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Research Article

Experiences, characteristics, and features of developing new towns between 1898 and 1970

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Abstract

The decision on developing a new town is always informed by the needs and requirements of regional and national planning on the basis of political viewpoints, natural resources, industrial facilities, and population surplus viewpoints. In different areas, new towns were built to address the emerging social, economic, and environmental problems by supporting better living, enabling urban activities, and supporting industrial expansion. Following the review of the related literature, this study compared the theories and bases for building new towns and studied the experiences of different countries as examples. The present desktop research was carried out based on a narrative review in order to develop a framework for assessing the success of new town projects in response to the underlying needs and aims. Although the survey of literature did not result in harmonized measures of success or failure of new towns, the identified critical measures assist decision-and policy-makers to adopt appropriate strategies to assure a higher rate of success for developing new towns.

Highlights:

- Characterizes the "new towns' features" and provides a narrative of experiences related to new towns.
- Provides a historical overview of three eras with regard to new town since 1898.
- Provides an overview of Newtown's success and weakness factors.



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1. INTRODUCTION

Due to the incremental growth observed in a percentage of city inhabitants at the beginning of the 21st century, the development of urbanization has been claimed to be one of the great international developments of the 20th century (Kumar, 2015; Mahtta et al., 2022; Canudas-Romo et al., 2022; Mason & Lee, 2022). Such population transfer has attracted the attention of many scholars to new towns and their influencing factors throughout the world (Madge, 1962; Wilson, 1986; Fanni, 2006).

Although the theory of new towns has been inspired by various theories, its main theorist Ebenezer Howard has become popular under the title of the 'garden city' (Cai et al., 2020; Grant, 2014; Nikologianni & Larkham, 2022; Sharifi, 2016; González, 2017). As a consequence of the gradual development of this theory in the 20th century, theories of satellite towns, urban suburbs, and neighborhood units have given rise to the theory of New Towns. This theory has been applied in different forms for more than half a century in various parts of the world but with discrepancies in the results (Keeton & Nijhuis, 2019; McManus, 2016; Taylor, 1969; Van Leynseele & Bontje, 2019; Aldridge, 1996).

During the historical periods, cities have been built with different purposes in all parts of the world. These can be considered ancient new towns. New towns, as fledgling settlements created based on aforethought structural planning, have a history of several thousand years (Ziari, 2006; Sarvar et al., 2016; Zamani & Arefi, 2013). The goals of creating new towns were planning strategies for improving spatial structures, using and optimizing the application of natural resources, preventing centralization, creating a new process to solve the social, economic, and environmental problems of metropolitans, absorbing the population surplus of megacities objectively, and reducing the economic burden of activities, regional developments, and optimal population distributions (Mironowicz, 2018; Kheyroddin & Ghaderi, 2019; Perloff, 1966).

According to the Commission of New Towns of Europe, three definitions can be considered for a New Town: (1) New towns are cities created since 1917 as a result of developing: a) territories, bare districts, or districts with scattered development; b) settlements and towns into cities; and c) small and medium-sized towns that have faced high rates of development and rapid population growth; (2) "New town" is a city that does not rely on a metropolis in terms of employment but is as self-sufficient as possible in terms of services; (3) A New town is a planned community designed and created in response to predetermined goals, such as physical, economic, and social decentralization of metropolitans (Nasiri, 2014; Ziari & Gharakhlou, 2009). Despite the attraction of being close to big cities, new towns try to encourage the population to leave metropolises by accommodating people and providing them with economic-social development programs (Forsyth & Peiser, 2021; Atash & Beheshtiha, 1998).

New towns have been built extensively in different Asian countries. The most important role of such Asian towns is the decentralization of metropolitans and megacities, the attraction of surplus population, the provision of suitable housing, the spatial organization of metropolises, the provision of housing for the industrial workers, the development of districts, and the reduction of slums. In Asia, Japan, Jordan, India, South Korea, Singapore, Indonesia, Malaysia, Saudi Arabia, and Bangladesh, new towns have been designed and built using different models (Lee & Shin, 2011; Ha, 1998; Joo, 2013; Nasiri, 2014; Sarvar et al., 2016; Ziari, 2015; Harati & Ziviyari, 2012). In Africa, new towns had a dual texture due to the influence of colonial policies; in other words, the colonized towns were created in proximity to commercial regions of metropolitans where the colonizers concentrated most of their activities. The new towns of Africa were built based on American and European designs at great expense, which is neither economically justified nor consistent with the economic, social, and natural conditions of Africa. In former socialist countries, the theory of new towns was employed to

create an attraction pole, prevent the growth of metropolitans, use internal resources, distribute population and industry spatially, develop underdeveloped districts, and perform spatial planning. Although the findings were varied, the theory was successful in the former Soviet Union and corroborated as a theory of decentralization. On the contrary, new towns were not successful in Poland or Hungary, leading them to the policy of developing small and mid-sized cities (Sarvar et al., 2016; Lee et al., 2005; Robertson, 1964).

This research was carried out by reviewing the previous research on the experiences of different territories. In fact, the purpose of this study was not to review the experiences of recently developed new towns designed and created in the last four decades but to investigate the experiences of the U.K, Germany, Egypt, U.S.A., France, Japan, Netherlands, and Poland.

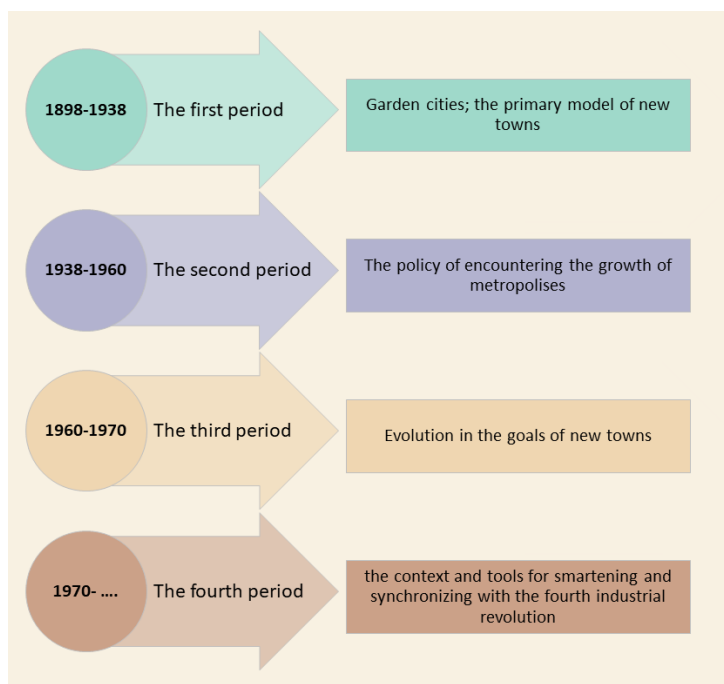
This narrative review is conducted through a descriptive approach using the available sources (Ferrari, 2015; Rother, 2007; Collins & Fauser, 2005). The samples and evaluation period were selected due to their access to rich sources of experiences, preference over continental distribution, and in-depth research. The research questions are:

- (1) What classification have new towns had since their beginning up to 1970?
- (2) What are the characteristics of the target experiences or samples?
- (3) What were the effective factors on their success and failure in the studied research period?

