Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

Contemporary housing trends in Sarajevo

Emina Mehic[1]
1-International Burch University, Sarajevo, Bosnia and Herzegovina
emina.mehic@stu.ibu.edu.ba

***Abstract* – Within the last 20 years, there has been witnessed a significant increase of the urban population of Sarajevo, as a result of economic and social migrations. Consequently, this has caused an increasing demand for new housing which is mainly profit-oriented without any beneficial social, environmental or cultural implication. Primary objective of this research is to analyze the current situation and to assess the quality of the buildings not only as a housing solution, but as a complex that unites the community who inhabits it. This research will be conducted in a qualitative manner in analysis and statistical approach over the data related to the urbanization, building standards and positive effects of the building. Newly built parts of settlements Otoka and Stup will be used as case studies, since these parts of the city are most influenced by the mass production of the new housing solutions. This paper stresses out the correlation between high demand for the new housing and decreased quality of the housing without respecting minimum spatial and environmental standards, without basic amenities, social infrastructure and recreational and cultural activities. There is a need for improvements in contemporary housing design that will reflect with positive impacts on social, environmental, economic and cultural aspects of urban living.**

Keywords - Contemporary housing trends, qualitative analysis, Otoka, Stup

1. Introduction

City of Sarajevo is becoming a large construction site, meaning that more and more residential buildings and buildings in general are being built. For the past couple of years, the fast appearance of the entire residential settlements is noticeable. The parts of the city that are affected the most are Otoka and Stup. One of the most characteristic housing solutions are definitely residential settlements called **Stup Nukleus**, a newly built residential and business complex in Stup, municipality of Ilidža and **Nova Otoka** in Otoka, municipality of Novi Grad.

With the urbanization of the capital city of Sarajevo extending rapidly. It is not a surprising phenomenon that more and more investors are seeking an opportunity for profit. In order to realize why the interest is so high in these specific parts of the city, history and urban plans for Sarajevo will give us a more precise point of view.

Otoka is a settlement in the capital city of Bosnia and Herzegovina, Sarajevo, located in municipality Novi Grad. Otoka is closely coupled with the following: Buća Potok (North side), Čengić vila (East side),

Aneks (South-East side), Švrakino Selo (South side). Its residential core represents a chain of high-rise buildings (Streets: Žrtava Fašizma, Brčanska, Aleja Lipa). [2]

The majority of residential buildings built in this part of the city was built by the government in early 70s when Otoka was considered one of the most prominent, modern and cleanest parts of the Sarajevo suburbia. The residential design of this part of the city was also advanced considering the other buildings. As shown on Figure 1, These were built during socialist regime, since significant attention was paid to environmental aspects of the settlement. There were designated areas for parks, elementary schools, preschools and shopping. [1] Originally residential settlements were built on the left side of Miljacka river, which before the 70's was mainly empty fields. Accordingly, there were no plans for extensive construction on the other side of the river, since the idea was to maintain Otoka Meandar as the green "lungs" of the city containing recreational areas and walking paths. The area to the North between two major traffic axis – Bulevar Meše Selimovića and Džemala Bijedića street were treated as industrial site. After the 1990's war new buildings were erected in the Meandar area. "Stadium Otoka" was built in 1993

Figure 1. Otoka in Yugoslavia, one of the most elite and modern urban areas at the time [www.klix.ba]

and it was additionally upgraded and renovated in 2011. "Istiklal Mosque" was also built in 2001, beside these two, Vistafon multipurpose hall and Olympic pool – two large scale projects were built in this period. Even though these are mainly sport and recreational buildings that provide social interaction and entertainment opportunities the green lungs of the city were seriously jeopardized. In the meantime, with the construction of the mentioned buildings industrial zones slowly started decaying and as the market needs and industry demand changed. The industrial companies that owned the area were destroyed in the shady privatization processes that followed the war. Industries that have survived the war and privatization, were allocated outside of the city. This created an opportunity to transform the entire industrial zone into residential settlement.[6] [7]

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

Figure 2. Otoka in process of construction [www.klix.ba]

Examining urbanization plans we can conclude that the first residential zone was expected to be at maximum 6-8 floor height, but today we can see that the floor height almost doubled and we can notice 12-13 story buildings. The building blocks that we are examining now in Nova Otoka were initially planned with a maximum height of 21 meter, but with the change of the regulatory plan in 2017, their height increased to 42m. However, even though the height of the buildings was increased the distances or the number of the pertaining facilities remained the same.

