experts have come to the conclusion that the “classical models of sustainability” are weak and have some shortcomings in some areas. In order to solve these shortcomings and eliminate them, experts rely on the regeneration of previous injuries in social, economic, and environmental relations; In this regard, they have introduced a holistic and comprehensive view. Strategies for sustainability, solely consider the state of ecosystems

in the “present”. This has led the “sustainable thinking” not to focus on “improving the past.”

John Tillman Lyle, in 1996, has defined the term “regenerative” as an approach in designing the “urban landscape. Designers can rebuild lost ecosystems through the concept of “regeneration”. Comparing the two ideas of “sustainability” and “regeneration,” the “sustainability” approach is based on existing “ecological factors”, while the “regenerative approach” is based on the change of natural ecosystems, from “the past to the present.” This adds to the nature of “process” and “systematic” existence of regenerating approach.

The regenerative theory has taken its core ideology from philosophical perspectives based on “ecological” concepts. It guides a wide range of concepts and approaches by strengthening its origins in social and environmental systems.

This approach is based on a theoretical holistic view and it is based on a systematic development framework and attitude. Moreover, in terms of analyzing the function of systems, this approach suggests its own methods and processes which use tools and techniques in order to implement the systematic development. As the matter of fact, regenerative design and development seek to find the extent of ecosystem degradation which is caused by the development of the artificial environment in nature. The purpose of this is to provide the needs of ecosystems and inhumane communities at the same time (Du Plessis, 2012). In this method, spaces are considered a part of larger systems and as points in a system (Zari, 2018).

“Regenerative development” is a combination of “sustainability”, “ecology,” and “design”. This approach has been relied on an ecological perspective. In this regard, by understanding the sustainability and environmental concepts, this approach can improve the goals and methodologies in diverse areas. These areas are included as sustainability, practical skills, life and visual systems, level of health (hygiene), welfare and prosperity (Gibbons, Cloutier, Coseo & Barakat, 2018). Regenerative design focuses on the reproducible and ethical principles of ecology while focusing on living systems. We must work with nature, not fight it. These are important approaches to regenerative design. Regenerative development considers the artificial environment as a way to achieve optimal health. Therefore, the artificial environment must be dynamic and responsive in order to be able to progress over time and thus achieve positive and continuous evolution. Through regenerative development, humans can revive and build the capabilities of natural ecosystems. Regenerative design focuses on the fact that humans, their artificial environment, culture, and society, as

a whole, belong to ecosystems. This organization seeks to achieve maximum health potential for the environment and human beings at the social, physical, cultural, and economic levels. The term regeneration, by itself, is a very valuable term because it suggests the properties of self-organizing, self-healing, and self-evolving for living systems (Poher, 2012). Regenerative development is the process of promoting capacity and facilities in individuals, communities, and other natural systems for the purpose of reconstruction, adaptability, and progress. Regenerative development is not about maintaining present status or modeling from what was in the past. As the matter of fact, regenerative development is related to systems and places that have the capacity to evolve in order to promote health and vitality. Also, regenerative development can be a facilitating process in this regard. Development must consider needs and wants; otherwise, it will not be practical (LENSES Overview Guide, 2018, 4). This development is with the purpose of renewal, sustainability, and prosperity. Regenerative development is not about preserving what is now or just reviving something from the past to what it was (Plaut, Dunbar, Gotthelf & Hes, 2016, 2). This idea is illustrated by using the basic models, which are shown in Fig. 1. The orange and green circles indicate the relative degenerative and regenerative project results or an environmental intervention decision. For example, if your decision consistently has more of a detrimental effect than a value-added one, the foundations will turn to a degenerate path. On the other hand, if the project is constantly representing welfare and health, it will be on the regenerative side. These patterns provide a mental model and represent a meaningful way in order to understand the consequences of environmental actions, either for the better or worse (LENSES Overview Guide, 2018, 5).

In recent years, various tools and executive frameworks have been developed by different universities and research institutes in order to assess and evaluate the environment based on the regenerative framework; The most important tools in this regard are REGEN, LENSESES (Living Environment, Nature, Social, Economy System), PERKINS + WILL and ECOBALANCE. One of the best and most complete is LENSES Analysis Framework (Middleton, Habibi, Shankar & Ludwig, 2020).