2. DEVELOPMENT PROCESS OF NEW TOWNS

Since the construction of new settlements based on the proposal of Ebenezer Howard, numerous changes have occurred in the goals and typology of these residential centers. In this vein, the development of new towns can be classified into four eras. According to the present research goals, three eras were emphasized while the fourth period, where new towns are taken into consideration as the context and tool for smartening and synchronizing with the fourth industrial revolution, was not investigated (Figure 1).

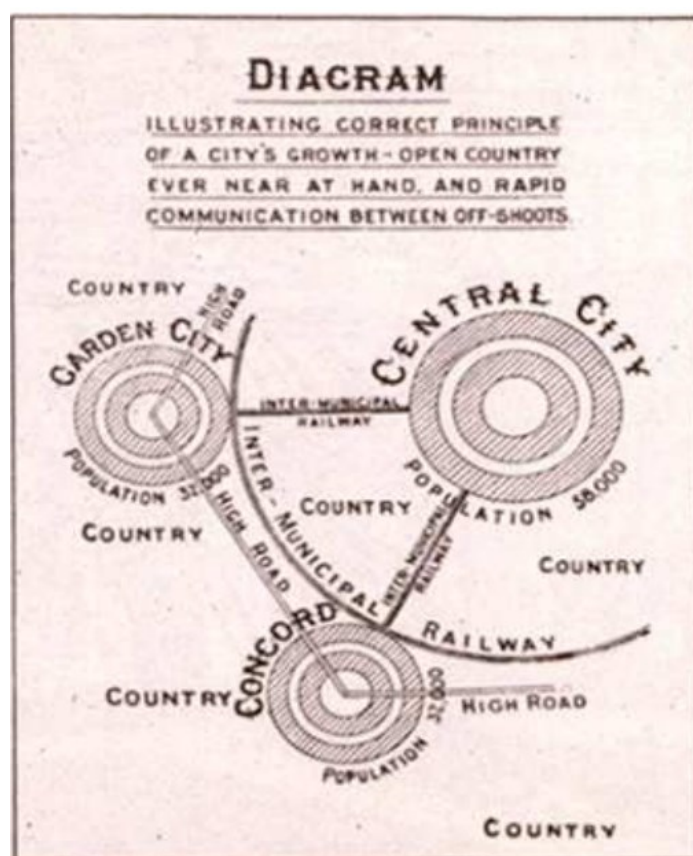
Figure 1. Classification of periods of new towns



2.1 THE FIRST PERIOD: GARDEN CITIES; THE PRIMARY MODEL OF NEW TOWNS (1898-1938)

In this period, garden cities, satellite towns, and then new towns were proposed as an option against the disordered and incremental growth of some English cities, especially in the industrial sector (Figure 2). These cities had a total population of about 30 thousand people creating a district including 10 new towns. In this era, the role of governments in developing these cities, the proportional limit of the garden city population, and the transfer of additional population to new towns had been emphasized. However, most new towns remained theoretical and only a few of them were built (Gatarić et al., 2019; Ziari, 2015; Harati & Ziviyari, 2012; Nasiri, 2014; Vongpraseuth et al., 2020; Olds, 1994; Sarvar et al., 2016; Pazhuhani et al., 2015; Wang, 2022).

Figure 2. Ebenezer Howard's influential 1902 diagram, illustrating urban growth through garden city "offshoots", Source: Garden Cities of To-morrow, Howard (1902).



2.2 The second period: The policy of encountering the growth of metropolises (1938- 1960)

By the end of World War II, Britain once again pioneered the development of new towns. Followed by these transformations, the garden cities have been viewed as means of organizing metropolitan districts to solve their problems. Therefore, new towns have been created at a distance from the metropolises, which were accepted as the main centers of activity for a potential urban districts. During this period, the policy of planned decentralization had not received enough attention and the development plans of new towns had been implemented independently in the process of economic-social development planning. Such investments were considered luxury economic measures, implementable only during an era of economic prosperity. In this regard, the construction of new urban settlements

begun around some large capitals such as Moscow, Paris, and Tokyo as well as the metropolitan zones simultaneous with the development of new British towns. The role of most settlements was to prevent the population increase of metropolitans, especially the capitals, by distributing the population around these districts. For example, of nine new towns were built in France, five were developed around France based on the Metropolis Zone Program with the aim of decentralizing its population. The decentralization program of Stockholm district led to the successful development of Pharesta and Walingby. In Finland, Tapiola was established as a satellite city of Helsinki. In 1949, the finger plan was implemented in Denmark to decentralize the Metropolis area of Copenhagen. In socialist countries like Poland, new towns were created based on the spatial viewpoint and planning as a driver of the industrial regions' development. During this period in the United States, new towns were emphasized without having a role in responding to the problems of metropolitans. In developing countries, many cases of new town planning had been performed during this period (Belford, 2011; Forsyth & Peiser, 2019; Forsyth & Peiser, 2021; Harati & Ziviyari, 2012; Nasiri, 2014; Vongpraseuth et al., 2020; Olds, 1994; Sarvar et al., 2016; Pazhuhan et al., 2015).

2.3 THE THIRD PERIOD: EVOLUTION IN THE GOALS OF NEW TOWNS (1960-1970)

In this period, towns were planned as tools for organizing the national space, district planning, and performing the policy of demographic and economic decentralization. In the third period, new towns in Britain were placed at the service of economic development at the regional level. The creation of new capitals of Chandigarh, Brasilia, and Islamabad in the developing countries also occurred in response to these goals. During this decade, with the emergence of new phenomena such as the polarization of the residential centers model, the disintegration of regional balance, and the creation of gaps among districts, solving these problems and paying attention to decentralization were among the new goals of new towns (Ziari, 2015; Harati & Ziviyari, 2012; Nasiri, 2014; Sarvar et al., 2016; Pazhuhan et al., 2015; Wang, 2022; Azizi & Arbab, 2010).

3. EXPERIENCES OF NEW TOWNS

In different countries of the world, new political, mining, oil, industrial, and surplusable towns have been built to attract the surplus population, control population and physical growth, perform decentralization and spatial organization of mother cities, and provide housing and regional development. According to the nations' policies in building new towns, each country has special experiences in this field (Harati & Ziviyari, 2012; Forsyth & Peiser, 2021; Ziari, 2015; Pazhuhan et al., 2015; Kim, 1977; McDonald, 1975; Helbock, 1968; Van Leynseele & Bontje, 2019; Berechman, 1976; Sarvar et al., 2016; Smith, 1966; Simpson, 2010; Leonard & Downie, 1972; Atash & Beheshtiha, 1998; Wilson, 1986; Nasiri, 2014).

