

Review on High-Rise Housing Projects in Istanbul: Toward a Sustainable Architecture

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Emerging with population growth and developing technology as a result of industrial revolution, rapid and unplanned process of urbanization has led to rapid depletion of natural resources in the physical and biological environment. In consequence of urbanization, lack of urban land and accordingly excessive rise of land prices has resulted in vertical construction. In the phases of design, construction, use and demolition, high-rise buildings, consuming much more energy than low-rise buildings, have led to significant changes in the city skyline. With the rise of vertically dense structuring in the world, high-rise buildings have become more questionable and requested the answers of how the buildings can be designed to care of human needs. Therefore, green building practices paying attention to ecological data have entered as an important parameter of vertically dense building design. Green building designs, and its derivatives are among the images and discourses used as a marketing strategy for the vertically dense housing design. A significant part of construction projects in Istanbul, claims that they place emphasis on the use of natural building materials and energy efficiency to associate themselves with sustainability discourses. For many segments of society, sustainability is transformed into a perception management gathering terms, such as green technology, renewable energy and smart building. In this respect, the paper aims to evaluate the development of high-rise buildings in Istanbul on Metrocity Towers, Sapphire and Varyap Meridian projects in the context of sustainability principles and practices. These projects describe three different processes and applications of sustainability. The main aim of the paper to discuss the efforts of transformation from solid structures to sustainable buildings based on various images and discourses related to high-rise building projects.

KEYWORDS: Discourse, images, solid, structures, sustainable.

High-rise buildings consuming much more energy than low-rise buildings in the phases of design, construction, use and demolition, with the number increasing day by day has led to significant changes in the city skyline. High-rise buildings have become re-questioned in perspective of sustainable urban and architecture, and it is seeking the answers to the questions of how these structures become more human by designers. In this context, the concept of sustainability has a great importance to benefit in the most efficient degree from high-rise buildings and to minimize the damage given natural environment. The first part of the paper deals with the urban adaptation process of high-rise buildings, discussing some challenges such as urban density, access problems to buildings, connections with public transportation and road network as well as high energy consumption of high-rises. The second part engages with the use of sustainable design principles in high-rise buildings (building components, design methods, land use, etc.) and

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Introduction



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impressions related to the process. The third part mentions sustainability certificate systems consisting of a variety of systems and procedures setting standards for design besides sustainable design principles and strategies concerning high-rise buildings. After discussing vertically dense building design and urban sustainability in Istanbul, the paper evaluates the process on Metrocity Towers, Sapphire and Varyap Meridian projects in the context of sustainability. Metrocity was selected as one of the first high-rise mixed use projects in Istanbul, reflecting the characteristics related to the early period of high-rise residences, due to its solid structure and height. Sapphire, one of the highest towers in Istanbul dominating the city skyline, was selected depending upon its sustainable building design approach, height and relations with the external environment. As the other project of fieldwork, Varyap Meridian represents a different approach to sustainable building design with its green building practices and certification systems. In this respect, the paper aims to discuss the transformation from solid structures to sustainable buildings based on various images and discourses related to high-rise building projects in Istanbul.

Methods

In the scope of the research, three main high-rise projects reflecting different characteristics of sustainability have been selected. In choosing the projects, the convenience sampling method, developed by Mugo Fridah (2002) is used according to design principles of these high-rise housing projects such as Metrocity, Sapphire and Varyap Meridian Tower that were built at different periods in Istanbul's construction history. Firstly, the challenges concerning the urban adaptation process, design principles and certificate systems related to the practices of sustainability are discussed and the application process of design principles are observed on these high-rise building projects. In this context, the main purpose is to define varied approaches to the concept of sustainability. In addition, exclusive interviews with the designers of these projects about their high-rise building projects and their integration to urban environment in the framework of sustainable design decisions have been planned. These interviews consist of open ended questions interrogating the adaptation of the project with the urban texture and its effects on the urban environment as well as the application forms of sustainability principles according to the designers. The questions are separated into two different categories. One of them is general, searching the challenges related to the urban adaptation process of these high-rise projects, and the other is a more specific question changeable according to approaches of sustainability related to these projects.