In this context, the focus is on “descriptive criteria” instead of “prescriptive criteria” and can be used for a variety of projects in all scales. The “LENSES” framework is a system of interconnected lenses through which the project context can be examined in detail. Each lens has its unique function and provides a graphic diagram that assists in understanding the concepts and features

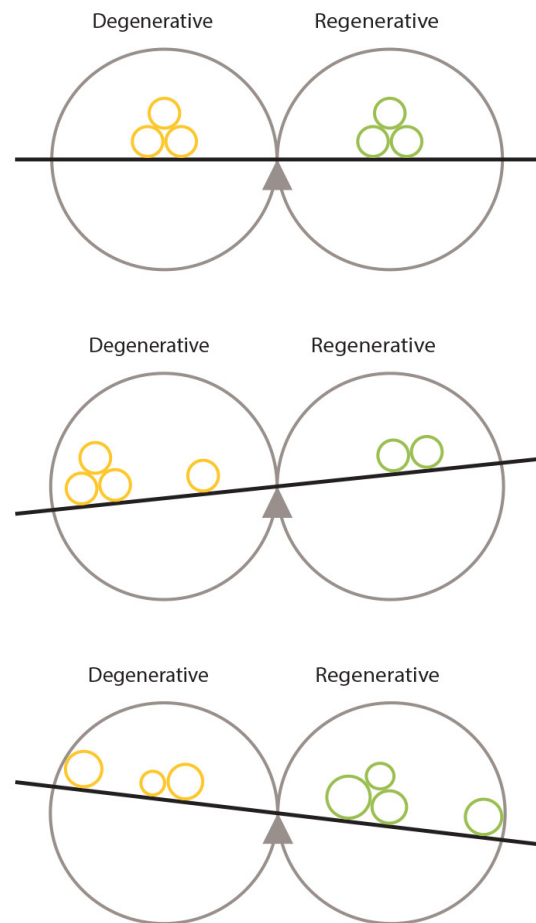


Fig. 1. Reg & Deg ecological balance. Source LENSES Overview Guide, 2018.

of the site. Ongoing management and development of this framework is under the auspices of the CLEAR: CENTER FOR Living Environments and Regeneration; In order to eventually reach a tool that guides users to appropriate, contextual and regenerating decisions and actions, this method is being utilized (Plaut, Dunbar, Wackerman & Hodgin, 2012). As shown in Fig. 2, regenerative is co-evolution of the whole system in the environment, and there are three basic aspects in order to catalyze a project towards regenerative development:

- Understanding the prominent pattern of places;
- Conversion and application of patterns in design instructions;
- Continuous feedback is a conscious process that involves learning and participation through dialogue and action (Reed, 2007, 678). Since the Persian Garden has a latent capacity to perceive prominent spatial patterns, it can be applied and feedback can be received. It seems that Persian Garden has all of the three basic aspects which is mentioned by Bill Reid in order to catalyze environmental interventions. Thus, by selecting