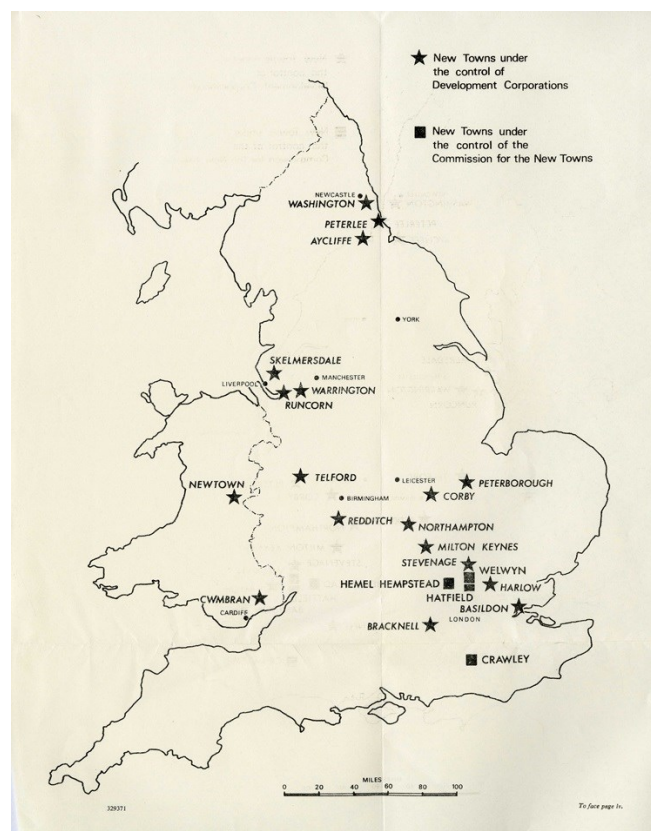
3.1 England

England is considered a pioneer in the field of new towns because its industrial revolution and growth of urban development occurred much earlier than those in other European countries. Criticism about the disadvantages of metropolitans started from the second half of the 19th century among the scholars "before urbanism" (Ruskin and Morris). The starting point of the urbanism movement can be traced to an imaginative composition published in 1898 by an ordinary journalist with no training or experience in the field of urban planning, Ebenezer Howard. His book, called "Tomorrow, A Quiet Way to Real Reform", which recommended the construction of independent garden cities apart from megacities, was later republished and translated into many languages. These proposals led to the establishment of the "Garden Cities Association" by Howard in 1899 as well as the development of debates about decentralization and urban planning during the 80 years leading up to the Thatcher era. This association was inspired by the first urban development law in England, namely the "Town

Planning Agreement” in 1909. At the same time, Howard started to build the garden cities of Letchworth (1903) and Welwyn (1919) in North London with personal motives for public benefit (without the purpose of personal profit) (Clapson, 2017; Forsyth & Peiser, 2019; Clark, 2003; Smith, 1966 ;Council,2015; Ziari, 2015).

During the Second World War, the government adopted a policy of decentralization according to the Barlow Commission Report of 1940 envisaging the decentralization of industrial megacities, primarily the London metropolitan area. The Great London Plan, known as the Abercrombie Plan, was published in 1944 after its author. This policy plan aimed to decentralize industrial activities to less industrialized areas in order to transfer institutions and their employees from the urban area to surrounding suburbs, construct dozens of new towns with a population of 40 thousand people, and develop small towns rapidly outside the region in previously developed cities. The Reeth Commission (1946) specified the characteristics of these new towns, which were very similar to the characteristics of Howard's garden cities; in particular , designing new towns independent from the Metropolis. The above-mentioned principles require building these towns in virgin or almost virgin landscapes with low density at a distance of at least 40 km from central London and 20 km from other urban areas. As a result, a landscape of 2500 hectares was predicted for a town with a projected population of 60 thousand. During the same year (i.e., 1946), the Law of New Towns was legitimized through which the administrative and financing methods of new towns were defined and the limits of the first new towns were determined. The principles of the Reeth Commission, despite being difficult, were also followed to find vast and almost virgin landscapes (Figure 3). Each new town had to accommodate an existing village or small town (Forsyth & Peiser, 2019; Forsyth & Peiser, 2021; Ziari, 2015; Sarvar et al., 2016).

Figure 3. Map of new towns in England and Wales, produced for the Commission for New Towns¹



¹ <http://www.nationalarchives.gov.uk/education/resources/sixties-britain/map-new-towns/>

The administrative and financial mechanisms considered in the new town law were very simple and brought some successes. In the administrative field and government organizations, the New Towns Development Organization was created for each town. The administrative council, which represents the English community, the general manager, and groups of town planners, architects, engineers, economists, businessmen, and others, included a group of about 300 people recruited for a new town with a population of about 60 thousand people. The New Town Development Organization was responsible for planning, building, and managing these new towns. In the beginning, this organization built about 90% of the buildings, which was almost the number of all private houses for rent. At the end of the 1960s, an effort was made to reduce this amount to 50% so that at the end of constructing the last new towns in 1980, private houses subject to ownership constituted the majority of houses. The organized local groups maintained their traditional powers for about 15 years after starting their operations. In particular, they received local taxes from the New Town Development Organization that allowed them to run the government facilities in their area (on the condition of repaying the relevant loans from local taxes) (Pazhuan et al., 2015; Nasiri, 2014).

The financing mechanism was very simple and beneficial; every year, every urban development organization negotiated with the government about its plans and operations. As a consequence, these programs were financed by 60-year long-term loans with delayed repayments; in other terms, The New Town Development Organization started repaying the loan when its income was stabilized from the rents and land transfers. This costly mechanism was very beneficial for the treasury of the new towns because it improved their incomes through loans with an average repayment period of 10 years. These revenues allowed deferred repayments with an initial discount before the end of twenty years. Later, most urban development organizations made profits predicted by the 1959 law (Ziari, 2015; Harati & Ziviyari, 2012).

In years after the war, eight of 14 new towns were built around London. They met or even exceeded their goals, many reaching 80 thousand or more residents. In the 1960s, although decisions were made about other new towns, the Reeth Commission principles were stopped. They aimed to increase the population and could include the existing and often medium-sized towns so that the placement of population in these new towns was never related to the mother city area. In fact, the laws of new towns were followed quite effectively for urban or regional restructuring operations.

Since the new town development companies were eliminated in the 1990s, the completion of towns and the administration of real estate were initially entrusted to the New Town Commission. The Thatcher government demanded these properties be sold and handed over to their residents. In the case they did not accept, houses would be handed over to the army residential complexes. In other words, the local activities were given to the residents and if they did not accept, local activities would be handed over to the investors. This was guaranteed by the New Towns Commission but replaced by a private institution called English Partnership, which initially caused protests (although these decreased gradually over time) from the Labor Party (Harati & Ziviyari, 2012; Nasiri, 2014; Ziari, 2015).