Question 1: How do you explain the urban adaptation process of the project and its effects on the urban silhouette?

Question 2: How do you explain the concept of sustainability and high-rise buildings? In your project, which methods and design principles do you use related to sustainability?

Discussion

The Challenges Related to the Urban Adaptation Process of High-Rise Buildings

When considering the impact of urban towers on the natural environment, against providing advantages such as limited land use and potential high densities, high energy use is among the main disadvantages. While figuring out the urban integration process of a high-rise building project, it should be addressed that some issues such as land and energy use, access, transport, construction difficulties and technology, and should be considered whether the project is able to respond to the main questions of environmental nature and technique (Firley, Gimbal, 2011). The first challenge related to urban adaptation of high-rise buildings is *urban density* reflecting the impact of the surrounding towers. A high-rise building may be inadequate to cope with the rapid flow of people whether the building is located in the dense urban fabric, since an urban neighborhood has already reached its saturation point. On the other hand, the towers may have been located in developing regions and area disconnected and isolated from the urban context.

Considering the flow of people and goods into the building, to solve the *access* problem into the tower should never be seen as a simple task. The closeness of primary entrance locations separated for visitors and users, with the back entrance locations used for all the logistic functions related to the building's operation can be a problem (Al-Kodmany, 2015). Also, the best way to guarantee effective access to a tower is interpreted as providing enough space to be able to handle maximum population facing the tower and its close environment. Good access, while at the same time providing the well-functioning of the tower, ensures conducting daily operations effectively. As well as access, the connections with public *transportation* and the road network of a high-rise building must be impeccable to get approval both among its users and in the larger urban context. As another challenge related to the urban adaptation process, it is an undeniable truth that high-rise buildings consume much more *energy* compared to low rise buildings per square meter. The newly developed strategies improving some specific features that facilitate entering of daylight and wind to a tower seek to reduce excessive energy consumption.

Use of Sustainable Design Principles in High-Rise Buildings

For a sustainable design in high-rise buildings, it is essential to consider several criteria such as land, mass form, height, orientation depending on the climate and landscape factors, the use of floor space, the organization of space, facade systems, vertical transportation systems, service systems, and the production of most accurate solution. In this part of research, the use of sustainable design principles in high-rise buildings (building components, design method, land use, etc.) and impressions related to the process are discussed in detail. In fact, the main reason that explains the emergence of high-rise construction is based on the principle of land use. In the context of sustainable land use and site selection, restricted land use is accepted as a positive environmental feature, reducing urban sprawl, costly transportation and car use, and that enables the effective use of long-term city infrastructure. As another design principle, the function is the most significant factor determining the design of floor plans. As a high-rise building can be designed as a residential, office, government, entertainment and hospital structure, it can be designed as a mixed-use building consisting of some of these functions. In this respect, multi-functional buildings can have different uses at different times despite mono-functional buildings such as office towers. While a mixed use building keeps different types of functions under the same roof, it has the potential of reducing energy consumption to a minimum level by recovering the existing energy inside the building.

Height is one of the main differences between high-rise buildings and low-rise buildings, but a more important issue is the consequences of the height on the structural design. A high-rise building should be designed considering the lateral wind loads, entrance of daylight, facade systems, circulation of the structure, slenderness ratio and the other aesthetical and technical principles (Firley, Gimbal, 2011). Just beyond the technical evaluation, there is a direct aesthetical relationship in between the tower's connection with the city and the structural design of the tower. While technical requirements having severe and heavy structures on the base of tower, the need of aesthetical connection with the city desires transparency and open spaces. In terms of core planning and vertical circulation, circulation between floors in high-rise buildings is usually carried out via elevators. As well as elevators, the main stairs and escape ladders form the vertical circulation system of high-rise buildings. Moreover, an accurate core planning with the proper functioning of a vertical circulation system is essential for the effective operation of the building. The position of the service core is the most important factor in the design of a high-rise building. The service core not only has structural outcomes but also has influences on the thermal performance and appearance of the building (Al-Kodmany, 2015).