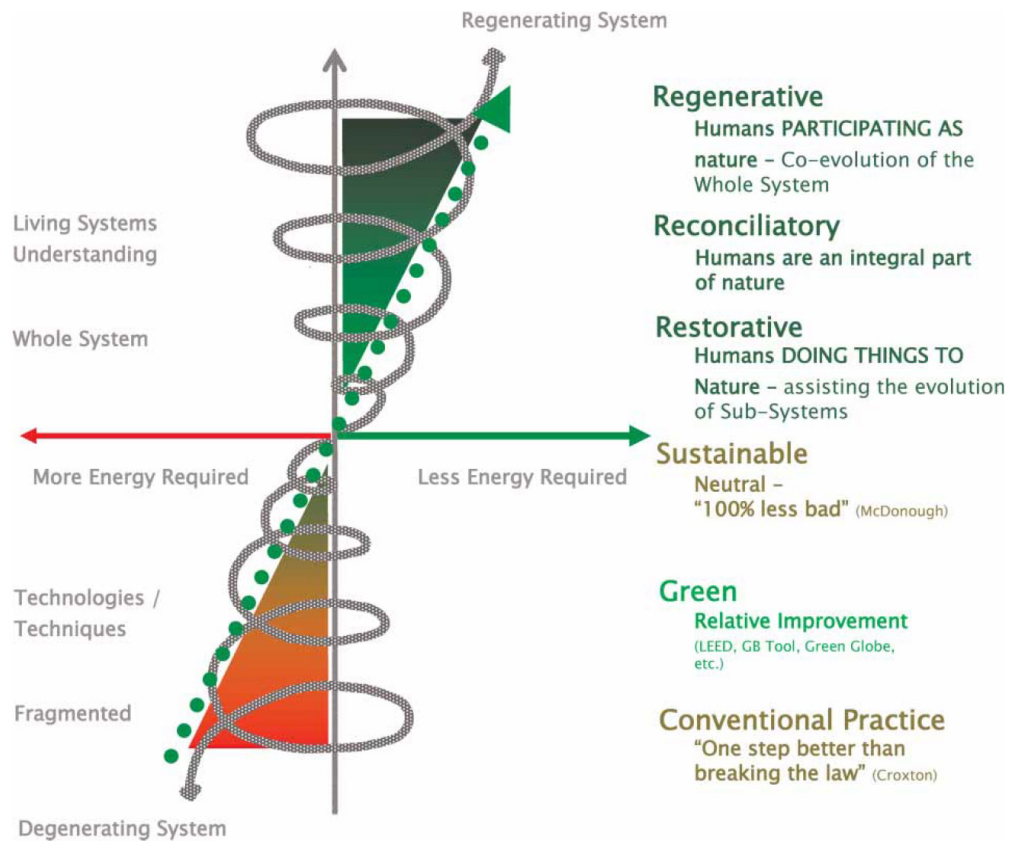


Fig. 2 . Environmental design trajectory diagram from green model to Sustainable able model and to regenerative model. Source, Reed, 2007.

Shazdeh Garden as one of the most important Persian Garden s and world-registered gardens, this article tries to identify the regenerative flows in it and draw the positive regenerative network of Mahan Persian Garden in a way that it can be a sustainable model and also can be used as a standardized and executive new format.

### Objective and hypothesis of the research

Each place has its own historical, cultural, ecological, and economic patterns. Regenerative approaches accept “place patterns” as the starting point of development (Mang & Reed, 2012). The Persian Garden is a “unique network,” “multilayer,” product and is “consisted of living systems within a geographical area”; This product is the result of a complex interaction of “time,” “ecology,” and “culture”. The hypothesis of this research is that Shazdeh Garden reveals the concept of design and regenerative development. In this regard, the purpose of this study is to examine that to which extent Shazdeh Garden conforms the defined frameworks of regenerative development; Accordingly, the analytical framework of the LENSES has been used as an analytical-measurement tool, and evaluation worksheets were utilized in order to measure and evaluate the flows that have shaped the

regenerative development in a multi-layered network as Persian Garden .

### Methodology

As mentioned in this research, the LENSES analytical framework is used in order to evaluate the Mahan Persian Garden . This framework consists of three lenses:

1. Foundation Lens;
2. Vitality;
3. Flows Lens (Fig. 3).

The foundation lens assists designers to recognize the implications of previous decisions or future processes in the design context. It also helps to conduct the important stage of decision-making. “Vitality” lenses work in conjunction with other lenses, while Flows lenses are used for understanding historical and current trends. Moreover, “Vitality” lenses are used in the brainstorming process and through this approach, the opportunities for regenerative development will be identified. In this way, more foundation and vital lenses are used for planning and decision making and Flows lenses are used to evaluate the environmental context. The Flows lens consists of twelve sections for each flow; Every section includes a set of focal points that define the