3.2 America

Planning the construction of new towns in the United States was taken into account as a national trend in the construction of urban and suburban districts. This profit-based model started in America in the 1920s and developed up to the 1960s when about 600 new towns had been built including five million residential units. About 10% of the American housing was created in new towns with Radburn and New Jersey as the first experiences. Clarence Stein and Henry Wright designed Radburn in 1928 by focusing on the large blocks that emphasized the separation of the riding and walking paths to make the residential areas safer. Radburn's

goal was to create garden cities in the metropolis for a population of about 25 thousand people. In Radburn, green space and environmental protection were of great importance since the town aimed to facilitate achieving a healthy, comfortable, and worry-free life in the human community. In the 1960s, a number of new capital cities were built such as Reston, Virginia, Maryland, Irvine, and California (Fishman, 1992; Nasiri, 2014; Wang et al, 2010; Helbock, 1968; Bauer, 1964).

In the 1970s, new American towns were built in the forms of satellite cities, inner-city, villas, as well as educational, research, and shopping centers. These cities were following goals, such as providing housing, creating employment, spending leisure time, and developing businesses. These small cities are self-reliant in having the growth potential to serve and prevent continuous urban growth and attract immigrants from big cities (Helbock, 1968; Ziari, 2015; Wakeman, 2016).

3.3 Japan

In Japanese, the garden city is called "Den-En Toshi", where, Toshi means beautiful view and Den-En means village or suburb. In this country, "Den-En" refers to green fields or pastures with villages located in a geographical region with gentle breezes. In fact, this term is used against the concept of "urban" referring to non-urban or anti-urban values. In 1907, the concept of the garden city was introduced to the Japanese through the book entitled "Garden City in Theory and Practice" by A. R. Sennetts. During the period from 1910 to 1915, they got also acquainted with concepts, such as suburban gardens, village gardens, urban planning, and housing. Tomoichi-Inouye, a group leader in the local office of the Interior Ministry, officially announced the idea of a garden city in Japan in 1907. Inouye and his team, in facing the challenge of finding a Japanese term for garden cities, initially selected the word "Den-En Teki" for rural-urban, which was followed by "Kaen-Tosh" (blooming garden) and Den-En Teki, respectively. At first, the group's idea of the Garden City was a garden full of blossoms at the physical center of the city, which turned into an industrial village that included industry, agriculture, and housing for industrial workers. After World War I, Japan faced urbanization problems as a result of industrialization. In this vein, the Ministry of Interior was responsible for formulating urban policy, laws, and theories of urban planning by turning into the policy of building new suburbs as garden cities. Furthermore, the Ministry of Interior built garden cities along with agricultural villages in the suburbs and this model continued until 1945 (Tanabe, 1978; Nasiri, 2014; Ziari, 2015; Kim, 1977).

After the Second World War, Japan was reconstructed based on Europe's experiences regarding displacement and attraction of the urban surplus population. To this end, the "Great Tokyo" plan was performed in the form of British new towns with a green belt and several Swedish satellite towns. Two examples of these new towns, connected to the main city by the high-speed train line, were constructed between 1963 and 1970 as a result of the cooperation between the government and the housing company in "Osaka". The Japanese adopted a specific style of building new towns with one million people. The purpose of creating new towns in Japan was to perform administrative decentralization, attract the surplus population, and stabilize the scientific identity of cities (Sarvar et al., 2016; Tanabe, 1978).

3.4 France

At the end of the 19th century, several garden cities were built around Paris due to the lack of housing. Although the design of those garden cities was similar to those designed by Howard, they had a limited relationship with their theoretical foundations. The founders of these garden cities, George Benoit Lovy, Jules Siegfried, and George Risler, emphasized topics such as housing and social-industrial reforms. In 1905, George Benoit Lovy wrote a series of books called Garden Cities according to Howard's theory, which was later supported by some modernists and national politicians. During the First World War, a limited number of garden

cities were built in France. Given that garden cities were attended by urban planners at the City Planning Exhibition in Nancy (1913), the commission that worked on the Paris Region between 1911 and 1914 prepared post-war reconstruction plans for medium-sized industrial estates, which included a number of garden cities. In 1919, the plan of satellite towns was implemented around Paris and a group called Paternalists proposed the theory of garden housings in the 1920s. Their main purpose was to develop garden housings in urban planning projects (Merlin, 1980; Nasiri, 2014; Ziari, 2015).

The General Council of the Paris Region (1924) predicted new towns with a population of 1.5 million in this region. Due to the outbreak of the Second World War and its consequences, the housing crisis spread widely in France leading to the construction of large residential complexes. Therefore, the Paris Region organization was more seriously proposed from 1963 to 1964 and nine new towns (five cities in the Paris region and four cities in other regions) were consequently designed and implemented based on the policy of creating new towns in France. The rapid growth of cities led to the introduction of the policy of balanced metropolitans during the fourth plan (1962-1965) and the new town's policy during the fifth plan (1967-1970). In the comprehensive plan of the Paris region, developed in 1965, creating several new towns had been proposed in the vicinity of this urban conurbation. Similar to Howard's examples, a number of garden cities were built to solve the problem of lack of housing around Paris at the end of the 19th century (Nasiri, 2014; Ziari, 2015).

According to the policy of new towns, nine new towns were supposed to be built in the Île-de-France region around Paris, Serigny, Pontoise, Mellon-Senard, Marne, La Vallée, Saint-Quentin, Anne, and Yvelines since 1970 for 25 years. Similarly, four new towns were created in the vicinity of the urban conurbation of balance (Ile Dabo; 30 km from Lyon), Rio de Letan, Du-Brew near Marseille, Vaudreuil (20 km from Rouen), and Villeneuve and Desc near Lille. A complete example of these new towns is Ville No-Desk in the north, which was planned in 1967 by the inter-ministerial committee of spatial planning (CIAT) for a population of 100 thousand people in the vicinity of a university campus with 35 thousand students. Although its establishment lasted 17 years, one thousand residential units and 20 thousand new occupations were created during this period. To facilitate the development of these new towns around Paris, not only some developments were planned from Rouen, Lille, Lyon, and Marseille but also a committee was established within the National Government Council for new towns with representatives from finance, housing, sports, and education institutions. This committee used the budget and capital of other ministries in order to meet the needs of new towns (Merlin, 1980; Sarvar et al., 2016).

The French government started considering the development and design of new towns (like other European countries) in the suburbs as a part of the modernization plan of Paris proposed by Delvo. President Charles de Gaulle was chosen as the first manager of the new provincial design and the central government unit of the Paris Central Region. They expected to create a large number of houses for a population of 500 thousand by solving a series of urban problems, such as separating pedestrians and motor ways or providing access to the water supply system. However, since two and a half million people lived in Paris due to the lack of land, they concluded that these towns could be more active and pleasant than Paris. In 1965, when the population of the Paris region reached nine million people, a vital need was felt to present and implement a new region plan with the aim of building five new towns around Paris with a population of 500 thousand people per each. By an order of the Prime Minister (1966), a committee (called the Development and Survey Board; MEA) was established in new towns to establish coordination of inter-board activities. In terms of implementation, the contribution of the central government was very high in providing the required credit to establish new towns. By late action in the construction of new towns, France was able to use the designers' experiences in planning and implementing other new towns. As such, they completed the plans and projects of new towns in Paris successfully by learning from the flaws and defects that occurred in other plans. Although the construction of new towns around Paris

and other cities began in 1970 (i.e., a generation after the emergence of new towns in England in 1964), these towns could accommodate up to 30% of the country's urban population by 1990 (Stelter, 2018; Harati & Ziviyari, 2012).