In respect to bioclimatic design, in recent years, the design and development studies focusing on high-rise buildings have led to the emergence of a new building type called the bioclimatic skyscraper. Design and development integrate other bioclimatic aspects into building design as well

as the current ecological impacts: the most efficient use of rain and wind, life-cycle approach to use of building equipment and materials, and the development of inner life examples for users of high-rise buildings are some of them. The main issue is the integration with nature. All arrangements avoid traditional geometry and respond to the dynamics of wind direction, climate and solar orbit. In addition to integrating plants with buildings, use of the effect of the sun in the form of a building, benefiting from environmental wind both as a source of energy and a design input, bioclimatic skyscrapers reflect a life style adapting the principle of openness with transitional spaces, passage ways, sky courts and terraces (Hamzah, Yeang, 1994). Planting and landscaping elements should be used not only for the ecological and aesthetical benefits but also for the coolness of the building. The plants absorb carbon dioxide and produce oxygen; thereby providing benefits to the building and its environment. In this respect, Ken Yeang (2000) mentions that more use of recycled and organic building materials can be focused on in order to increase the level of integration in between planting and a green building system in future projects. Besides, most users desire to establish a more direct relationship with the external environment and to have windows that can be opened to allow fresh air into spaces. However, this request can be obtained with transitional spaces and intermediate spaces such as balconies, terraces, etc. As well, sky gardens and sky courts offer their users personal landscape areas where they can plant as the gardens in the sky, and provide them with an opportunity to create their own personal environment. On the other hand, these open and semi-open spaces provide natural ventilation of the building benefiting from the daylight and wind in the design process.

High-Rise Buildings and Sustainability Certificate Systems

At the early stages of design process, sustainable high-rise buildings require a greater level of integration with the environment because they require coordination of complex, interdependent systems (Ali, Armstrong, 2008). In the framework of sustainability in high-rise buildings, it is known that there is a variety of systems and procedures setting standards for design. One of the best known systems in the world, developed in America, is LEED (Leadership in Energy and Environmental Design). Another is BREEAM (Building Research Unit Environmental Assessment Method) established in the United Kingdom. Switzerland's MINERGI and Australia's Green Star are also some of these systems. All of these systems and standards tend to make the classification of building in harmony with many criteria such as the adaptation in urban fabric, energy consumption, carbon dioxide emission and use of local sources. Most of them are the accreditation systems required to provide some basic principles related to sustainable building design (Al-Kodmany, 2015). Although these standards accept the sustainability concept containing ecology, social structure and the economy, they do not contain the analyses for these parameters. For example, the LEED targeting the construction sector gives users the green building certification in the frame of five main categories (selection of location, energy efficiency, water efficiency, building materials, and the quality of interior space and life). Most LEED indicators are based on end-user impact (Aykan, 2014). These certification systems deal with the strategies of energy, water and material efficiency, use of recycled or renewable materials, smart building automation systems and sustainable facade technologies more than design decisions taken in the building formation. Since they evaluate building and construction systems more than design decisions, they can be inadequate due to the lack of essential information related to building design (Sev, 2009). Therefore, with the sustainable building evaluation systems, sustainable architectural principles and strategies must be interpreted and applied in the most suitable way for a sustainable building design.

High-Rise Housing Design and Urban Sustainability in Istanbul

Developmentalist discourse forming the political area at the 20th century changed places with sustainable development at the beginning of the 21st century. Sustainability in urban area is interested in economic, ecological and social issues directing the decision-making process about the