Another important issue is vehicular congestion that is happening on a daily basis in this part of the city, because Otoka as mentioned is the geographical center of the city. It is a connection point from the hill settlements and the valley, with tram connection and the main road. Furthermore, once the Otoka settlement was previously built vehicle traffic was directed with neighbourhood lanes planned in a ring style around the perplexing which added to more secure conditions generally and decreased the congestion.

Stup, shown on Figure 3., is a settlement in the capital city of Bosnia and Herzegovina, Sarajevo, located in the municipality Ilidža. Geographically it is located in the western part of the city further from the city centre. It is encompassed by the river Miljacka on the South, and on the North by the river Dobrinja. Neighboring settlements are Briješće, Alipašin most, Alipašino Polje, Olimpijsko selo, Nedžarići, Zračna luka Butmir, Ilidža, Pejton, Otes and Azići. This part of the city was quite rural since it was considered on the outskirts of the city, so mainly low-rise, single family houses and industrial buildings were located in this area. These were mainly owner-occupied housing and there were now larger scale buildings. Once the regulatory plan was provided, Stup area was separated into zones. One of the zones - Stup Nukleus was designated as a residential settlement zone comprising recreational and green areas. However, there were multiple missteps during the implementation of the plan itself. The Institute for Development Planning of

Sarajevo Canton hasn't specifically stated the dimensions of the single buildings, but rather provided zones for approved buildings with pertaining area coverages and building indexes. On the other hand, the developer chose to ignore the regulations and building indexes and built the entire buildable area. This has 8caused very high building density, for instance we have several cases of 6-meter distance between two 13 story buildings. Regarding the historical narrative of Stup Nukleus the site in 1992 was owned by a farming cooperative. After the war, the area became privately owned. Construction of the Stup Nucleus residential settlement began in 2011. The Municipality of Ilidža drafted a Study on the socio-economic justification for the establishment of a public institution in the Stup II settlement in November 2017, which plans for the construction of the school to begin this year, but it never happened. The closest school to this settlement is currently Aleksa Santic Elementary School, located in the Aerodromskom naselju, which is more than one kilometer away, and access to it is very dangerous because of the frequent traffic, especially for younger children. Regarding the vehicular connection of Stup, it is connected to the main traffic axis- Džemala Bijedića street and it contains one of the biggest road loops that is connecting city to other magistral roads that are leading to Mostar, Zenica or Tuzla. With this being said, we can now incorporate the general characteristics of both settlements to create a detailed analysis of the new building construction trends and he future of building in the capital city of Sarajevo. [3]

Figure 3. Stup in Yugoslavia, as spacious new settlement near to industrial zone [www.klix.ba]

2. Methodology

The case study will show the quality, trends, potential problems and possible improvements for contemporary housing trends in Sarajevo. This will allow us to contain all necessary information that will be relevant for our research. The results will be used to give recommendations for the design of residential housing in the future.

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

3. Case study

Urbanistic criteria:

On Figure 4. below the regulatory plan of Stup Nukleus can be seen. Based on the urban typology and regulation plan proposed we will be able to bring up some conclusions and find relevant data that will affect the evaluation of the results. [9]

Figure 4. Regulation plan of Stup Nukleus [Institute for Planning Development of Sarajevo Canton]

Stup Nukleus was built in three separate phases and even though the majority of it was built during the first phase. The construction process started in 2001 and it consisted of 5 buildings with heights varying between 5 and 12 stories high. Smallest distance between these buildings is 6 meters and it is between the 10 story building and 7 story building which creates a big issue in terms of vistas, day light and extreme, almost inhuman density. [4]

Buildings are taking around 7.471 m2 of the site area which is 20.245 m2. We can come to a conclusion that more than a third of the actual site is covered by the buildings. Furthermore, this brings us to the calculation of Urban Density Index (expressed through floor area ratio) which in this case equals 0,36902939. This is quite a lot taking into a consideration that buildings are over 10 stories high, creating the image of very high physical concentration and spatial congestion.