3.5 Germany

In Germany, two ideas were proposed for megacities. The first was to prevent centralization and population density in some places, which included a kind of balancing to the suburbs by removing industries from urban areas. The other was to prevent the villagers' migration to megacities. As it is illuminated clearly, the Nazis in Germany were against the creation of large cities since they condemned such cities as problematic leading to a decline in the German race. In 1935, they put forward proposals for "territorial organization" and Walter Cristaler described (1940-1942) the technical aspects of the new administrative and desirable structure. In Central Place Theory, he presented the establishment of spatial order through new concepts, such as good distribution, administrative centers, as well as road plans and communication maps while emphasizing the village as the basic settlement. In fact, his plan had differences and similarities with Howard's Garden City plan. In Germany, at the beginning of the 20th century, two strategies were proposed for new towns. The first was based on decentralization by attracting a surplus working population from the inner regions of crowded cities to the surrounding suburbs. This strategy considered forming suburbs and transferring the industries to new towns. The second strategy emphasized the development of migrant cities, which was based on discouraging people to migrate from the countryside to big cities. Another point of view suggested the improvement of agricultural living standards in the suburbs and the maintenance of population, which was mostly supported by the provincial landlords (Eckert, 2009; Harris, 2012; Nasiri, 2014; Ziari, 2015; Sarvar et al., 2016; Van Zee, 2012).

In Germany, the idea of "Howard's garden cities" failed to arouse emotions, and only conservative politicians, planners, and urban professionals tackled this topic to any extent. Given that Germans were inclined to reform their traditional society, Edward von Berlepsch Vonlandas prepared a simple and adjusted model of Howard's social city in 1907, which was later revised by Kustav Langens in 1911. This urban development plan was based on garden cities like satellite towns that were physically separated from the central city and placed separately from the green belt. In this plan, the central city is surrounded by satellite towns separated by a green belt and open space. The garden city concept was thus adjusted in Germany and developed through Raymond Unwin's satellite towns, which caused a great impact on German modernist planners in the 1920s (Eckert, 2009; Harati & Ziviyari, 2012; Van Zee, 2012).

3.6 Egypt

The policy of new towns was initiated followed by the establishment of a law by the government in 1979. According to this law, 17 new towns would be built in an area of 2400 square kilometers, which is equivalent to 60% of the useful surface of the country (36280 Km²) in the size of an already-existing city (2497 Km²). In total, this law predicted that more than six million people would be distributed among four new towns. Based on the plan, four large cities (Panzdem Mah, Al-Obour, Badr, and Al-Amal) were designed at a 30-kilometer distance from the capital with a population of 250 thousand people in each. Furthermore, six cities (Beni Suef, Sohaq, Menya, Siut, Asodan, and Valaqson) were designed in the vicinity of the port city of "Damita", as the sister city of the ancient cities in Middle Egypt and Upper Egypt, which were built on the edge of the desert along the narrow Nile valley. Their populations would vary between 60 to 130 thousand people. As a result, two rural towns in uncultivable areas have been revived for the habitation of 100 thousand people. In addition to these new towns, 10 new complexes with the name of new habitats were predicted along a radius of 2 to 4 kilometers around Greater Cairo, which were supposed to accommodate the surplus

population of the agricultural sector (Abou-Zeid,1979; Hegazy & Moustafa,2013; Harati & Ziviyari, 2012; Nasiri,2014).

All new towns of the first generation (i.e., megapolis complexes) consisted of only two million people and two-thirds (73.5%) of the main target resided in only three cities of 15th of May, 6th of October, and 10th of Ramadan. The first city (15th of May), which contained only one-third of the total number of residents was built as an extension of the urban belt surrounded by the "Helwan" industrial area located in the south of Greater Cairo. This city has attracted many workers from this region and is well integrated into the transportation network due to the north-south metro line. The second city on the road from Cairo to Fayoum is located in the southwest of the capital, which has developed rapidly and has been preferred by some businessmen who needed to stay close to government institutions for investment over the past few years. Private universities, recreational facilities, luxurious hospital centers, and the new "Sunista" have also been established there. The tenth of Ramadan is a leading city since the desert urbanization process was rooted in it. The construction of this city was started in 1976 and its population reached 48 thousand in 1996. It was predicted that this town would include 150 thousand people by the year 2000. The location of this city, in the heart of the corridor leading to the cities located in the "Canal Zone", has given it a privileged and highlighted location for the transfer of industries from the capital and the creation of new human habitats. The city of "Sadat", which was once considered the potential administrative capital of the country, is far behind in terms of growth and reflection. Other new towns or satellite cities have also attracted a small population so far. Those cities located in the south of Egypt, which are sister cities of other cities in the valley and were established in the 80s, are finally placed at the bottom of this list (Hegazy & Moustafa,2013; Harati & Ziviyari, 2012; Nasiri,2014).

3.7 Netherlands

With the exception of the low-lying coastal cities, such as Emmeloord, Lelystad, and Almer, no other new town has been designed and developed from scratch in the Netherlands. However, a generation of cities has been created as a product of conceiving environmental planning, called "Groeikeren" or "urban development centers". These sixteen centers and small villages were designated by the government under a "cluster decentralization" model to solve the problem of population growth. During their 40 years of history, these centers have turned into relatively large suburbs and today they have reached such a level of growth that a part of their residential context needs to be renovated. Due to regional developments, the relationship of these centers with the mother city has changed giving rise to many infrastructure and transportation problems. Their population composition is often monotonous and they lack adequate facilities or services (such as education and culture). Although these centers are quite diverse, they are faced with the same problems because they have all been created from the same model (Bosma ,1990; Na;2015; Nasiri,2014; Ziari, 2015).

A) Zoetermeer: The vision of Zoetermeer City has predicted at least nine important challenges for it by 2030. In this list, examining the youth of the population is of particular importance. Zoetermeer Municipality intended to investigate the encouraging and inhibiting factors of living in this new town. This research focused on first- and second-generation residents who grew up in Zoetermeer or those who came to the city as first citizens. This research included a series of interviews with such people and obtained beneficial information about these citizens' needs and desires. The findings also reflected on appropriate measures and services that can be offered to the citizens. The second case is not just about the results of demographic criteria. Of course, there is no doubt that some young people leave the city because of its few facilities in the fields of education, entertainment, culture, and housing (Wezenaar,1999; Sarvar et al., 2016).