future of the city. For a metropolis at the scale of Istanbul, sustainability has become a national issue beyond the urban limits. While Istanbul is being re-planned as a huge construction and consumption field, socio-ecological based criticism rising against this growth policy is becoming a legitimate concern with respect to urban sustainability. A significant number of construction projects in Istanbul, associating themselves with sustainability discourse, emphasize the significance of energy efficiency and the use of natural building materials in the design of buildings. Some of them have LEED or similar international green building certifications. However, according to data published by UGBC (US Green Building Corporation) in July 2013, only 94 of the 38,658 projects registered for the LEED certification program worldwide are located in Istanbul. It is inevitable to say that this number coincides with a relatively low proportion for a city on Istanbul's scale (Aykan, 2014). In recent years, the concept of sustainability, supported by nongovernmental organizations and some parts of the society, is used as a marketing tool that decorates the promotional page for projects changing the urban fabric of Istanbul. In this regard, the language of the urban policy is being reshaped in the context of sustainability. Green building practices considering ecological data have entered vertically dense housing design as an important parameter. High-rise buildings generally deal with technological approaches, energy conservation and other issues regarding only the ecological aspect of sustainability. However, sustainability is a multidimensional concept that should be dealt with on the physical and economic dimension both on urban scale and building scale. In this context, the difficulties high-rise buildings have caused in the urban area should be evaluated with all aspects of sustainability, and new strategies and approaches should be developed to solve these problems. Sustainability for many segments of society, is transformed into a perception management assembling the terms such as green technology, renewable energy and smart building. According to Laclau (2006), sustainability, due to its ambiguous definition and expanding boundaries, faces the danger of transformation to a concept defined as "empty show" involving everything but actually saying nothing. While sustainability aims to re-question economic, environmental and social issues in a holistic way, in time indicators become indistinct establishing links between reality and this ground. However, the concept of sustainability becomes overly inclusive and superficial beyond the expectation of uses of the principles of good design.

Gated communities, a common housing settlement in Istanbul, promise for living in nature away from the crowded city, which seem to be one of the main discourses of marketing strategies. Today, in the context of these marketing methods still in existence, forests, green areas, and artificial lakes located in residential areas are presented as a measure to increase the value and status of these habitats. Promising for a life away from the chaos of the city, situated in nature, these settlements actually depend on the infrastructure of the city and shape the urban area according to their needs. Recently, mixed-use (containing residential areas, shopping, and other functions) high-rise buildings isolated from the environment, reflect the struggle of the domestication of nature. Many projects in Istanbul use the simulation of nature as a design method, Bosphorus City, a residential complex simulating the Bosphorus with its own components special to the area, and Viaport Venezia, a housing project using artificial water channels imitating the Venice, are some of these projects simulating real ones (Candan, Akbulut, 2014). Defined by Ghertner (2011), the green aesthetic approach, as a new shape of the urban presentation form, rather than a measure of the real impact of structure to the environment, is an evaluation related to how a city needs to appear in the context of an aesthetical image (Fig.1).

Eco-friendly or ecological projects and cities no longer represent the concepts reflecting brand value. In this context, the housing projects described as eco-friendly in Istanbul are put on the market; the housing projects asserted to produce their own power compete with each other with roof gardens and environmentalist discourse. The common ground of these projects is to define the ecological life independent from the urban geography around, confining it a private sphere. Aykan (2014) draws attention to the need of redefining urban policies regarding the principles of sustainability.

Fig. 1

The image of Bosphorus City Istanbul (top) and Viaport Venezia (bottom)



The basic steps to realize this goal are sorted as to identify sustainability on a local scale, to create sustainability indicators, to report sustainability, and to formulate a long-term participatory policy. To identify sustainability on a local scale, overreaching the mainstream consisting of economy, ecology and social structure, it is essential to approach sustainability on the basis of municipalities and to inquire as to which parameters have an effect on the sustainability in urban life. In this process, it can be beneficial to observe the description and applications of the institutions such as the UN, EU and GRI in the context of urban sustainability. As the second step, in the phase of creating sustainability indicators, in order to sustain urban

facilities without causing damage to the natural resources and socio-economic structure of the city in the long term is possible with a multivariate risk analysis. To realize that, some indicators need to be developed with the aim of monitoring the performance of the city in the framework of economy, social structure and ecology. Combining the data analyzed through indicators on the axis of sustainability and sharing an integrated report periodically with the city's users have a place in the development of a participatory policy of sustainability. To create long term participatory policies on the basis of sustainability depends on a balance between economy, ecology and social structure. A sustainable Istanbul means where a place practices listed in the framework of this approach are applied effectively. In the absence of these practices, the concept of sustainability cannot go beyond being a new urban slogan decorating the billboards.