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

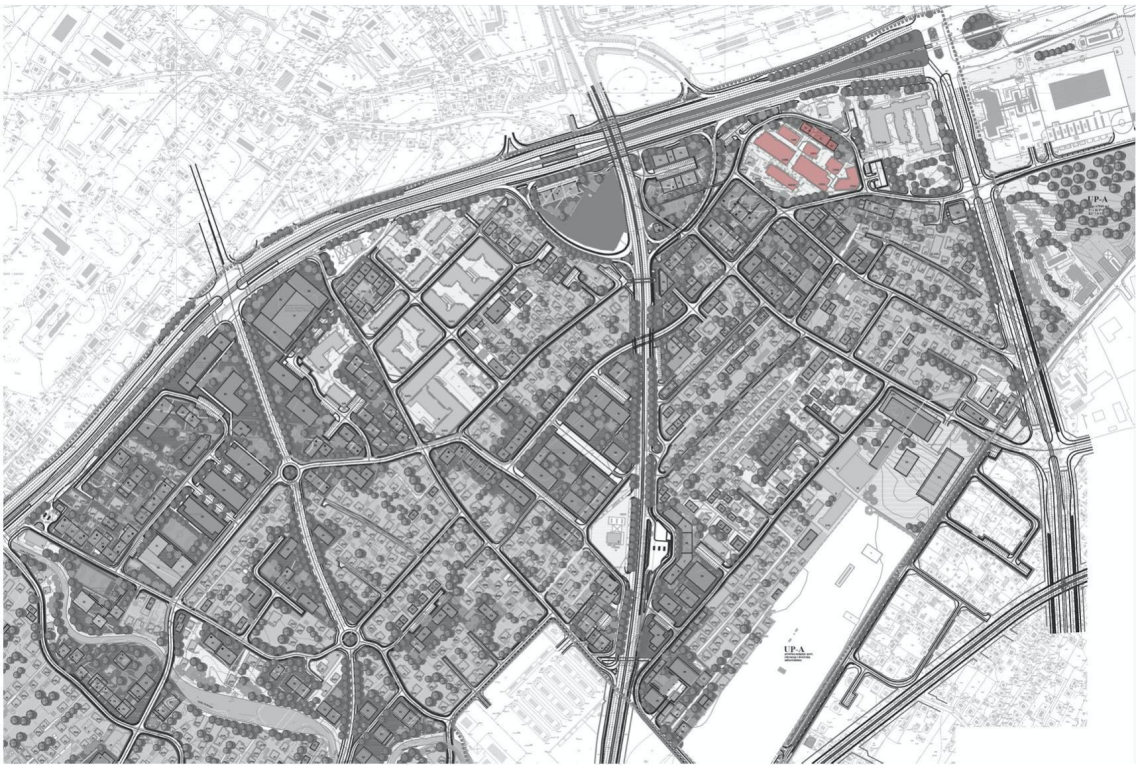

Figure 5. Regulation plan of Stup Nukleus in the first phase of development
[Institute for Planning Development of Sarajevo Canton]

The second phase, represented on the Figure 7., of Stup Nukleus development contained incredible amount of 11 buildings ranging from 6 to 13 floors high. The smallest distance between these buildings is 7,5 m. The total area covered by the buildings is 18. 455 m^2 out of 51. 056 m2 of the total site area. The Urban Density Index (expressed through floor area ratio) for the second phase of Stup Nukleus is 0,3614658414 which is smaller than the first mentioned phase. [3]

Figure 6. Regulation plan of Stup Nukleus in the second phase of development
[Institute for Planning Development of Sarajevo Canton]

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

Figure 7. Completion of Stup Nucleus I
[Tibra Pacifc]

However, the situation on site is considerably worse than the first phase. Because the amount of extremely high buildings is much more pronounced than before and some parts of the site are simply incapable of receiving any daylight. There are also cases where the buildings are facing each other to extent of creating privacy issues.

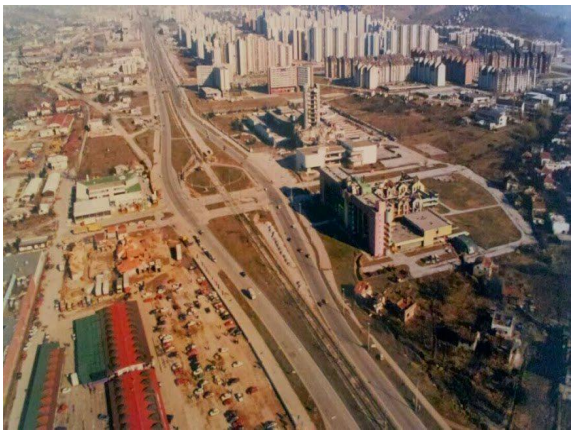

Figure 8. Construction of Stup Nucleus 2 in third phase of Stup Nucleus development
[Tibra Pacific]

The third phase contains similar situation like it is shown on regulatory plan bellow, it contains 4.508 m^2. These one is still in development so it is hard to get the exact value for the UDI, it contains 3 buildings and 1the highest one is 9 floors high.