B) Modernity and planned suburbanization: According to the findings of Ivan New's doctoral thesis prepared at the University of Amsterdam in 2014, the new towns of the

Netherlands built from the 1970s onwards are mostly composed of villa houses with gardens. Given the wide differences between suburbanization and suburban cultures in the Netherlands and other countries, the question is whether it is possible to organize these vast areas in the form of generic suburban sites. Urban sociologist, Ivan New has recently investigated the strangeness of the suburban life culture in the post-World War II period in the Netherlands, Great Britain, and France. This study tried to determine to what extent the suburbs of Almer, Cergy-Pontoise, and Milton Keynes originated from a specific tendency towards modernity and suburbanization. This study also indicated how suburban areas have created a kind of modern experience against the general trend of urban development. Another finding of this research shows that life and activity in suburban areas are characteristic of modern conditions of change, diversity, separation, mobility, and development (Bosma, 1990; Ziari, 2015; Wezenaar, 1999).

3.8 Poland

Considering the destruction caused by the war and inspired by the Great London plan of 1944, new towns in Poland have been created based on national planning and balanced economic development among its districts. There are three types of new towns in this country: (1) cities created to decentralize the industrial districts according to a regional plan; (2) cities developed in the industrial hub; and (3) cities established for the development of new industrial complexes as well as for political, economic, and social reasons. The challenge of employment is not raised in all new towns of Poland because there is an imbalance and lack of social mobility among them. In general, the new towns are planned to provide housing for industrial centers and their optimal population is within the range of 50 thousand to 200 thousand people. The national urban policy is aimed to expand the existing small and medium-sized towns because the cost of their construction operations is estimated to be cheaper. From the viewpoint of western observers, Poland's new towns are depressing and their houses are small (two rooms on average). Poland's new towns suffer from problems with management and investment method. Of course, it is not clear that the policy of new towns will be profitable in the long run; in any case, there are pendulum migrations (Nasiri, 2014; Krasny, 1999; Wakeman, 2016; Ziviyari, 2012; Wawrzynski, 2005).

The post-war era in Poland has been a special period due to the high rate of urbanization as a result of industrialization and socioeconomic changes. Progressive urbanization is visible both in the development of the existing cities and in the establishment of new towns. The process of birth and transformation of cities was active and diverse after World War II. According to the statistics, Poland had about 707 new towns in 1946 but this number reached 874 new towns in 2000. In the early 1950s, about 10 million people lived in Poland's cities, which rose to 8.32 million residents in 2000. Population growth in cities over the past 50 years has been accompanied by changes in the legal boundaries of the existing cities due to natural growth, inward population migration, and the development of new towns. The increase in the number of cities from 1945 to 2000 varied from one to thirty-six per year but the real annual growth rate was 4-5 towns per year. Considering the spatial model of new towns, a high density can be observed in "Katowice" and its surrounding districts as well as some parts of "Częstochowa" and "Apple" in the Sadty district of the capital region. In the first case, the new town was developed as a reaction to the extraction of raw materials from mines and their processing in the southern part of Poland. Warsaw's "de-accumulation" idea, proposed in 1950, was also a response to the above-mentioned phenomenon. The new towns in Warsaw are different in terms of dimensions, they usually consist of commuter, industrial, service, or industrial-service centers. About 70% of these towns have a population of less than 10 thousand and 30% of them have a quorum of the urban population. In cities under 50 thousand people, the difference is even greater so that 95% of the centers are new towns (Nasiri, 2014; Krasny, 1999; Wawrzynski, 2005).

The analysis of the new towns' model and the settlement system's significance allow the introduction of three groups of cities. The first category includes new towns as components of the cluster settlement forms, whose origin goes back to the mining industry. These towns are located in the coal and copper extraction areas of Legnica region. The second category consists of new towns located in the vicinity of or within large agglomerations; to be more precise, they are located in an area under the influence of a large city, for example, Lejinori and Breweries near Warsaw. The third category includes self-regulation centers in settlement systems, which contribute to the development of local population systems, including Monki and Charana. Certain problems exist, such as insufficient cash for service systems (at the beginning of the birth of new towns, especially in industrial cities), which led to a lack of job opportunities for women causing an obvious labor surplus. After the economic transition to the market system in 1990, many private business centers appeared to try to solve this problem by increasing their service systems (Wakeman, 2016; Ziviyari, 2012).

4. Discussion and Conclusion

The concept of a new town is dynamic with its own history of various characteristics in different countries according to the economic, cultural, and social structures. According to the many available sources, the concept of a new town has different meanings since it has been clearly presented in a variety of ways and conditions in various parts of the world. This indicates that new towns are defined and determined in relation to their functions as well as the government or management systems' goals and policies. The diversity of new towns is caused by not only the era in which they were created but also the role that their developers intended to create in the space composition (Harati & Ziviyari, 2012; Zamani & Arefi, 2013).

New towns, in their present form, date back to the actions of the British Royal Commission in 1938 on the distribution of population and industry under the chairmanship of Barlow and the Lord Wright Committee. The Barlow Commission concluded that in order to establish a policy of decentralization, further growth of the industry should be restricted in London and the distribution of population and industry should be carried out. However, a committee was formed in 1945 under the chairmanship of Lord Reith whose purpose was to study general ideas related to institutions as well as the planning, formation, and management of new towns in the framework of a planned decentralization policy of dense urban spaces (Merlin, 1991; Sarvar et al., 2016).

Countries vary in terms of their population characteristics, life traditions, livelihood, residence culture, level of economic and social development, and many other factors. So, copying the experience of a specific country in the field of planning new towns without localization and taking the local conditions into account is inappropriate. The laws of these cities are different from those of other cities, and this method is actually a form of prototyping. New towns are often proposed as a way to regulate the existing urbanization processes.

Followed by looking at the research conducted on new towns during the 20th century, one can conclude that the term 'new town' covers a wide range of views and definitions, which are substantially different from continuous urban development to a new town. For this purpose, the presented definitions specify the distinctions and contradictions governing the meanings and functional dimensions of new towns.

For instance, in one perspective, two general states of different types have been described: (a) new towns that are known outside of an urbanized area; (b) new towns built within the framework of an urbanized area but without any connection to it and only with residential density to the existing city. The terms independent, self-reliant, and self-sufficient are factors that can be used to differentiate between the satellite cities and new towns. Since satellite cities have an interstitial status and are dependent on the main city, they gradually

turn into new centers of activity and employment. Meanwhile, their performance takes place in large dimensions in relation to the demands, requirements, and domination of the main city.