Results

Metrocity Towers (1997-2003)

Metrocity (1997-2003), a mixed use project designed by the architects, Doğan Tekeli and Sami Sisa, is discussed especially for its reflecting the contemporary living standards of the new century. In addition to two residential towers, the project consists of one office tower and a linear shopping center. After the urban planning of Büyükdere Street as an international business center in 1980s, land values in the region have increased considerably. The mixed use, containing different functions within the same building, is preferred in high-rise building design not only for economic reasons but also for a sustainable urban environment. While a mixed-use high-rise building is seen as a more profitable investment by the land owners, it also keeps alive the urban life around of the building in respect to sustainability. Thus, the function of a business center dominating the region is becoming secondary, the business district, living during the day and turning into the abandoned dead space at nights, can be alive all the time.

Due to its location on Büyükdere Street, Metrocity Towers easily connects to TEM and E-5 freeways with the Bosphorus and Fatih Sultan Mehmet Bridges. In addition, the most important advantage of Metrocity Towers is its integration directly to the urban system through the metro line. The towers are located in a dense urban fabric, on the axis of Büyükdere-Maslak, a primary business center in Istanbul. In the sense of urban sustainability, environmental integration and its relationship with the external world on the ground floor while giving a direct connection to the subway network provides advantages in terms of access to the building (Fig.2). Also, public space in front of the towers, except for being an access area to the towers, is not completely supported with other functions such as commercial units, small playgrounds, other social facilities. The building's facades in accordance with its architectural design are covered with cladding glass and aluminum composite panels. In terms of the microclimate of the building, the only advantage is that the windows of the office tower in Metrocity can open to fresh air contrary to some high-rise towers in which artificial ventilation is the only option.

Doğan Tekeli, one of the designer architects of the Metrocity Towers, mentions that the towers with their proportions, facades, material and images display a behavior as a humanist of all high-rise buildings around Büyükdere Street. As Büyükdere Street is planned as a central business area, the architect says that the towers fit the urban fabric around them in terms of height and position in the city skyline (Doğan Tekeli, personal interview, 1 April 2016).

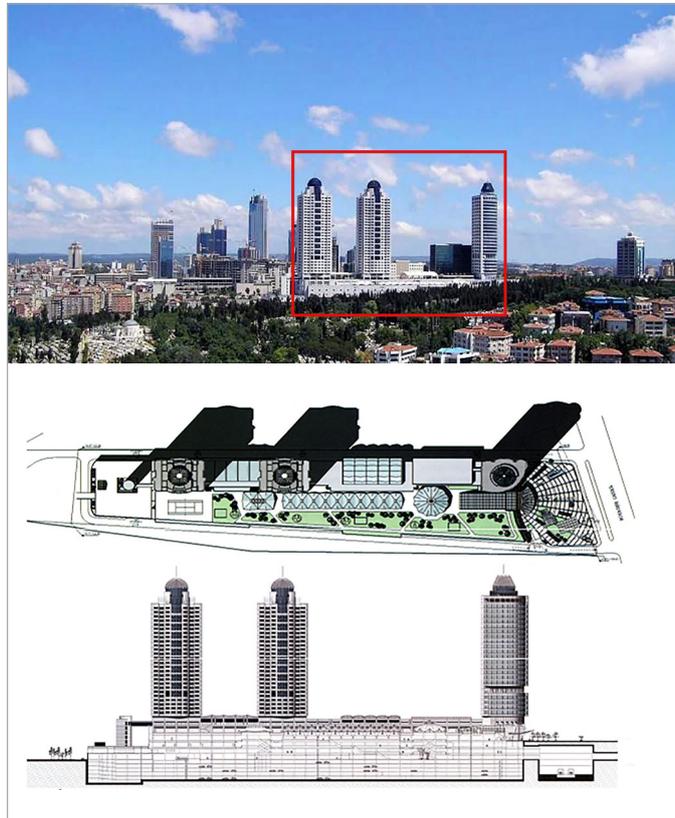


Fig. 2

Metrocity Towers' silhouette, site plan and section drawings (YEM, 2016)

Istanbul Sapphire (2006-2011)