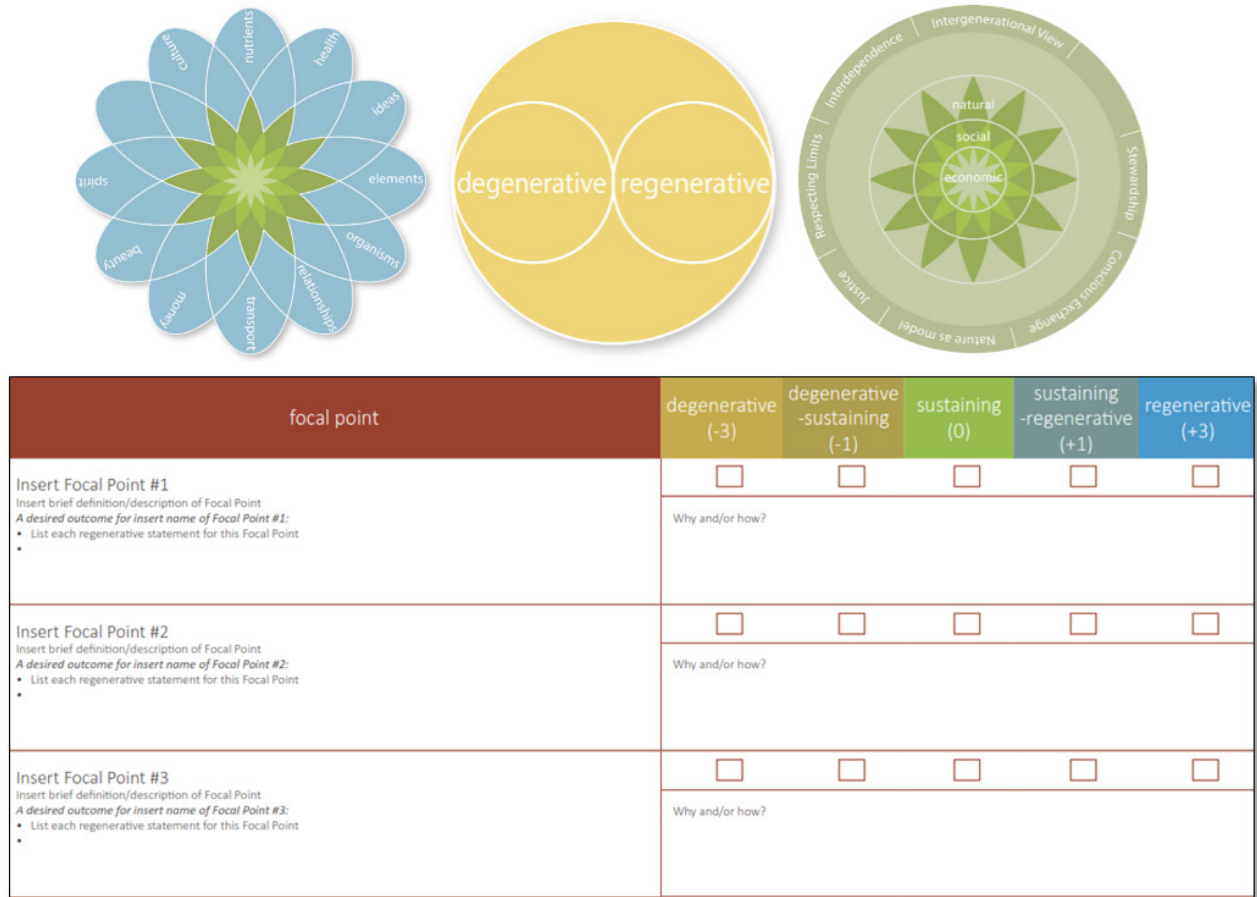


Fig. 3. Foundation and vitality lenses that are not used in this study (models 2 & 3), flows lens (model 1) that is used to evaluate the environment flow in assistance with the worksheet (model 4) analytical-measurement of the flows. Source: Lenses Overview Guide, 2018.

sub branches of flows and have a “five-scale” spectrum with a classification from degenerative to regenerative mode (see Fig. 3).

Each section includes five spectrums, including regenerative, Sustainable-regenerative, sustainable, sustainable -degenerative, and finally, degenerative. This method allows the possibility of “quantitative perception” concerning the “regeneration” nature of a project to be determined. Each flow contains a number of focal points with interpretive-analytical features and characteristics and are aligned in the above five classifications (Lenses Overview Guide, 2018). The basis of the evaluation of the effective flows in regenerating the landscape of Shazdeh Garden, has been conducted through using this method and with the help of garden and Iranian landscape experts. Field observations conducted interviews in this area, and existing scholarly articles that have used logical reasoning; have played key roles in completing these worksheets. Eleven currents that were associated with Shazdeh garden have been introduced in

the lens framework and are identified as below: Beauty, community, ecosystem, education, land use, materials, health and well-being, water, energy, economy and organization. Below each of these flows, two to four focal points are considered for regenerative evaluation which is based on standard LENSES worksheets. The transportation flow had a less direct connection with the subject of the garden, which was excluded according to the LENSES framework evaluation methodology.

### Evaluation of regenerative flows in Shazdeh Garden

Shazdeh Garden has a mansion, and the entrance was constructed at the end of the Qajar period. This garden is located 35 km southeast of Kerman and near Mahan at an altitude of two thousand meters above sea level on the edge of Mount Jopar, in a land with an area of more than five acres. Cypress, sycamore, fruit trees, poplar, and Tabrizi trees are the vegetation of this garden. As it was prementioned, Shazdeh garden is desinged in stepped

form (vertical and horizontal form); This characteristics of the garden has caused the frequent waterfalls, ponds and water fountain to manifest. The Kushk is at the top of the garden. It has two floors and has a great view in terms of the landscape; It, interestingly, evokes a kind of transcendent feeling in humans’ spirits (Heidar Nattaj, 2010).

• **Beauty flow**

From the aspect of the beauty flow, we can regard that Shazdeh garden has ecological beauty and it can be known as its focal point. This, can reveal the aesthetic interpretation of the cohesion of the garden and also it can show the adaptation that ecosystems reveal in the Persian Garden . The historical period, which refers to the balance of aesthetic aspects of the garden in different eras, and the feeling and perception in the Persian Garden can also be observed. This reveal the oppurtunity to evoke the perceptual aesthetics of the person which witnesses the Persian Garden `s beauty.