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

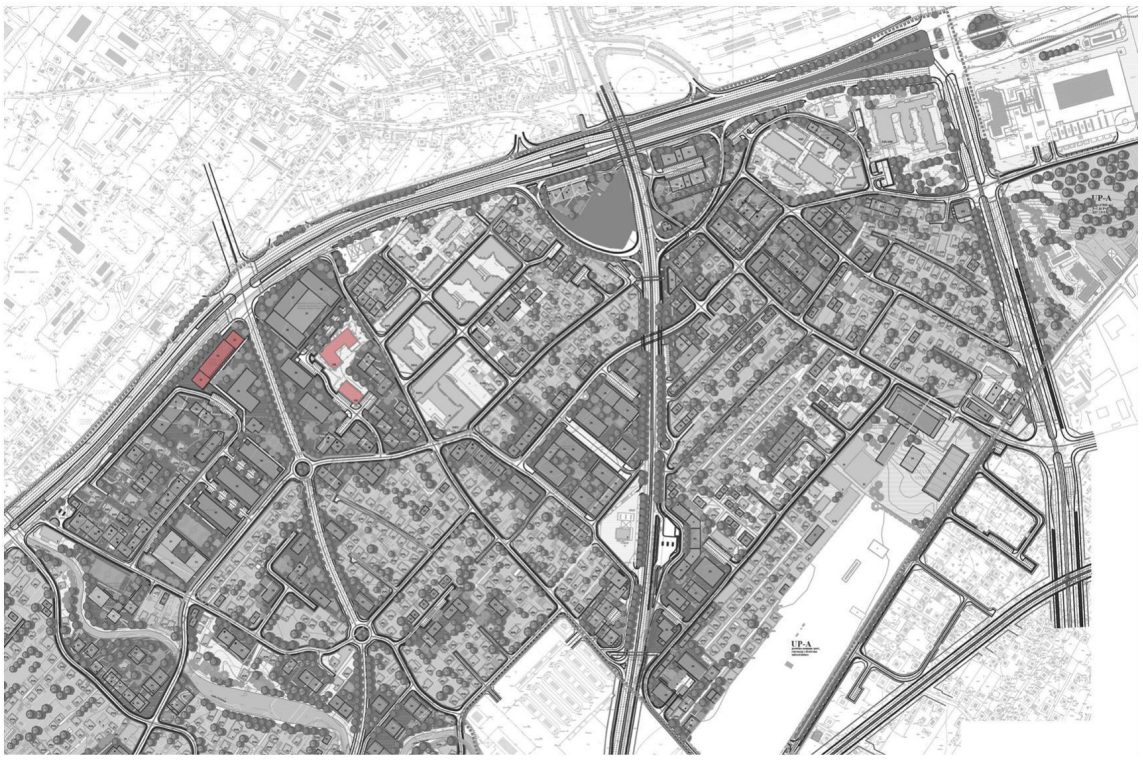

Figure 9. Regulation plan of Stup Nukleus in the third phase of development
[Institute for Planning Development of Sarajevo Canton]

On the other hand, when we talk about Nova Otoka we can notice 5 new buildings with two of them with the same height of 12 floors, which as mentioned before has doubled after the change of regulatory plan. The covered area of Nova Otoka is 10.601 m2 out of the total area of 26.930 m2, and one more building that is in further location, not in between these buildings has area of 2031 m2. [10] It is important to notice that the UDI in Nova Otoka is 0,3936502042. It is high, but there is a factory in between the buildings that is contains the rest of this field. This technically means that here the building density is almost close to ~ 0,86. For the general size of sit it is high and it takes large portion of space.

Figure 10. Regulation plan of Otoka
[Institute for Planning Development of Sarajevo Canton]

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

Environmental, social and cultural criteria:

Based on the documentation and geographical analysis of the site, where Stup Nukleus is located we can conclude that there is no park in the close proximity of the complex, never the less there are no amenities for children or any similar project planned. The closest park that is intended for recreational and leisure purposes is 25 minutes walk from the complex and it is 1.9 km away. On the other hand, based on the analysis of Nova Otoka site we conclude that there is only one very small park within the complex, however the amenities for children are quite limited. Closest larger park that is intended for recreational and leisure purposes is 37 minutes walk from the complex and it is 3.3 km away.
Considering the social aspects of the mentioned complexes we can notice a very bad trend of lack of care for the social interaction. It is important to mention the better position of Otoka compared to Stup that didn't have any predispositions for social and cultural facilities, which Otoka inherited from socialist Yugoslav construction. After the careful examination of the site, we have concluded that Stup Nukleus has 5 privately owned coffee shops and 3 restaurants which based on the population and building density is not enough. [8] Beside these private commercial activities, there is no any sort of entertainment, recreational or cultural enforcing amenity in either one of the sites we are examining in this case study. [5]