Designed by Tabanlıoğlu Architecture, Istanbul Sapphire as a mixed use project, has a tower that brings recognizability to its surroundings with its 261-meter height in the urban fabric. The building is located on Büyükdere Street, one of the main arteries of a business center in Istanbul, so it has direct connection to the subway, TEM and E5 freeways, and the Bosphorus, FSM Bridges. The building, located in a dense urban fabric, has no direct link to Büyükdere Street, but from a neighboring side road and providing a direct link to the subway line, could be protected from vehicular traffic. From an external perspective, the form of the building tapers gently upwards. It benefits from natural light at a maximum level, with the help of a glass covering expanding from the fourth floor and transforming into eaves with a soft curl. By means of the transparent and permeable eaves, day-light can reach down to the basements. Multi-layered and mobile, a large space perception is created in the bottom of these eaves where cafe, bars, restaurants and shops are located.

Fig. 3

Istanbul Sapphire Tower, with section drawing and the image of interior garden (Arkiv,2016)



In comparison with Metrocity Towers, it is possible to say that Sapphire Tower brings a connection with the external environment by this kind of eaves design on the ground floor. However, the tower has a lack of spatial connection with the close environment such as the other high-rise buildings in the region. In the presentation of the project, named the first ecological high-rise tower in Turkey, it has emphasized its bio-climatic design principles as well as the height and location of the tower. To ensure energy efficiency, some design criteria have been used for active use of day light, and some details have been applied to save energy inside and outside the building. The facade of the tower consists of two shells independent from each other (Fig.3). Interior spaces are protected from bad weather conditions and sound with the help of an outer shell. This transparent shell allows comfortable spatial arrangements by creating a buffer zone between the inner and outer atmosphere. Breathing by means of moving, restrainable vents, technical equipment and natural ventilation, Sapphire Tower is designed regarding consumption of less energy for the microclimate of the building more than other high-rises in the area.

Murat Tabanlıoğlu, the architect of the tower, has described that the building rises in conformity with the surrounding high-rises and is still of nature-friendly facilities such as vertical gardens. In addition to the comfort provided by modern technology, Istanbul Sapphire has the infrastructure and the location that will ensure easy transportation possibilities. There are also residences of different sizes at different levels of the building. The building is planned as four separate housing zones, with a common zone between the sections containing indoor gardens, social areas, maintenance and support facilities, and the mechanical systems. Also the architect emphasizes that environmentally friendly systems have been used to ensure low energy consumption (Murat Tabanlıoğlu, personal interview, 7 April 2016).

In brief, the building is especially focused on the height and bio-climatic structure as the main features of the project. However, it must be underlined that the height of a building does not mean this building is designed better or superior to other structures. The height of building is used as an indicator of economic and symbolic power of the building. Rather than the height of the building, the structure can be separated from other structures in accordance with the relationships established between the structure and its natural and artificial environment, so it belongs to the urban area. The new design trend in high-rise buildings in the world is related to being able to provide production of its own energy and to sustain its existence with minimum damage to the environment.

Varyap Meridian (2009-2010)

Designed by RMJM, an American office in Istanbul, Varyap Meridian is a mixed use high-rise building project consisting of residential blocks, a hotel, and a business center, along with commercial and social areas. In the context of bio-climatic design, the blocks are equipped with facade materials in order to reduce the harmful effects and warmth of the sun to the lowest level. The