Analytical studies indicate that all three focal points in this framework are regenerative and can be understood and analyze in the Persian Garden (Table 1).

• **Community (generalizability)**

Three focal points in the generalization of the Persian Garden are related to the impact of this flow on the space users. Understanding the user community; Their connection with the Persian Garden and their views on this concept and the third focal point is creating opportunities and producing a culture of social dignity. Comparative analysis with the researches shows that continuing the agricultural tradition and its transformation into a geometric system and also the formation of a landscape as “Persian Garden”, in all three focal points, has the capacity to be generalized in society and thus as an archetype, has high acceptability in popular preferences even in contemporary time (Table 2).

Table 1. Evaluation of the quality of regenerative development and design of the Beauty flow of Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
Ecological beauty	-Biophilic characteristics in the Persian garden (Khayyat Moghaddam & Irani Behbahani, 2018). -Landscaping with natural elements (Mostafazadeh & Ansari, 2016). -Aesthetics of water as an ecological system in the Persian garden (Shahcheraghi, 2013). -Aesthetics of the Persian garden archetype as an alternative solution to approach sustainability (Masnavi, Mohseni Moghadam & Mansouri, 2018).	Regenerative -Paying attention to rhythm and repetition and symmetry in the garden, -General geometry of space and locations, paying attention to the dominant axis of the garden.
Historical period	-Existential originality in different time periods (Mansouri, 2019). -Persian garden has a historical nature and has a continuous characteristic from the past to the present (Khayyat Moghadda et al., 2018).	Regenerative -This garden has maintained its formal and functional identity throughout history.
Feeling and perception	-Existence of a system of concentration by creating the desired solitude -Perception process of “environmental peripheral rupture-semantic attachment “ (Shahcheraghi, 2009).	Regenerative -The Shazeh Garden creates a common mental image in the minds’ of its audience (Azmoon & Moeini, 2018).

Table2. Evaluation of community flow (generalizability) in Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
Understanding the user community	-The capacities of the Persian Garden in order to persuade people and professionals for the purpose of creating outdoor spaces (which are appropriate with it), have often been unknown or have been represented with incomplete knowledge. This capacity, potentially exist.	Regenerative-Sustainable -Shazdeh Garden is a social example of accepting people to interact and connect with nature.
Connection with the community	-Citizens’ concern about the importance of preserving natural resources in the urban environment and its impact on various aspects of life (Masnavi et al., 2018).	Sustainable -degenerative -As a historical work, it has a relative connection, but the main problem is the lack of connection with the urban and social context.
Creating opportunities while the producing the culture of social dignity	-Persian Garden is the cultural language of Iranians throughout history (Goudarzi, 2017).	Regenerative-Sustainable -Shazdeh Garden creates a profound mental image in the visitor. It is a symbol of Iranian culture and human identity (Massoudi, 2009).

• **Ecosystem**

Based on LENSES worksheets, the following four focal points of ecosystem flow in the Persian Garden will be discussed: Adaptability of plants, animals and human communities and the possibility of high prosperity in the ecosystem. Productivity and usefulness in terms of capacity building and being a catalyst for human societies and non-human societies with the purpose of self-sufficiency and healthy. Persian Garden has the capability of being adapted with the environment or climates of different regions and it is reversible after natural disasters such as floods and landslides. Persian Garden has diversity of plant and animal communities. The Persian Garden has made the expansion and adaptation of plants, animals and human communities in the environment possible and provides high possibility of prosperity for the ecosystem. As it can be observed analysis of Table 3, Shazdeh garden has complex conditions in terms of ecosystem flow; Meanwhile, it can be degenerative in terms of ecosystem adaptability.

But in terms of diversity, it can be a substrate for the formation and preservation of different species of animals and plants.

• **Education**

Persian Garden is not inherently made for educational purposes; however, considering the focal points of the education, the two focal points of information and culture-building and active communication with the environment are in line with the function of Shazdeh garden. Based on the existing trends, Shazdeh garden can be considered a regenerative-Sustainable example in shaping the education flow (Table 4).

• **Land use**

The natural land, the built land, and the fertile land are the three focal points of land use flow derived from the LENSES operating framework (Table 5).

• **Materials**

Simplicity, attractiveness, and adaptability to the environment are the basic focal points of the flow of material in the Persian Garden (Table 6).