Architectural criteria:

Stup Nukleus is commonly considered to be one of the worst complex built in Sarajevo in last two decades. The main issue we have discovered based on the interviews, was that the insufficient distance between buildings. [11]

We will select the sample apartment from these buildings. The example that we used is the apartment with 2 bedrooms and has total of 58 m^2. The selected type is the most common and the most repetitive type of the apartment in the entire complex. Regarding the layout and the dimensions of the rooms it is noticeable that from the lobby the living room with the kitchen and dining are accessible. The total area for these spaces is of 17,80 m^2. From this space you can access the balcony 9,20 m^2. To the left of the lobby there is a bathroom, area of 4,06 m^2. The master bedroom is 14,37 m^2 with access to the loggia. To the right of the front door is a pantry, area of 1,80 m^2, while access to a smaller bedroom that has area 8,39 m^2, from the living room. Some of these apartments are above the 7th floor. Which brings us to the next point and that is the disadvantages of Stup Nukleus buildings. This disadvantage is the insufficient amount of natural light. This issue is closely connected to the distance between buildings. The floors above the 7th floor, do have access to the natural light. Other parts are poorly designed and they get at most 3 hours of daylight. Looking upon the window to space ratio, we can notice that there is lack of windows throughout of the apartment, the rooms are small and they are really hard to fit any larger piece of furniture. As well on the floor plan you can see that the kitchen and bathroom are too small. Beside that, this apartment as you can see is facing the north side. This side is the side that gets the small amount of light in it. The issue is with

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

the air circulation from the kitchen to the only window in the left part of apartment that has to go through living and dining room.

Figure 11. 58 m^2 apartment in Stup Nucleus as average size apartment [www.olx.ba]

On the other hand, as mentioned before, Nova otoka is also a project from the same construction company as Stup Nukleus complex and it is considered to be more contemporary and higher level than Stup. Since Nova Otoka was just recently completed, we were able to find more information about the technical execution of the construction and about building layout itself. This apartment is located on the west side of the complex and it is on 12th floor, meaning there is just one floor above it. [3]

Further more As mentioned before Nova otoka is also a project from the same construction company as Stup Nukleus complex and it is considered to be more contemporary building than the previously mentioned building. Since Nova Otoka was just recently completed, we were able to find more information about the technical execution of the construction and about building it self. Floors facilities: two floors basement, ground floor and 12 residential floors. The basement floors are designed as parking spaces, ground floor contains offices, while the 12 floors above the ground floor are planned as housing units. The complex contains 12 floors, but the last 2 floors are two story penthouses. This complex apartment size varies from 32,49 m2 to 133,63 m2 where average area of the apartments is 65 m2. This apartment is located on first floor of 12 story building A. It is on South and facing the main road, which is very frequent and has high vehicle density during the day, especially the Otoka settlement due to the issues with traffic jams is know to be the start of the jams making vehicle concentration very high.

Journal of Natural Sciences and Engineering, Vol. 2, No.2 (2020)
DOI number: 10.14706/JONSAE2021311

In order to make better comparison, we will select the similar size of the apartment from "Nova Otoka" complex, which has 57.16 m^2. The apartment consists out of living room with connected kitchen and dining

room with the total area of 22,64 m^2. Master bedroom with area of 13,15 m^2 is directly next to children bedroom: 7,10 m^2 and within the lobby with area of 3,72 m^2, across from the bedroom there is toilet with area of 4,24 m^2 within the living room we can notice the balcony: 6,31 m2.