facade reflects a hybrid system consisting of glass and ceramic panels (Fig.4). While reducing cooling need by protecting interior space from overheating, these light colored windows ease the heating load by allowing a high level of sun light to enter inside, in the winter. The windows, which can be opened up to a certain floor, provide occupants the ability to take advantage of natural ventilation whenever they feel the need. The project, designed in accordance with LEED criteria, integrates with renewable energy sources in addition to green building features. In order to reduce fossil fuel use and carbon dioxide emissions, solar panels and wind turbines are used so as to produce electricity in the project. With the strategies of the choice of ecological material and waste management, energy, water and heat savings up to % 40 are provided in the project. Also, it works to minimize heat losses by positioning buildings according to solar and wind, to improve the insulation with the right material choices, to take maximum advantage of natural lighting, and to give place to plants consuming less water in landscaping. The main discourse of the project is that it will be the first and only high standard green housing project and it supports this idea with high-rise building certification systems and prizes. In brief, the common approaches, method and strategies related to the concept of sustainability in high-rise buildings are shaped with building facade systems energy efficiently, the integration of landscape elements to the building, the use of greenery even on the top floor, the use of renewable energy systems, solar control and the use of natural ventilation systems, and the design of building programs encouraging mixed-use. As can be seen from the specified common approaches and strategies, sustainability issues in high-rise buildings are discussed mostly at building scale. In fact, buildings create city, so it is not possible to consider building sustainability apart from urban sustainability. It must be evaluated in a holistic way. One of the major problems of high-rise buildings is the rupture of relations on the street level. In order to resolve the problems in the way of sustainability of high-rise buildings, besides use of renewable energy resources and supporting of mixed-use, placing some functions such as restaurants, shopping centers, social and commercial areas on the ground floor will be a highly effective solution to improve the relationships of high-rise buildings with the street. Another necessity of sustainability of high-rises is that they should be designed being aware of how cities are affected by high-rises within the frame of urban sustainability.

Murat Yilmaz, from DOME+Partners, an architectural company in Turkey, who has cooperated with RMJM, emphasizes the importance of urban density related to the urban adaptation process of the Varyap Meridian project. The architect remarks that urban adaptation of the project depends on the necessity related to determination of specific densities previously in urban planning (Murat Yilmaz, personal interview, 15 April 2016). The lack of a planned density hierarchy results in some difficulties of seeking balance and adaptation in architecture. Despite these challenges related to nonintegrated approach of urban planning in Turkey, the architect states that Varyap Meridian towers are designed considering the relationships with the close environment on urban scale. However, the residence towers of Varyap Meridian are designed as gated communities in Istanbul; the state of being an enclave causes the lack of a relationship with the urban environment.

However, two different aspects, urban scale and building scale connecting with high-rises and sustainability in Turkey can be discussed. In this context, the Varyap Meridian project is qualified for some green building certificate systems about sustainability rather than having a vision related to urban sustainability. In brief, high-rise buildings in Istanbul do not seem to have been designed with an integrated sustainable approach related to urban planning.

The development of vertical dense construction in the housing has triggered discussion of many issues such as high-rise and energy use, green-building relationship, climate, urban sustainability, infrastructure and transportation systems. Green building practices regarding ecological data have entered as an important parameter to vertically dense housing design in Istanbul. The Sapphire Tower and Varyap Meridian have applied the bioclimatic design principles such as the use of daylight, natural ventilation, materials for the energy-efficient façade design, and the use of

Conclusions

spaces opening the nature such as vertical gardens, sky courts, and etc. The main problem of high-rises in Istanbul is based on the integration with urban tissue. In terms of infrastructure and transportation systems, Metrocity and Sapphire towers provide directly link to urban transportation with subway lines and freeways around the buildings. While Metrocity towers display the lack of open spaces for public use on the ground floor, Sapphire tower establishes a connection with the external environment with eaves design on the ground floor. Many high-rise projects engage with the issues such as energy conservation adopting a technological approach related to ecological sustainability. And, they apply mostly high-rise building certification systems as seen in Varyap Meridian project. However, sustainability is a multidimensional concept that should be dealt with to the social, physical and economic extents both on urban and building scales. It is not possible to consider building sustainability apart from urban sustainability. In this context, the problems that high-rise buildings have created in the city are well understood and new strategies and approaches should be adopted to solve these problems in respect to all aspects of sustainability. Today, sustainability for many segments of society is transformed into a perception management assembling the terms such as green technology, renewable energy and smart building. For metropolises on the scale of Istanbul, it is unavoidable that every project changing the urban texture has long-term effects overflowing out of the city. Such a process requires to prepare of urban sustainability reports in a manner similar to the financial reporting activities companies are subjected to, to provide information by city administrations through these reports periodically to the city-dwellers, to include city-dwellers into the resolution processes. A sustainable Istanbul means a place where practices listed in the framework of this approach are applied effectively. In the absence of these practices, the concept of sustainability cannot go beyond being a new urban slogan decorating the billboards.

Fig. 4

The image reflecting the location of Varyap Meridian towers in urban fabric (RMJM, 2016)



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