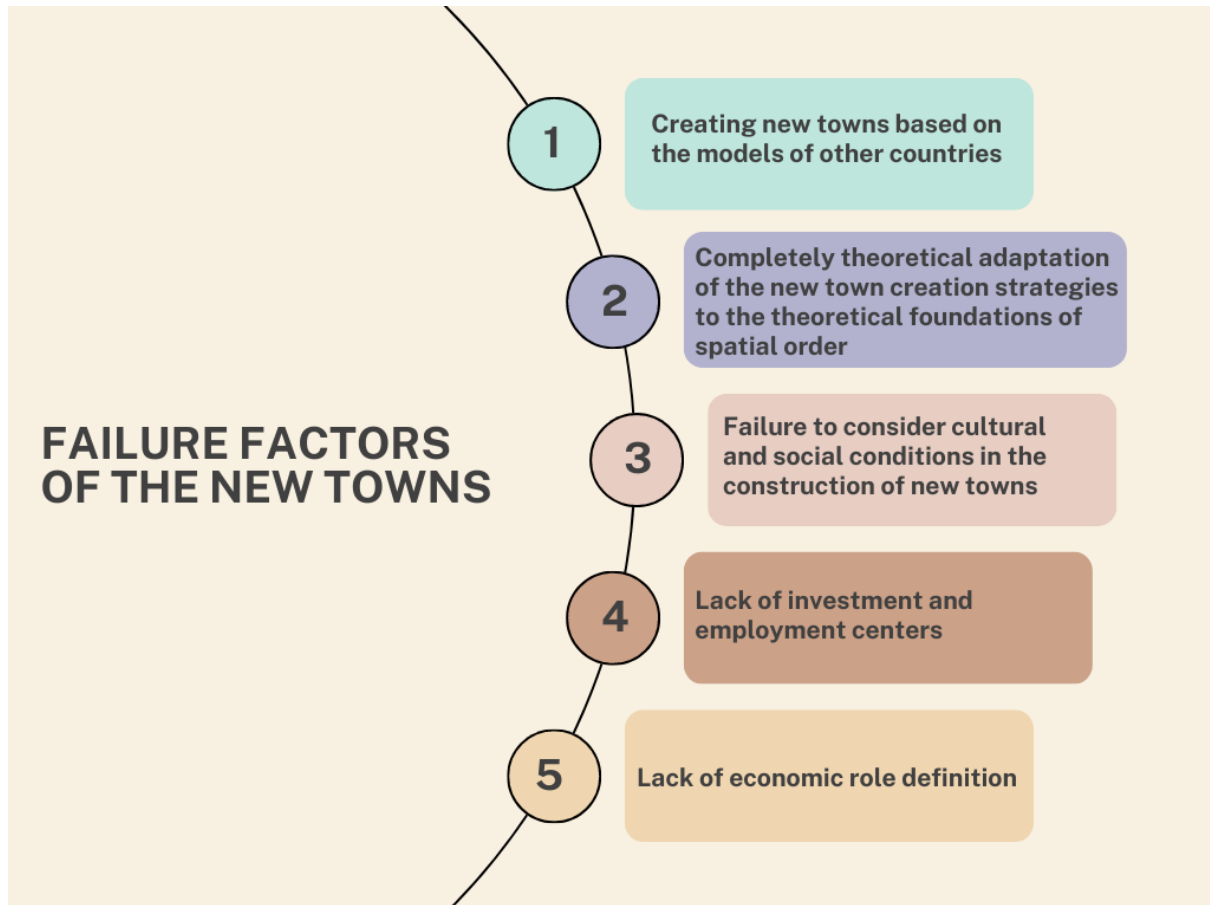
From another point of view, a simple typology or classification of the operation of new towns around the world during the 20th century can be obtained. The first category is attributed to new towns designed as new capitals. There are many examples in this case, such as Versailles (France), Washington (USA), Canberra (Australia), New Delhi (India), Brasilia (Brazil), Islamabad (Pakistan), Chandigarh (India), and Abuja (Nigeria). The new capital can be developed to create political balance among regions, decentralization, separation of power from overcrowded cities, etc. These capitals are often entrusted to an architect or urban engineer to plan, implement, or both (Lanfan in Washington, Le Corbusier in Chandigarh, Costa, and Niemeyer in Brasilia). The second category of new towns, which actually constitute the largest number of new towns built around the world, have been created to form a mostly industrial activity. These examples are mainly constructed in the former Soviet Union and mostly in less developed areas around an industrial complex (iron industry, petrochemical industry, and wood and its derivatives). In these cities, the separation of the industrial complex from the residential neighborhoods (sections) was designed in a very efficient way through a separating green space. The Soviet model was introduced in socialist countries, especially Poland and Hungary. Of course, there are also industrial examples built by private companies, such as "corporate cities" that are active in the field of mining or whose main function is tourism. The third category of new towns is often responsible for absorbing a part of the population surplus built in order to organize large urban areas; for instance, the garden cities of Howard and their competitors abroad (the so-called green belt cities in America and the garden cities of France between the two wars) are of this type (Sarvar et al., 2016; Forsyth & Peiser, 2021; Ziari, 2015; Harati & Ziviyari, 2012).

The theory of new towns was administered in Western capitalist countries to implement the strategy of decentralization, the growth skill of large cities, the attraction of surplus population, the optimal spatial distribution of population and industry, as well as the spatial organization of the capital and metropolises. This theory was successful in providing housing and improving the quality of architecture and landscape but it could not perform successfully in some functions, such as preventing pendulum migration, developing a basic self-sufficient economy, rendering regional services, curbing the growth of metropolises, and creating a real social life. All these have put a lot of pressure on communication networks. In former socialist countries, the theory of new towns has been used to create a growth pole by preventing the development of megacities, using internal resources, performing spatial distribution of population and industry, developing regions that were left behind, and preparing the land by spatial planning. While the findings achieved from this theory were diverse, they were successful in the former Soviet Union and were accepted as a theory of decentralization. However, since the theory of new towns has not been very successful in Poland and Hungary, it has turned into the policy of developing small and medium-sized towns in Hungary. In the third world, this theory has been employed to create a strategy of performing decentralization, spatial planning, creating a growth pole and regional development, transferring administrative centers, organizing the space of big cities, creating a service pole for villages, and creating centers for integrating destroyed rural areas, which resulted in various findings. In general, these cities have been successful in housing low-income groups but their physical, social, and economic structures were incompatible with the native environment. The result was developing luxury and expensive goods, which have caused poverty, social imbalance, and slums. In some cases, these towns are merging with metropolises around them because they were designed based on a local and incomplete policy without considering the comprehensive national and regional strategies (Aeeni et al., 2019; Ghosh et al., 2022; Ziari, 2015; Nasiri, 2014).

The construction of new towns was a critical and thought-provoking action in developed and developing countries with various purposes, including adjusting the problems of big cities.

Despite the variety of experiences, scenarios, and predetermined plans, it is still very difficult to predict the success of new towns in any case. This indicates that many condition-based variables and factors play roles in creating new settlements adding to the complexity of planning and developing new towns.