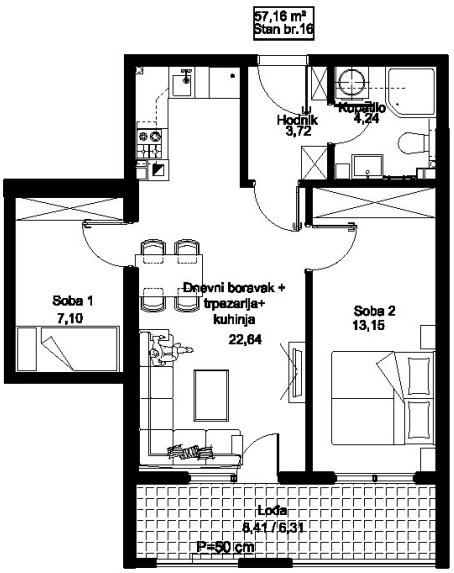

Figure 12. 57 m^2 apartment in Nova Otoka as average size apartment [www.olx.ba]

Additionally, more significantly the shape, the rooms inside of the buildings are just not practical, because placing a bed in middle of the room, leaves around 70 cm of space that is accessible. This is a new practice and it proving to be bad and non-functional. Resident will always have a lack for space for wardrobes.

4. Conclusion

Evaluating the situation and the data presented above, we can state that the analysis showed that most of these new complexes like the Stup Nukleus and Nova Otoka are built mainly for profit, without any concern for environmental, social or cultural benefits of such developments. There is lack of care for providing smart residential building solutions or on the other hand any basic social, recreational and cultural infrastructure resulting in inhuman, unsocial and quite hostile built environment without any sense of identity. A significant improvement can be done by adding areas like parks and playgrounds for children. Instead, the developers are opting for rather cruel profit machine that will bring money exclusively to the investors.

There is a significant influence of scale, more precisely building density and distances between buildings on the overall quality of the studied complexes. One of the main issues especially noted in Stup Nukleus

is that there is an evident lack of daylight in between the buildings, especially where the distance between two buildings is not more than 8 meters. This is causing privacy issues, issues with vistas which can also lead to the further psychological issues. From the regulatory plan is very important to state that the density and the height of the buildings is not by any regulations or laws that are set in place. The case study has shown that the layout of the bedrooms within the buildings is highly questionable, based on their position and the size. The versatility, the flexibility and the functionality of certain spaces, bedrooms foremost, are dubious due to their limited size. [4]

Furthermore, it is important to conclude with saying that there needs to be improvements and persistency of government to pursue the execution of the initially set regulatory plans. Moreover, there is an evident need for a clear set of residential standards in terms of room size, layout, orientation etc. These standards should be used and applied as regulatory mechanisms. This will prevent any future mistakes. On the other hand, the investors need to keep in mind all of the aspects of living, rather than just providing profitable housing solutions without any amenities. Lastly, the final users of the housing should be more aware of all the consequences and implications of the inadequate residential settlements, instead of focusing just on price per m2.

5. REFERENCES

[1] Bošnjak, Katarina. “URBANI IDENTITET SARAJEVA.” AABH, 5 Nov. 2016

aabh.ba/urbani-identitet-sarajeva/.

[2] “Općina Novi Grad Sarajevo.” Općina Novi Grad Sarajevo, 2015; www.novigradsarajevo.ba/index.php?option=com_content&view=article&id=17&Itemid=21.

[3] Sarajevo, Canton. “Building Regulations and Laws for Canton Sarajevo”, 2017, propisi.ks.gov.ba

[4] Bachelard, G. (1994). The Poetics of Space. Boston: Beacon Press books

[5] Finci, J. (1962). Development of Disposition and Function in Residential Culture of Sarajevo. Sarajevo:

[6] NP Oslobodjenje. Grabrijan, D., & Neidhardt, J. (1957). Architecture of Bosnia and the Way to Modernity. Ljubljana.

[7] Ernst, J. Z., Vukicevic, B., Jakulj, T., & Ilich, W. (2017, August 22). Sarajevo Paradox: Survival throughout History and Life after the Balkan War. Retrieved from Columbia University: from http://www.columbia.edu/cu/ece/research/intermarium/vol6no3/ernst.pdf

[8] Federalni zavod za statistiku. (n.d.). Retrieved from http://fzs.ba/index.php/popis-stanovnistva/popisstanovnistva-2013/preliminarni-rezultati-popisa-2013/

[9] “PACIFIC’ d.o.o. Kiseljak.” TIBRA, 2019, tibra-pacific.com/tibra_new/.

[10] Otoka, Nova. “NOVA OTOKA.” NOVA OTOKA, 1 Aug. 2015, www.novaotoka.com/en/home.php

[11] Općina Ilidža https://www.opcinailidza.ba/uploads/files/shares/REGULACIONI%20PLANOVI/Regulacioni%20plan20Stup%20Nukleus.pdf