Table 3. Analysis of ecosystem flows in Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
Compatibility	-Persian Gardens are still used as a micro-climate of green elements in the urban landscape (Taghvaei, Tahbaz & Mottaghi Pische, 2015). -Persian Garden plays an essential role in regulating the ecosystem of the environment (Godarzi Sorosh, Mokhtabad Amrei, 2013).	Regenerative-Sustainable -Regulation of thermal and comfortable ecosystem due to the presence of water and garden trees and the surrounding geometry.
Efficiency	Increasing the efficiency, profitability, and self-sufficiency of the landscape in the Persian Garden (Khalilnezhad & Tobias, 2016).	Regenerative -Existence of fruit trees in Shazdeh Garden.
Adaptability	Persian Garden in setting with ecological conditions can create sustainable conditions (Norouzian Pour, Motahari Rad & Motaghi Pische 2012).	Sustainable -degenerative -Adaptation to topography, incompatibility with the surrounding environment, and the possibility of creating problems in the water supply can be counted as degenerative factors.
Diversity	Planting multifunctional species in design system of Persian Garden (Khalilnezhad & Tobias, 2016).	Regenerative-Sustainable -Types of tree species including Tabrizi, cypress, fruit trees.

Table 4. Analysis of the flow of education in Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of degeneration
Information and culture building	-Persian Garden illustrates how to use natural elements in artificial spaces.	Regenerative-sustainable -Use of water as a symbol of nature; Variety in the use of trees
Active relationship to the environment	-The Persian Garden can be a suitable model of human-environment interaction.	Regenerative -Matching with the 20-meter ground slope Shaping a favorable environment in the heart of the desert

Table 5. Land use flow Evaluation in Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
Natural land	-Garden design is based on land condition and existing nature (Zarei & Soltanmoradi, 2017).	Regenerative -Adaptation to a 20-meter slope of the ground and the formation of a flat garden
Built land	-The garden and the Kushk completely overlap and blend together. -The centrality of the architectural mass, its singularity, and the clarity of the garden geometry causes the time factor to have no effect on the observer experience (Motedayen & Motedayen, 2016).	Regenerative- Sustainable -From the entrance to the two-story mansion in the garden, there is a desirable flow movement.
Fertile land	-Even royal gardens had fruit trees with edible fruit (Shahcheraghi, 2013). Fruit trees in the form of plots and as a fruitful landscape cover a large part of the Persian Garden (Khalilnejad & Tobias, 2016).	Regenerative -Existence of fruit trees in Shazdeh garden

Table 6. Material flow Evaluation in Shazdeh garden. Source: Author.

Focal points	Qualitative interpretation	Degree of regeneration
Simplicity and attractiveness	-Using simple materials that are in harmony with the space in the Persian Garden (Mehdizadeh Saraj & Nikoo Gofar, 2011).	Regenerative
Adaptability	-Utilizing eco-friendly materials such as tiles, clay and brick in the structure of these artificial elements is not only economically efficient but also these materials have high thermal capacity and can easily be replaced or renewed. This research analyzes and interprets Persian horticulture based on its climatic causes (Nakhaei, Ansari & Zandiye, 2017).	Regenerative -The use of brick and coating in it can increase the thermal capacity which is required for the construction of the Kushk and play an important role in adaptively and ecological architecture.

Table 7. The flow of health and well-being Evaluation in Shazdeh garden. Source: Author.

Focal point	Qualitative interpretation	Regeneration degree
Physical, mental, and psychological balance	-All existing systems in Persian natural landscape design have a direct effect on the human five senses and, at the same time, intensify the stimulation of the senses. This system ultimately leads to concentration of the senses, leading to gaining peace and creating an opportunity for reflection in humans (Nili, Nili & Slotanzadeh, 2012).	Regenerative -Physical and natural factors in Shazdeh Garden have been more than 50% effective in creating emotional movement in the visitors (Azmoon & Moeini, 2018)
Healing	-Persian Garden uses different senses of sight, hearing, smell and touch of its visitors. In this way, Persian Garden reveals a human being a situation that is free of any tension and nervous pressure. It also provides people a healthy environment (Hashemin, Kazemi & Bemanian, 2020).	Regenerative -The most important factor in calming the sound of water is due to the stepped nature of the garden. Additionally, the presence of the entrance with special tiles and the white mansion doubles the simplicity and balance with the surrounding colors.

• **Health and welfare**

Two basic focal points of physical and also mental and psychological balance and healing can be examined during the regenerative flow of health and welfare of the Persian Garden (Table 7).