Figure 4. Failure factors of the new towns

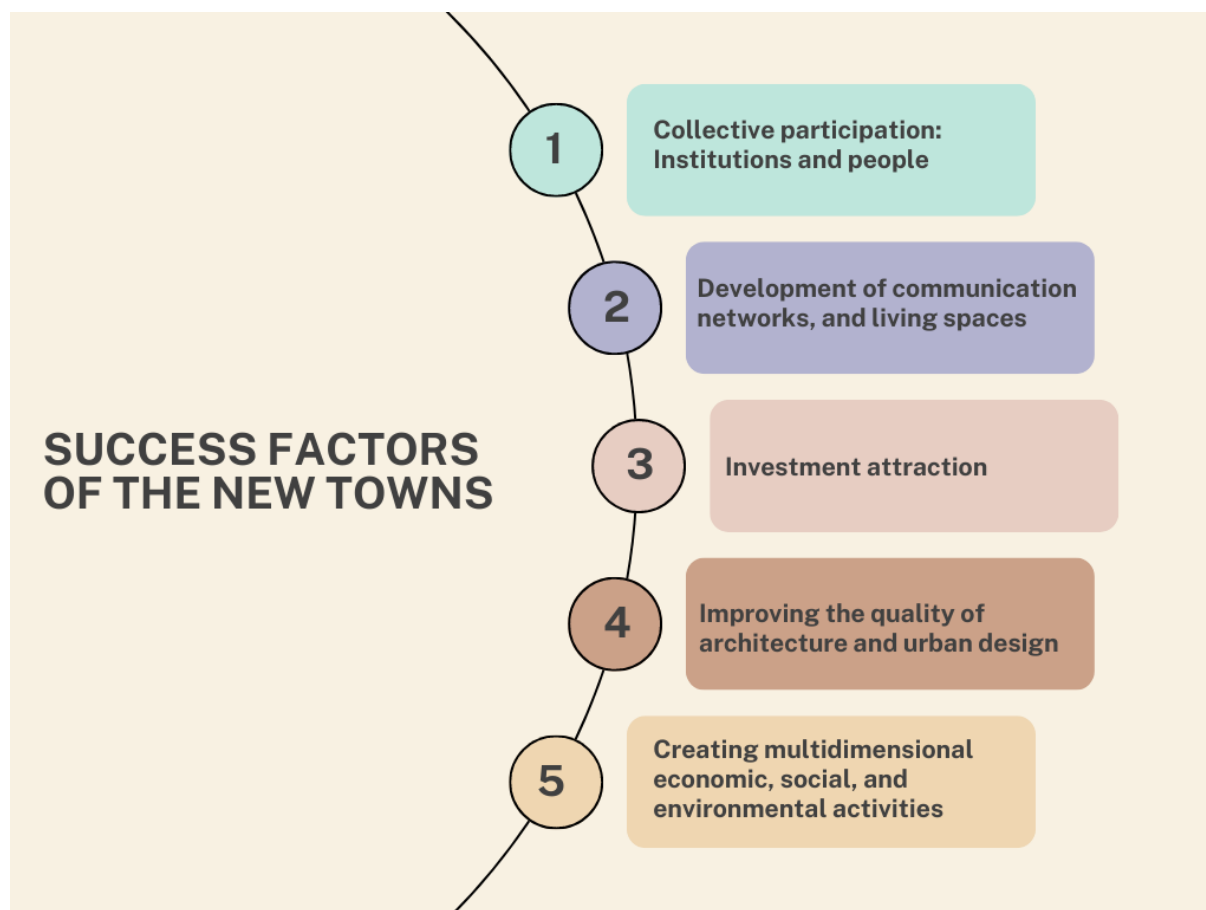


The failure of new towns can be attributed to the pure imitation of the ways of creating new towns based on the models of other countries; completely theoretical adaptation of the new town creation strategies to the theoretical foundations of spatial order; failure to consider cultural and social conditions in the construction of new towns; lack of economic role definition; and lack of investment and employment centers (Figure 4). Therefore, the complete success of new towns will be realized when qualities of architecture and urban design, investment attraction, development of communication networks, and living spaces are observed comprehensively by creating multidimensional economic, social, and environmental activities as well as including all institutions and people in new towns (Figure 5). Therefore, having a mere physical view of the city and its construction will not be applicable, rather we need to consider new towns in full interaction and compatibility with other dimensions of the city (Zamani & Arefi, 2013; Aeeni et al., 2019; Sarvar et al., 2016; Xue et al., 2013; Wei & Mogharabi, 2013).

Social factors, as the foundation of the planning system, are among the critical points in planning and managing new towns, improving the residents' living conditions, level of well-being, and social comfort, and providing the necessary grounds for improving and expanding social relationships. To this end, the necessary conditions and opportunities should be predicted for the improvement and stability of social relations, which have become unstable in rapid urbanization. In addition, predicting the necessary measures to implement social goals

and functions in creating new towns and valuing their roles in improving the urban environment are among the necessities of planning in the development of new towns. Therefore, values, beliefs, norms, and actions should be essentially examined in new towns. Another social goal in the creation and development of new towns is to consider the needs of low-income and disadvantaged groups, those who do not have the necessary conditions and opportunities to express their creativity and talents, or individuals who lack the necessary capabilities and opportunities to use social facilities. In this regard, residents of the disadvantaged and less privileged areas, immigrants, the poor, individuals with disabilities, the young, and the elderly can be mentioned. Factors such as the lack of necessary information and knowledge, necessary and sufficient opportunities, as well as social organizations are among the basic obstacles to achieving the necessary opportunities. Another factor considered from a social point of view in the evaluation of new towns is the lack of an active urban environment, which can be attributed to the unbalanced demographic and social structures, the lack of economic diversity, the active presence of the commercial sectors in the city, and the lack of megapolis services such as cultural centers. The lack of coordination between housing and employment is always one of the main reasons for the failure of new towns since it may turn the city into a dormitory, cause slow growth, and inhibit attracting enough population (Sarvar et al., 2016; Forsyth & Peiser, 2021; Zehner, 1971; Dong et al., 2021; Li & Zhao, 2022; Azizi & Arbab, 2010; Ghosh et al., 2022).

Figure 5. Success factors of the new towns



The new towns of the future must present a different type of structure and urban space. These settlements should be a place where life is going on in the best way possible without many of the current and common problems of urbanization. According to the analyzed information collected by reviewing the creation and development processes of new towns in different countries, the findings can be considered from several perspectives. Today, new

towns will no longer be built solely to respond to the population surplus of megacities, rather they are aimed to expand geographical balances to meet territorial imbalances with the attractiveness of settlements. New towns represent a city with efficient, fast, safe, cheap, and diverse transportation networks. They are designed to avoid destructing susceptible territories by protecting valuable and agricultural zones, improving the quality of life and setting citizen-centered standards, defining the urban roles to play, providing a background and context for civil partnership, motivating the local and foreign investors, developing the surrounding environment simultaneously, coordinating regional planning and research policies, and achieving the ideal example of a smart city (Zamani & Arefi, 2013; Forsyth & Peiser, 2021; Nasiri, 2014; Ziari, 2015; Harati & Ziviyari, 2012; Wu et al., 2019).

In order to improve new towns' planning, the following strategies are recommended: prioritizing the role of mid-sized cities in urban areas instead of building new towns; defining a multidimensional role for each new town, creating employment and investment centers to strengthen population sustainability, using spatial planning approaches in new towns' site selection, and comparing the cost-benefit analysis of creating a new town over that of strengthening mid-sized cities.

Of the limitations of this research, we can refer to the lack of English sources and documentary images of experiences in different continents. In the direction of scientific development, other researchers are recommended to identify the local, social, and economic factors affecting the success or failure of new towns and evaluate them in a specific territory and time period.

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