• **Water**

Water is one of the most important regenerative flows in the Persian Garden, and the two basic focal points of quantity and quality of water, in accordance with

construction, the amount of access to water and ecological balance in this flow can be examined (Table 8).

• **Energy**

Although the energy flow cannot be directly considered as regenerative flows due to the function of Shazdeh Garden, the study of the three focal points of production, saving, and investment capability, overall, indicates the possibility of adaption of the Persian Garden with respect to this flow. In general, the flow



Table 8. Water flow Evaluation in Shazdeh garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
Quality and quantity of water presence	-Pond, fountain, sike, waterfall are the main elements of water demonstration in the Persian Garden (Soltanzadeh & Soltanzadeh, 2017). -In the garden, water was gradually collected in large ponds (Chardin, 1958).	Regenerative -It has two main pools for collecting water.
Water and place quality	-Water is a natural and aesthetic element that changes concerning the creation of the place of a Persian Garden in accordance with the quality of the place (Mansouri, 2019).	Regenerative -The gradual stair movement of water in the garden in the middle axis of the landscape has created a unique sound in the Persian Garden.
Access to water and ecological balance	-Water was scarce and valuable in the Persian climate. The garden architecture used various tricks in order to save water consumption and make good use of the aesthetic power of this element (Zarei & Soltanmoradi, 2017).	Regenerative -Use of Tigran aqueduct in the heights of Jopar mountain.

Table 9. Energy Flow Evaluation in Shazdeh Garden. Source: Author.

Focal point	Qualitative interpretation	Degree of regeneration
production rate	-Shazdeh garden and its artificial or natural elements do not have an active function in energy production; Naturally, such a function is not intended for the identity of the garden.	Degenerative -Shazdeh garden has no production in the flow of energy.
Saving	-The geometric structure, physical system and elements that form these gardens have been able to adapt well to the climate in summer and create a situation in the garden that has an effective reduction in temperature with respect to the environment around (Taghvaei et al., 2015).	Sustainable -The environmental thermal comfort conditions in Shazdeh garden create a unique micro-climate for individuals, although these conditions are not productive and therefore cannot be considered regenerative.
Energy investment capability	-It is possible to build Kushks and buildings in the garden with active and inactive capabilities of energy production and attempt to prevent CO2 emissions. This way, Shazdeh garden can lead to energy production and reduction of greenhouse gases in an active and regenerative network.	Regenerative -At present time, Shazdeh garden does not have such a feature.

of energy in Shazdeh garden is often degenerative and non-regenerative (Table 9).

#### • Economy

Three focal points of resources function and investment risk in the regeneration development of Shazdeh garden can be examined. Shazdeh Garden with a socio-cultural perspective can have a strong foundation in attracting tourists and can lead tourism-based economic systems in the country at the regional level (Table 10).

#### • Organization and policy making

The focal point of flexibility can lead to the regeneration development of the Persian Garden during the organization flow. This, indeed, happens if the Persian Garden is proposed as a model with the ability to be replaced in public and urban spaces (Table 11).

#### • History and time

Time continuity and historical narratives are two focal points that can be defined during the regeneration

of history and time in the Persian Garden ; Both are regenerative focal points in LENSES executive framework. Shazdeh garden has the regenerating ability in terms of historical narratives because it shapes the story of the place and is a great part of the history of the Persian Garden (Table 12).

### Discussion and conclusion

One of the hugest challenges in these new studies is that qualitative tools such as LENSES provide results based on authors' evaluations and are, therefore, only partially generalizable. To compensate for this possible shortcoming, and also in order to avoid possible misjudgments through intensive discussion with respect to all aspects of the Persian Garden that might occur with experts and additionally with the review of credible documents, this article has tried to assess the regenerative flows in the Persian Garden comprehensively. The analysis

Table 10. The flow of economy in Shazdeh garden. Source: Author.

Focal point	Qualitative interpretation	Generation degree
investment risk	-The Persian Garden is an economic, crucial focal point in the development of domestic and foreign tourism that can provide a minimal investment risk for the future.	Sustainable able
Capital Function	-The development of social system and cultural structures of vernacular architecture can have a continuous and long-term impact on the areas of entrepreneurship.	Regenerative
Investment resources	-Non-governmental organizations and people-centered institutions, as the main supporters of the development of the Persian Garden, along with government policies, can guarantee the financing of the regeneration of the Persian Garden.	Sustainable able

Table 11. The Analyses flow of organization in Shazdeh garden. Source: Author.

Focal point	Qualitative interpretation	Regeneration degree
Flexibility	-Persian Garden is a flexible model that can be expanded instead of urban parks (Hosseini & Mohammadzadeh, 2015).	Regenerative -The repeatable shape of the garden; Unique pattern of Persian Garden (can be applied) on sloping lands.

Table 12. The Evaluation flow of History in Shazdeh garden. Source: Author.

Focal point	Qualitative interpretation	Focal point
Time continuity	-The Persian Garden is also a characteristic of the Persian spirit that has moved from one time to another in order to understand the mechanism of the world and is in historical connection with the culture and climate of the land (Sheybani & Hashemizadegan, 2017).	Sustainable
Historical narratives	-The narrative occupies a large part of the history of the Persian Garden. The narratives contain stories with an everyday perspective and describe the realities of the garden. These narratives form the story of the place (Kashkooli, Mahya, Habibi & Sharif, 2018) and can be effective in revitalizing the development of the Iranian garden.	Regenerative

of the multifaceted focal points, is one of the advantages of this method which reduces the impact of judgment errors. Further details can reveal the overlap of focal points and regenerative flows. Some of the represented redundancies have caused each flow to be approached from different perspectives and can, indeed, lead to a new insight with respect to the regeneration flows of the Persian Garden. The investigation of Shazdeh garden with the LENSES executive framework leads to a deeper understanding of the environmental, economic, and socio-cultural conditions (Fig. 4). The fact that most of the focal points in the regenerative flows of the Persian Garden are constructive has confirmed the initial hypothesis of this study. The findings of this study are an appropriate basis for possible future efforts in order to focus on sustainable aspects of the Persian Garden as a reproducible regenerative model for urban spaces. Shazdeh garden, is being very welcomed by domestic and foreign tourists. It

is also very welcomed from the side of citizens. Shazdeh garden, not only is a potential economic resource for cities and urban-rural communities (in Iran), but also can improve the ecosystem too. Although new conditions in urban communities causes new challenges, this study showed that Shazdeh garden can be used as an independent example for transferring knowledge between generations. Also, it was shown that Shazdeh garden, was successful in developing a traditional society. This, in turn, manifest the strength of social structure in cultural cohesion. By the notion of the abovementioned statements, it can be stated that this research can be known as an effort in order to systematically analyze the architecture and landscape of Iran by recreating the archetypal development thinking which is called Persian Garden, and, in this regard, it provides a way to create the methodological basis for further studies and applications.

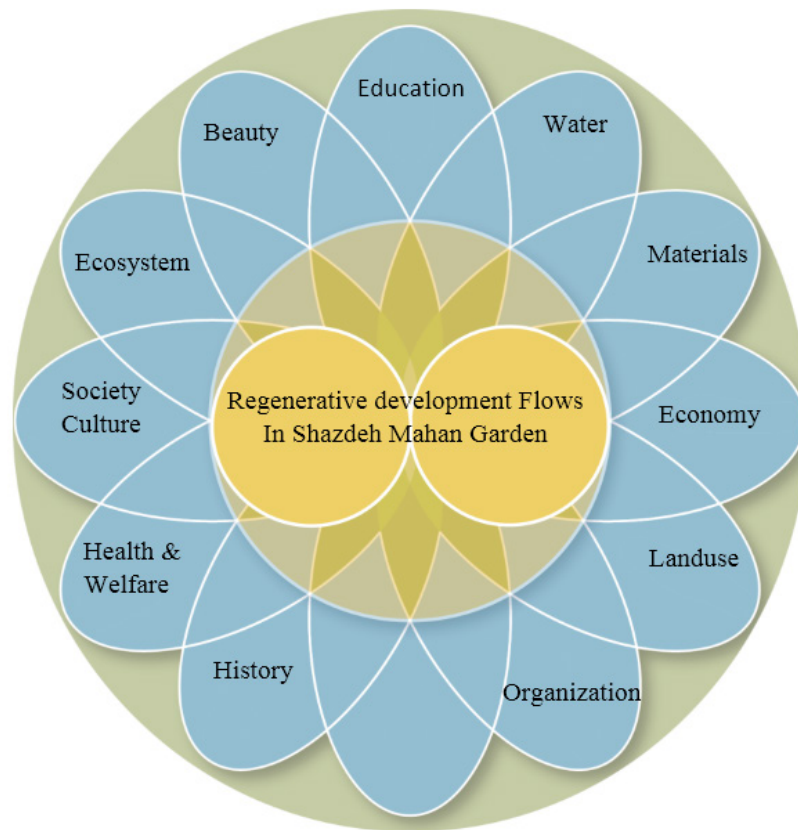


Fig. 4. Flows of regenerative development of Shazdeh garden. Source: Author.

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